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ENFORCEMENT

2013 - 2014

HOLLYFRONTIER

December 1, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7014 1200 0000 1832 3105

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
November 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the November 2014 monthly progress report, detailing the actions taken during the preceding calendar month of October 2014, and due on the first business day of the following month (i.e., December 1, 2014). This report also includes the final analytical results as of November 17, 2014, and the actions taken through approximately November 21, 2014. Progress report submittal frequency will be altered from monthly to quarterly following submission of this report per the Third Amendment to the Agreed Compliance Order WQA-OCD-CO-2013-001, dated November 19, 2014, except as otherwise provided at Paragraph 9 of Amended Exhibit A. The next progress report will be submitted by February 2, 2015, addressing actions taken during 4th quarter 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste

Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1.To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports (except as otherwise referenced at footnote 1, below), as follows:[1]

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9;
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9;
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9;
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9;
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9;
- The May 2014 progress report was submitted on June 2, 2014 pursuant to Paragraph 9;
- The June 2014 progress report was submitted on July 1, 2014 pursuant to Paragraph 9;
- The July 2014 progress report was submitted on August 1, 2014 pursuant to Paragraph 9;
- The August 2014 progress report was submitted on September 2, 2014 pursuant to Paragraph 9;
- The notice of compliance with Se Limit was submitted on September 15, 2014 pursuant to Paragraph 13;
- The notice of selection of long-term option for addressing selenium concentrations in wastewater was submitted on September 30, 2014 pursuant to Paragraph 15;
- The September 2014 progress report was submitted on October 1, 2014 pursuant to Paragraph 9;
- The October 2014 progress report was submitted on November 3, 2014 pursuant to Paragraph 9.

[1] *See* Letter from Dan Crawford, P.G., Environmental Manager, Navajo, to Director, OCD, August 21, 2014, and Letter from Michael G. McKee, Vice President and Refinery Manager, Navajo, to Director, OCD, November 19, 2014 (regarding stipulated penalty payments for a small number of missed deadlines).

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. As described in Navajo's September 30, 2014 notice to OCD, Navajo has also now selected use of the existing 100 gpm SeRT® unit, without modification, as its long-term option for reducing selenium concentrations in wastewater. (Other long-term options that had been under consideration included the potential design and installation of a 200 gpm SeRT® unit and the modification of the existing 100 gpm SeRT® unit). An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. (Relocation of this existing unit was at that time expected to put a portion of the long-term selenium removal technology in place within an estimated 3 to 4 months. As explained in Navajo's September 30, 2014 notice, Navajo has now selected the 100 gpm SeRT® unit as its long-term option for reducing selenium concentrations in wastewater.)

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.

- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Tank 809 Eff.	Removal Efficiency

DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The results through October 16, 2014 are summarized in Table 3 below and show an average total selenium removal efficiency of 95.3%. On September 30, 2014, this unit was selected as Navajo's long-term option for reducing selenium concentrations in wastewater, as explained in Navajo's notice to OCD of that same date.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%
5/27/2014	Hall Environmental	60	2.90	-	0.08	-	97%
5/29/2014	Hall Environmental	60	3.20	-	0.11	-	97%
6/2/2014	Hall Environmental	64	3.30	-	0.07	-	98%
6/5/2014	Hall Environmental	51	3.10	-	0.09	-	97%
6/9/2014	Hall Environmental	50	3.30	-	0.06	-	98%
6/12/2014	Hall Environmental	60	3.10	-	0.13	-	96%
6/16/2014	Hall Environmental	120	3.30	-	0.54	-	84%
6/19/2014	Hall Environmental	130	3.10	-	0.40	-	87%
6/23/2014	Hall Environmental	130	3.90	-	0.47	-	88%
6/26/2014	Hall Environmental	118	3.00	-	0.30	-	90%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
7/1/2014	Hall Environmental	101	2.30	-	0.14	-	94%
7/3/2014	Hall Environmental	115	2.20	-	0.12	-	95%
7/7/2014	Hall Environmental	106	2.70	-	0.17	-	94%
7/14/2014	Hall Environmental	125	3.20	-	<0.05	-	98%
7/17/2014	Hall Environmental	92	2.70	-	0.07	-	97%
7/21/2014	Hall Environmental	120	2.70	-	0.23	-	91%
7/24/2014	Hall Environmental	80	2.80	-	0.14		95%
7/28/2014	Hall Environmental	114	2.50	-	0.28		89%
7/31/2014	Hall Environmental	118	3.50	-	0.32	-	91%
8/4/2014	Hall Environmental	96	3.30	-	0.06	-	98%
8/7/2014	Hall Environmental	125	3.00	-	0.04	-	99%
8/11/2014	Hall Environmental	100	2.80	-	0.04	-	99%
8/15/2014	Hall Environmental	100	3.60	-	0.04	-	99%
8/21/2014	Hall Environmental	100	3.10	-	0.04	-	99%
8/25/2014	Hall Environmental	100	1.60	-	0.03	-	98%
8/28/2014[1]	Hall Environmental	105	2.60	-	<0.05	-	98%
9/2/2014	Hall Environmental	105	3.90	-	0.04	-	99%
9/4/2014	Hall Environmental	105	3.90	-	0.03	-	99%
9/8/2014	Hall Environmental	95	4.60	-	0.06	-	99%
9/11/2014	Hall Environmental	90	4.20	-	0.03	-	99%
9/15/2014	Hall Environmental	90	4.40	-	0.04	-	99%
9/18/2014	Hall Environmental	100	5.00	-	0.04	-	99%
9/22/2014	Hall Environmental	61	5.30	-	0.04	-	99%
9/25/2014	Hall Environmental	90	6.10	-	0.12	-	98%
9/29/2014	Hall Environmental	90	6.40	-	0.07	-	99%
10/2/2014	Hall Environmental	95	6.50	-	0.05	-	99%
10/6/2014	Hall Environmental	100	8.60	-	0.09	-	99%
10/9/2014	Hall Environmental	88	8.90	-	0.11	-	99%
10/13/2014	Hall Environmental	100	7.30	-	0.10	-	99%
10/16/2014	Hall Environmental	115	6.30	-	0.11	-	98%
10/20/2014	Hall Environmental	115	5.10	-	0.13	-	97%
10/23/2014	Hall Environmental	100	4.40	-	0.09	-	98%
10/27/2014	Hall Environmental	105	2.50	-	0.06	-	98%
10/30/2014	Hall Environmental	90	3.70	-	0.04	-	99%
11/3/2014	Hall Environmental	100	3.20	-	0.03	-	99%
11/6/2014	Hall Environmental	100	3.50	-	0.03	-	99%
11/10/2014	Hall Environmental	110	2.70	-	0.05	-	98%
11/13/2014	Hall Environmental	110	3.30	-	0.06	-	98%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
11/17/2014	Hall Environmental	100	3.30	-	0.03	-	99%

[1] The sampling event on August 28, 2014 showed a SeRT Influent concentration of <0.05 ppm and a SeRT Effluent concentration of 2.60 ppm. Samples were likely either switched in the field before being labeled, or mislabeled. Table 3 shows the correct concentration associated with each location.

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- First Amendment to Exhibit A signed by Navajo and OCD.

June 2, 2014

- Navajo submitted a minor permit modification requested by OCD for the installation of the SeRT® & ICP units at the Artesia Refinery.

June 24, 2014

- OCD approved the modification request submitted on June 2.

June 1 to 2, 2014

- Navajo temporarily stopped injection while doing the Pressure Fall Off Tests (PFOTs) and Mechanical Integrity Testing (MIT) for Well 1.[2]

June 30 to July 2, 2014

- Navajo temporarily stopped injection while doing the PFOTs and MIT for Well 2.[2]

July 7-9, 2014

- Used SeRT® media was replaced by new media. The media change-out started on July 7, 2014 and was completed on July 9, 2014. The unit was brought on-line on July 10, 2014. The pH probes were also replaced.

August 11, 2014

- Met with OCD to discuss amending Exhibit A to clarify reporting and sampling in connection with cessation of well injection per Navajo's July 25, 2014 letter.

August 25-28, 2014

- Navajo temporarily stopped injection for PFOTs and MIT for Well 3.[2]

September 3 and 8, 2014

- Second Amendment to Exhibit A signed by OCD and Navajo.

[2] Pressure Fall Off tests and Mechanical Integrity Testing are unrelated to selenium concentrations in the wastewater injected at the wells.

September 15, 2014

- Notice of Compliance with Selenium Limit submitted to OCD.

September 30, 2014

- Notice of selection of long-term option for addressing selenium concentrations in wastewater submitted to OCD.

November 19, 2014

- Third Amendment to Exhibit A signed by OCD and Navajo.
- Navajo paid OCD the stipulated penalty of $26,000 for late submission of October 1, 2014 quarterly sampling results.

As noted in the February 2014 monthly interim progress report submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the performance of the 100 gpm SeRT® unit. Also, as noted above, on September 30, 2014, Navajo submitted to OCD its notice of selection of long-term option for selenium reduction pursuant to Paragraph 15 of Exhibit A to the Order. Navajo selected the existing SeRT® unit, without modification, based on its proven effectiveness in reducing selenium concentrations (now, as of the November 17, 2014 sample, at an average total selenium removal efficiency of 95.3%) and Navajo's record of compliance with the Se Limit using this technology.[3]

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follows.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location (location shown in Attachment A) on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constituted the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling is being conducted on a quarterly basis on the first business day of the quarter. One quarterly sample was taken on October 1, 2014 and the next scheduled sampling date is Friday, January 2, 2015. There have been no non-compliant sampling events since issuance of the Order on November 14, 2013. Additional monitoring is also presented in Table 4. Since the October monthly progress report, no new laboratory reports have been obtained for the OCD quarterly sampling events required under Paragraph 1(c) of Exhibit A to the Order. (The laboratory report for the October 1, 2014 quarterly sampling event was submitted with the October monthly progress report.) As a result, no laboratory report is provided in Attachment B.

[3] As explained in the September 30th notice, Navajo reserves the right to modify the current SeRT® unit in the future should changes become necessary based on wastewater effluent characteristics, refinery operational needs or other circumstances.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**
7/3/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**< 0.027**	**< 0.027**
10/1/2014[4]	**T-836 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.04**	**0.04**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.
[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) *A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).*

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment C. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment D, and all of the total selenium measurements for all refinery sample locations are provided in Attachment E. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, April, May, June, July, August, September, and October through November 17, 2014.

c) *The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.*

As of the most recent sampling event, there are no new reported exceedances of the Se Limit. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit. As explained in Navajo's July 25, 2014 letter to OCD, Navajo was unable to conduct quarterly sampling on July 1, because there was no injection at the wells on that day due to PFOTs and mechanical integrity testing. Quarterly sampling was not conducted until July 3, 2014, after the discharge to the wells resumed, a delay of two days. Also, Navajo was one day late in submitting the results of its quarterly selenium sampling to OCD, which were required to be submitted by July 17, and were instead submitted on July 18, 2014. Per

the stipulated penalty schedule at Section III, Paragraph 2 of the Order, Navajo calculated a stipulated penalty of $5,000.[4] This sum was paid by letter dated August 21, 2014. Navajo was also late in submitting the results of its October 1, 2014 quarterly selenium sampling to OCD, which were received on October 6, 2014, and conservatively assumed to be required to be submitted by October 8. They were instead submitted on November 3, and as a result, were 26 days late. Based on this, and per the stipulated penalty schedule at Section III, Paragraph 2 of the Order, Navajo calculated a stipulated penalty of $26,000.[5] This sum was paid by letter dated November 19, 2014. Navajo is taking preventive steps to help ensure timely quarterly sampling and reporting of corresponding sample results.

If you have any questions, please do not hesitate to contact me at (575) 308-1511 or brian.stone@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

BM Stone

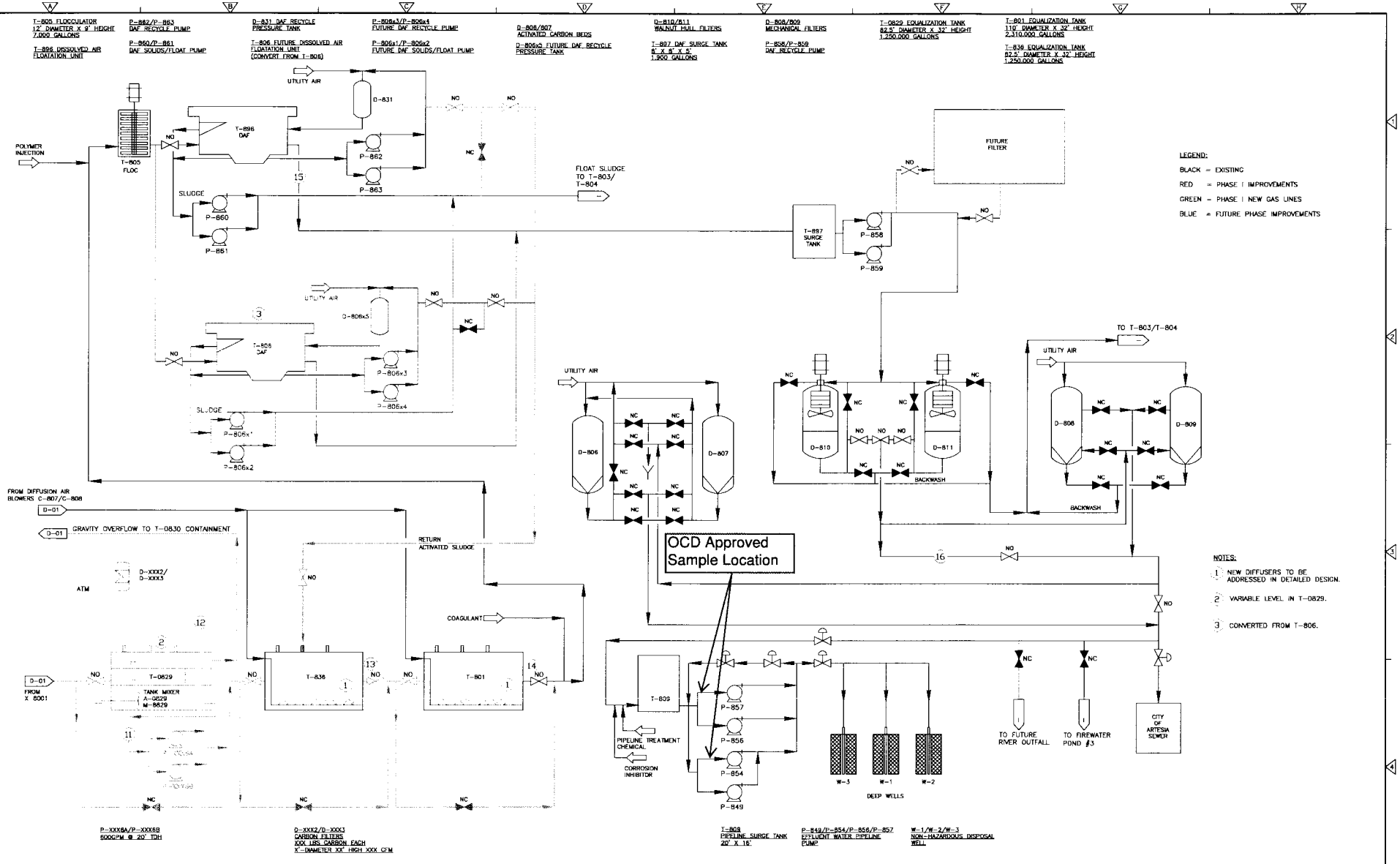
Brian Stone, P.E.
Environmental Specialist

Navajo Refining Company, L.L.C.

[4] Per Order Section III, Paragraph (2)(b)(4), for failure to conduct timely sampling, $2,000 per day X 2 days = $4,000; per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 1 day = $1,000.

[5] Per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 26 days = $26,000.

Attachment A:
OCD-Approved Sample Location



REV. NO.	DATE	DRAWN	CHKD	REMARKS
5	01/12	DH	JDC	ISSUED FOR PHA REVIEW
4	12/9	RM	JDC	CHANGED PER 12/07/10 REVIEW MEETING
3	12/6	RM	JDC	CHANGED PER 11/30/10 REVIEW MEETING
2	11/3			CHANGED DURING CLIENT REVIEW MEETING
1	10/26			CHANGED PER CLIENT 10/26/10

DESIGNED BY: J. CAMANN
DRAWN BY: R. MOORE
SHEET CHK'D BY: K. GREENFELDER
CROSS CHK'D BY: M. CARBALLA
APPROVED BY: X
DATE: DECEMBER 2010

CDM
Camp Dresser & McKee
3050 Post Oak Boulevard, Suite 300
Houston, Texas 77056
Tel: (713) 423-7300 Fax: (713) 840-0175
TBPE Firm Registration No. F-3043
consulting · engineering · construction · operations

NAVAJO REFINERY
ARTESIA, NEW MEXICO
PHASE I WWTP

PROCESS FLOW DIAGRAM
PHASE I - WASTEWATER TREATMENT PLANT IMPROVEMENTS - SHEET 2
EQUALIZATION TANK TO DISCHARGE

PROJECT NO. 90538-79019
FILE NAME: G001PFD
SHEET NO. D-02

DWG: S:\90538\79019\00-EXHIBITS\DPH_G001PFD-ALT.dwg USER: moorere
DATE: Jan 13, 2011 8:35am XREFS:CDM_2234 79019-2234BDR

Attachment B:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order
- No New Report

Attachment C:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment C Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	**T-836 Effluent**	**Hall**	**1.10**	**Cardinal**	**1.16**	**1.13**
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	**T-801 Effluent**	**Hall**	**0.74**	**-**	**-**	**0.74**
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08
6/19/2014	T-801 Effluent to Wells	Hall	<0.10	-	-	<0.10
7/3/2014[4]	T-801 Effluent to Wells	Hall	< 0.027	-	-	< 0.027
7/22/2014	T-801 Effluent to Wells	Hall	<0.027	-	-	<0.027
8/25/2014	T-836 Effluent to Wells	Hall	<0.027	-	-	<0.027
8/28/2014	T-836 Effluent to Wells	Hall	<0.027	-	-	<0.027
10/1/2014[4]	T-836 Effluent to Wells	Hall	0.04	-	-	0.04
11/3/2014	T-836 Effluent to Wells	Hall	0.10	-	-	0.10

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3]Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.
[4]Required sampling conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment D:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through November 17, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.60	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.30	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #4S Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085
6/19/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	1406935
7/3/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407271
7/22/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407A42
8/25/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1408D15
8/28/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.027	-	-	-	-	-	-	-	-	-	1408F33
10/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.036	-	-	-	-	-	-	-	-	-	1410094
11/3/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	-	-	-	-	-	-	-	-	-	1411054

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment E:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment E Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through November 17, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	5W5 Bottoms (W-634)		5W5 Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.90	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #4S Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.00	16.00	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5.00	<5.00	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.50	<4.50	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.10	3.20	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	1403561 1403562

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
																															1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404B38
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405688
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983
5/27/2014	Hall Environmental	-	-	-	-	-	-	2.90	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405B03
5/29/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405C46
6/2/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406018
6/5/2014	Hall	-	-	-	-	-	-	3.10	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406247

DATE	Laboratory	SW5 Bottoms (W-634)		5WS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #4S Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														
6/9/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406376
6/12/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406576
6/16/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406694
6/19/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.069	-	-	-	-	-	1406934
6/23/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406A48
6/26/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406C44
7/1/2014	Hall Environmental	-	-	-	-	-	-	2.30	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407055
7/3/2014	Hall Environmental							2.20	0.12															0.02						1407222 1407224
7/7/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407272
7/10/2014	Hall Environmental	-	-	-	-	-	-	pH 6.0 pH 5.0 pH 4.0 pH 3.5	3.2 2.10 0.21 0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407494
7/14/2014	Hall Environmental	-	-	-	-	-	-	3.20	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407602
7/17/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407867
7/21/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407986
7/24/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407C14
7/28/2014	Hall Environmental	-	-	-	-	-	-	2.50 3.60	0.28 0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407D22 1408919
7/31/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408014
8/4/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408159
8/7/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408413
8/11/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408469
8/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408846
8/21/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408B70
8/25/2014	Hall Environmental	-	-	-	-	-	-	1.60	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	-	-	-	-	-	1408D14 1408D15
8/28/2014[1]	Hall Environmental	-	-	-	-	-	-	2.60	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.014	-	-	-	-	-	1408F25 1408F33
9/2/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409074
9/4/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409240
9/8/2014	Hall Environmental	-	-	-	-	-	-	4.60	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409352
9/11/2014	Hall	-	-	-	-	-	-	4.20	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409592

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														
9/15/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409711
9/18/2014	Hall Environmental	-	-	-	-	-	-	5.00	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409962
9/22/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409B00
9/25/2014	Hall Environmental	-	-	-	-	-	-	6.10	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409D32
9/29/2014	Hall Environmental	-	-	-	-	-	-	6.40	0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409F12
10/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.020	-	-	-	-	-	1410094
10/2/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410152
10/6/2014	Hall Environmental	-	-	-	-	-	-	8.60	0.086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410276
10/9/2014	Hall Environmental	-	-	-	-	-	-	8.90	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410515
10/13/2014	Hall Environmental	-	-	-	-	-	-	7.30	0.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410614
10/16/2014	Hall Environmental	-	-	-	-	-	-	6.30	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410843
10/20/2014	Hall Environmental	-	-	-	-	-	-	5.10	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410A24
10/23/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.089	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410B61
10/27/2014	Hall Environmental	-	-	-	-	-	-	2.50	0.058	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410C49
10/30/2014	Hall Environmental	-	-	-	-	-	-	3.70	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410E23
11/3/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.081	-	-	-	-	-	1411055 1411054
11/6/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1411274
11/10/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1411371
11/13/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.055	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1411551
11/17/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1411680

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

[1] The sampling event on August 28, 2014 showed a SeRT Influent concentration of <0.05 ppm and a SeRT Effluent concentration of 2.60 ppm. Samples were likely a) switched in the field before being labeled, or b) were mislabeled. This table shows the correct concentration associated with each location.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Wednesday, November 19, 2014 2:52 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Brancard, Bill, EMNRD
Subject: Stipulated Penalty Payment
Attachments: 2014-11-19 Stipulated Penalty Payment for Oct.pdf

Scott/Carl – attached is a scan of the stipulated penalty payment for the late submittal of the October 2014 Quarterly sampling results. The original is being sent today via certified mail. Please don't hesitate to call with any questions.

Thanks You,
Mike

Mike Holder
Corporate Environmental Specialist – Water & Waste
HollyFrontier
2828 North Harwood, Suite 1300
Dallas, TX 75201
(214) 954-6536 (office)
(575) 308-1115 (cell)

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HOLLYFRONTIER.

November 19, 2014

Director, Oil Conservation Division
NM Energy, Minerals & Natural Resources Dept.
1220 S. St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7014 1200 0000 1832 3044

Re: Amended and Supplemental Agreed Compliance Order (the "OCD Order")
Stipulated Penalty Payment
Navajo Refining Company, L.L.C.
Artesia Refinery

Dear Director:

As discussed earlier this month with representatives of OCD, Navajo Refining Company, LLC ("Navajo") recently missed a deadline for reporting under the above OCD Order. Specifically, the Order requires that Navajo provide the results of required sampling within three business days after its receipt of the final data for that sample. It has recently come to Navajo's attention that the results of its quarterly selenium sampling for 4th quarter 2014, received on October 6th, were not submitted to OCD until November 3, 2014. Navajo is conservatively assuming that the results were required to be submitted by October 8, 2014, and that, as a result, Navajo's submittal was 26 days late. Based on this, Navajo has calculated a stipulated penalty under the Order of $26,000.[1] We understand that OCD agrees with this calculation, and we include a check in this amount to resolve this matter.

Thank you for taking time to discuss these issues with us, and please let us know if you have any questions regarding the above.

Very truly yours,

Michael G. McKee
Vice President and Refinery Manager

Enclosure

Electronic cc (w/enc.): Mike Holder (HollyFrontier)
Denise McWatters (HollyFrontier)

[1] Per Order Section III, Paragraph 2.b.(5), for failure to timely submit any report or notification, $1,000 per day X 26 days = $26,000.

NAVAJO REFINING COMPANY, L.L.C.
2828 N. Harwood St., Suite 1300
Dallas TX 75201-1507

STATE OF NEW MEXICO GENERAL FUND
DIRECTOR OIL CONSERVATION DIVISION
NM ENERGY MINERALS & NATURAL RESOUR
1220 S ST FRANCIS DR
SANTA FE NM 87505-4225

Check Date		11/18/2014
Check Amount	$	26,000.00
Vendor No		5126527
Payment Document		2000153239
Company Code		1020

Invoice Date	Invoice Number	Description	Invoice Amount	Discount Amount	Net Amount
11/10/2014	111014	OCTOBER 2014 OCD NON-COMPLIANCE PEN	26,000.00	0.00	26,000.00

Payment document	Check number	Date	Currency	Payment amount
2000153239	1000281752	11/18/2014	USD	********26,000.00*

↓ PLEASE FOLD ON PERFORATION AND DETACH HERE ↓

VERIFY THE AUTHENTICITY OF THIS MULTI-TONE SECURITY DOCUMENT. CHECK BACKGROUND AREA CHANGES COLOR GRADUALLY FROM TOP TO BOTTOM.

NAVAJO REFINING COMPANY, L.L.C.
2828 N. Harwood St., Suite 1300
Dallas TX 75201-1507

64-1278/611 **1000281752**
11/18/2014

PAY EXACTLY
********26,000.00*USD
VOID AFTER 180 DAYS

PAY *** TWENTY-SIX THOUSAND and 00 /100 USD***

TO THE
ORDER OF STATE OF NEW MEXICO GENERAL FU
DIRECTOR OIL CONSERVATION DIVI
NM ENERGY MINERALS & NATURAL R
1220 S ST FRANCIS DR
SANTA FE NM 87505-4225

AUTHORIZED SIGNATURE

Bank of America N.A.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

THIRD AMENDMENT TO AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended ("Act"), and the regulations promulgated under the Act, the Oil Conservation Commission and the Oil Conservation Division of the Energy, Minerals and Natural Resources Department of the State of New Mexico (together, "OCD") issues this Third Amendment to Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, which was issued to Navajo Refining Company, L.L.C. ("Navajo") on November 14, 2013 and which includes Exhibit A, as amended on April 22, 2014 and September 3, 2014 ("Amended Exhibit A") to amend the requirement for interim progress reports and to confirm the potential termination date of the Order (together, the "Order"). The Order directs compliance with the Act, the Water Quality Control Commission Regulations and permits issued under the Act.

I. FINDINGS AND DETERMINATIONS

1. Paragraph 1(a) of Section IV of the Order provides that the Order will terminate when selenium concentrations remain below the Se Limit for four consecutive quarters after Remediation Project Completion.

2. Paragraph 13(d) of Amended Exhibit A requires that Navajo achieve compliance with the Se Limit as measured at the Sample Location by September 15, 2014. OCD confirms

that Navajo achieved compliance with the Se Limit by September 15, 2014.

3. Paragraph 13 of Amended Exhibit A provides that the completion of all items required under this Paragraph shall be referred to as "Remediation Project Completion". OCD confirms that Navajo has reached Remediation Project Completion.

4. Paragraph 15 of Amended Exhibit A requires Navajo to advise OCD of Navajo's selection of a long term option for addressing selenium in wastewater by September 30, 2014. OCD confirms that Navajo has advised OCD of the long term option.

5. Paragraph 9 of Amended Exhibit A requires Navajo to provide OCD with monthly interim progress reports that include the results of all required sampling. Navajo and OCD agree to amend the reporting requirement to change the frequency of progress report submittal from monthly to quarterly for the duration of the Order, with the last monthly report to be submitted December 1, 2014 (covering activities occurring in October 2014), except as otherwise provided at Paragraph 9 of Amended Exhibit A.

6. Navajo sampled the injection fluid on October 1, 2014 and provided the results to OCD. The selenium concentration for the test was below the Se Limit. Navajo and OCD confirm that if Navajo a) timely tests the injection fluid for the quarters beginning January, April and July 2015, b) timely reports the results in the quarterly report and c) the results are below the Se Limit for each test, then the Order will terminate upon OCD receipt of the quarterly report for the third quarter of 2015. After the termination of the Order, injection of non-hazardous wastewater at the wells shall continue to be subject to the terms and conditions of the OCD UIC Permits.

7. Paragraph 1.a. of Section IV of the Order provides that Navajo and OCD have the right to modify the Order by written instrument signed by both parties.

II. AMENDMENT

1. Paragraph 9 of Amended Exhibit A is hereby amended and restated in the attached Third Amended Exhibit A to Amended and Supplemental Agreed Compliance Order to incorporate the above agreement of the parties regarding the requirement for the timing of interim progress reports.

2. The Order remains unchanged except as stipulated herein.

3. This Amendment may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this 19th day of November, 2014.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Amendment, and agrees to all of the terms and provisions as set forth in the Amendment,

Navajo Refining Company, L.L.C.

By: _____

Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 19 November 2019

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Third Amended Exhibit A to Amended and Supplemental Agreed Compliance Order (November , 2014)

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo ceases injection at the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting at the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

    f) For purposes of this Exhibit A (including, without limitation, Paragraphs 1(d), 6, 7 and 8), the term "ceases injection" shall be limited to the cessation of injection at the wells due to actual or potential exceedances of the Se Limit. The term excludes cessation for all other reasons, such as equipment repair, maintenance or replacement and well testing (such as pressure fall off tests,

annulus pressure tests, and mechanical integrity tests). Further, the obligation to sample the injection fluid prior to cessation does not include emergency events or circumstances, where it is infeasible to conduct sampling prior to cessation of injection at the wells.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

    a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

    b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

    c) take such other actions as may be appropriate to address the exceedance; and

    d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo ceases injection at the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail that Navajo has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports, which shall be due the first business day of the following month, detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. Beginning fourth quarter 2014 and continuing until the termination of quarterly sampling under this Order, Navajo shall provide quarterly progress reports in lieu of monthly progress reports, which shall be due the first business day of the second month following the end of the quarter. For avoidance of doubt, the quarterly progress report addressing actions taken during fourth quarter 2014 is due no later than February 2, 2015, and the quarterly progress report for third quarter 2015 shall be submitted no later than November 2, 2015. Additionally, a final monthly report is due December 1, 2014, covering activities occurring in October 2014. If, however, when Navajo determines that stipulated penalties are due under Paragraph 2 of Section III of the Order, Navajo will submit a monthly report under the schedule above in order to provide OCD with Navajo's calculation of stipulated penalties for the relevant month. Such monthly report need not include the other elements set forth below at Paragraph 9.a.-b., which would instead be part of the quarterly report for the quarter encompassing the month for which stipulated penalties were calculated. Except as set forth in the preceding sentence, the progress report shall include the following:

    a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

    b) a summary of the results of any optional sampling taken during the preceding calendar month or quarter, as applicable (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

    c) for monthly progress reports, the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the causes of the exceedences of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in

wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

a) its selection of a short-term remedy(ies);

b) dates for completion of any necessary bench scale or other trials;

c) dates of anticipated installation of any selected technology(ies); and

d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall construct and implement the remedy selected pursuant to paragraph 12 above (the "Remediation Project") in accordance with the following schedule of milestones and deadlines following OCD approval of same.

a) Completion of scale-up trial and commencement of full-scale operation of an iron co-precipitation process via ferric chloride injection ("ICP") by February 1, 2014.
b) Completion of construction and startup of a Phillips 66, trial SeRT® unit (approximate 100 gallons per minute capacity) by February 1, 2014.
c) Confirmation of selenium reduction using trial SeRT® unit by March 31, 2014.
d) Achievement of compliance with the Se Limit as measured at the Sample Location by September 15, 2014.

Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion." Notwithstanding the foregoing, Navajo may, after notice to OCD, cease operation of ICP at any time and still satisfy requirements for Remediation Project Completion, provided that Navajo continues to achieve compliance with the Se Limit (as measured at the Sample Location).

14. Reserved.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. Depending on the efficacy of the trial SeRT® unit described in Paragraph 13, above, Navajo may elect to install and/or build a full capacity permanent SeRT® unit or modify the trial SeRT® unit. In addition, Navajo continues to evaluate alternative

technologies for selenium removal. On or before September 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, November 04, 2014 10:40 AM
To: 'Holder, Mike'; Dawson, Scott, EMNRD
Subject: RE: 4th Quarter Se Effluent Results

Mike:

OCD needs the Monthly Progress Reports from September and October of 2014.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
O: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Web: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental



From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Monday, November 03, 2014 10:34 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 4th Quarter Se Effluent Results

Scott/Carl – I apologize if this is a duplicate submittal but the Environmental Manager for Navajo is no longer there and I cannot confirm that the selenium effluent results for the fourth quarter of 2014 were submitted. Total Se = 0.020 mg/L & TCLP Se = 0.036 mg/L – both well under the 1.0 mg/L limit. Please let me know if you have any questions and/or if additional actions are required.

Thanks,
Mike

Mike Holder
Corporate Environmental Specialist – Water & Waste
HollyFrontier

2828 North Harwood, Suite 1300
Dallas, TX 75201
(214) 954-6536 (office)
(575) 308-1115 (cell)

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Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, November 03, 2014 10:34 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 4th Quarter Se Effluent Results
Attachments: Se Effluentt Results 4th QTR 2014.pdf

Scott/Carl – I apologize if this is a duplicate submittal but the Environmental Manager for Navajo is no longer there and I cannot confirm that the selenium effluent results for the fourth quarter of 2014 were submitted. Total Se = 0.020 mg/L & TCLP Se = 0.036 mg/L – both well under the 1.0 mg/L limit. Please let me know if you have any questions and/or if additional actions are required.

Thanks,
Mike

Mike Holder
Corporate Environmental Specialist – Water & Waste
HollyFrontier
2828 North Harwood, Suite 1300
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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 06, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Quarterly WW Effluent Monitoring OrderNo.: 1410094

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Quarterly WW Effluent Monitoring
Collection Date: 10/1/2014 9:00:00 AM
Lab ID: 1410094-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.020	0.014	0.050	J	mg/L	1	10/3/2014 11:38:51 AM	15688

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Quarterly WW Effluent Monitoring
Collection Date: 10/1/2014 9:00:00 AM
Lab ID: 1410094-002
Matrix: AQUEOUS
Received Date: 10/2/2014 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.036	0.027	0.050	J	mg/L	1	10/3/2014 11:37:13 AM	15688

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410094**

06-Oct-14

Client: Navajo Refining Company

Project: Quarterly WW Effluent Monitoring

Sample ID	**MB-15688**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**15688**	RunNo:	**21647**					
Prep Date:	**10/2/2014**	Analysis Date:	**10/3/2014**	SeqNo:	**635277**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-15688**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**15688**	RunNo:	**21647**					
Prep Date:	**10/2/2014**	Analysis Date:	**10/3/2014**	SeqNo:	**635278**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410094**

06-Oct-14

Client: Navajo Refining Company

Project: Quarterly WW Effluent Monitoring

Sample ID	**1410094-001AMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**Effluent to Wells (lo**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635286**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.52	0.050	0.5000	0.01951	99.1	75	125			

Sample ID	**1410094-001AMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**Effluent to Wells (lo**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635287**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0.01951	95.2	75	125	3.84	20	

Sample ID	**MB-15688**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635497**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-15688**	SampType: **LCS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635498**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1410094 RcptNo: 1

Received by/date: LM 10/02/14

Logged By: **Michelle Garcia** 10/2/2014 9:15:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 10/2/2014 9:52:56 AM Michelle Garcia

Reviewed By: 10/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☑	No ☐	Not Present ☐
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Yes			

Chain of Custody Record

Client: Navajo Refining Co.	☐ Standa ☐ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Quarterly WW Effluent Monitoring
NM 88211-0159	Project #: P.O. # 167796
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder / Dan Crawford
☐ Standard ☐ Level 4 (Full Validation)	Sampler:
☐ Other _____	On Ice: ☒ Yes ☐ No
☐ EDD (Type) _____	Sample Temperature: 1.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410094	Analysis Request: Total Se by EPA Method 6010B	Analysis Request: TCLP Selenium 1311/6010
10/1	9am	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
10/1	9am	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1	9am	James Potts		10/02/14	0915
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Required to test on the first business day of each month.

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HOLLYFRONTIER.

November 3, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7007 3020 0000 3028 9410

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
October 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the October 2014 monthly progress report, detailing the actions taken during the preceding calendar month of September 2014, and due on the first business day of the following month (i.e., November 3, 2014). This report also includes the final analytical results as of October 16, 2014, and the actions taken through approximately October 24, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order,

including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:[1]

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9;
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9;
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9;
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9;
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9;
- The May 2014 progress report was submitted on June 2, 2014 pursuant to Paragraph 9;
- The June 2014 progress report was submitted on July 1, 2014 pursuant to Paragraph 9;
- The July 2014 progress report was submitted on August 1, 2014 pursuant to Paragraph 9;
- The August 2014 progress report was submitted on September 2, 2014 pursuant to Paragraph 9;
- The notice of compliance with Se Limit was submitted on September 15, 2014 pursuant to Paragraph 13;
- The notice of selection of long-term option for addressing selenium concentrations in wastewater was submitted on September 30, 2014 pursuant to Paragraph 15;
- The September 2014 progress report was submitted on October 1, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production

[1] *See also* Letter from Michael G. McKee, Navajo, to Bill Brancard, OCD, July 25, 2014 (addressing OCD compliance status).

rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. As described in Navajo's September 30, 2014 notice to OCD, Navajo has also now selected use of the existing 100 gpm SeRT® unit, without modification, as its long-term option for reducing selenium concentrations in wastewater. (Other long-term options that had been under consideration included the potential design and installation of a 200 gpm SeRT® unit and the modification of the existing 100 gpm SeRT® unit.) An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. (Relocation of this existing unit was at that time expected to put a portion of the long-term selenium removal technology in place within an estimated 3 to 4 months. As explained in Navajo's September 30, 2014 notice, Navajo has now selected the 100 gpm SeRT® unit as its long-term option for reducing selenium concentrations in wastewater.)

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.

- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The results through October 16, 2014 are summarized in Table 3 below and show an average total selenium removal efficiency of 95%. On September 30, 2014, this unit was selected as Navajo's long-term option for reducing selenium concentrations in wastewater, as explained in Navajo's notice to OCD of that same date.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%
5/27/2014	Hall Environmental	60	2.90	-	0.08	-	97%
5/29/2014	Hall Environmental	60	3.20	-	0.11	-	97%
6/2/2014	Hall Environmental	64	3.30	-	0.07	-	98%
6/5/2014	Hall Environmental	51	3.10	-	0.09	-	97%
6/9/2014	Hall Environmental	50	3.30	-	0.06	-	98%
6/12/2014	Hall Environmental	60	3.10	-	0.13	-	96%
6/16/2014	Hall Environmental	120	3.30	-	0.54	-	84%
6/19/2014	Hall Environmental	130	3.10	-	0.40	-	87%
6/23/2014	Hall Environmental	130	3.90	-	0.47	-	88%
6/26/2014	Hall Environmental	118	3.00	-	0.30	-	90%
7/1/2014	Hall Environmental	101	2.30	-	0.14	-	94%
7/3/2014	Hall Environmental	115	2.20	-	0.12	-	95%
7/7/2014	Hall Environmental	106	2.70	-	0.17	-	94%
7/14/2014	Hall Environmental	125	3.20	-	<0.05	-	98%
7/17/2014	Hall Environmental	92	2.70	-	0.07	-	97%
7/21/2014	Hall Environmental	120	2.70	-	0.23	-	91%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
7/24/2014	Hall Environmental	80	2.80	-	0.14		95%
7/28/2014	Hall Environmental	114	2.50	-	0.28		89%
7/31/2014	Hall Environmental	118	3.50	-	0.32	-	91%
8/4/2014	Hall Environmental	96	3.30	-	0.06	-	98%
8/7/2014	Hall Environmental	125	3.00	-	0.04	-	99%
8/11/2014	Hall Environmental	100	2.80	-	0.04	-	99%
8/15/2014	Hall Environmental	100	3.60	-	0.04	-	99%
8/21/2014	Hall Environmental	100	3.10	-	0.04	-	99%
8/25/2014	Hall Environmental	100	1.60	-	0.03	-	98%
8/28/2014[1]	Hall Environmental	105	2.60	-	<0.05	-	98%
9/2/2014	Hall Environmental	105	3.90	-	0.04	-	99%
9/4/2014	Hall Environmental	105	3.90	-	0.03	-	99%
9/8/2014	Hall Environmental	95	4.60	-	0.06	-	99%
9/11/2014	Hall Environmental	90	4.20	-	0.03	-	99%
9/15/2014	Hall Environmental	90	4.40	-	0.04	-	99%
9/18/2014	Hall Environmental	100	5.00	-	0.04	-	99%
9/22/2014	Hall Environmental	61	5.30	-	0.04	-	99%
9/25/2014	Hall Environmental	90	6.10	-	0.12	-	98%
9/29/2014	Hall Environmental	90	6.40	-	0.07	-	99%
10/2/2014	Hall Environmental	95	6.50	-	0.05	-	99%
10/6/2014	Hall Environmental	100	8.60	-	0.09	-	99%
10/9/2014	Hall Environmental	88	8.90	-	0.11	-	99%
10/13/2014	Hall Environmental	100	7.30	-	0.10	-	99%
10/16/2014	Hall Environmental	115	6.30	-	0.11	-	98%

[1] The sampling event on August 28, 2014 showed a SeRT Influent concentration of <0.05 ppm and a SeRT Effluent concentration of 2.60 ppm. Samples were likely either switched in the field before being labeled, or mislabeled. Table 3 shows the correct concentration associated with each location.

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- First Amendment to Exhibit A signed by Navajo and OCD.

June 2, 2014

- Navajo submitted a minor permit modification requested by OCD for the installation of the SeRT® & ICP units at the Artesia Refinery.

June 24, 2014

- OCD approved the modification request submitted on June 2nd.

June 1 to 2, 2014

- Navajo temporarily stopped injection while doing the Pressure Fall Off Tests (PFOTs) and Mechanical Integrity Testing (MIT) for Well 1.[2]

June 30 to July 2, 2014

- Navajo temporarily stopped injection while doing the PFOTs and MIT for Well 2.[2]

July 7-9, 2014

- Used SeRT® media was replaced by new media. The media change-out started on July 7, 2014 and was completed on July 9, 2014. The unit was brought on-line on July 10, 2014. The pH probes were also replaced.

August 11, 2014

- Met with OCD to discuss amending Exhibit A to clarify reporting and sampling in connection with cessation of well injection per Navajo's July 25, 2014 letter.

August 25-28, 2014

- Navajo temporarily stopped injection for PFOTs and MIT for Well 3.[2]

September 3 and 8, 2014

- Second Amendment to Exhibit A signed by OCD and Navajo.

September 15, 2014

- Notice of Compliance with Selenium Limit submitted to OCD.

September 30, 2014

- Notice of selection of long-term option for addressing selenium concentrations in wastewater submitted to OCD.

As noted in the February 2014 monthly interim progress report submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the performance of the 100 gpm SeRT® unit. Also, as noted above, on September 30, 2014, Navajo submitted to OCD its notice of selection of long-term option for selenium reduction pursuant to Paragraph 15 of Exhibit A to the Order. Navajo selected the existing SeRT® unit, without modification, based on its proven effectiveness in reducing selenium concentrations (now, as of the October 16, 2014 sample, at an

[2] Pressure Fall Off tests and Mechanical Integrity Testing are unrelated to selenium concentrations in the wastewater injected at the wells.

average total selenium removal efficiency of 95%) and Navajo's record of compliance with the Se Limit using this technology.[3]

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follows.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location (location shown in Attachment A) on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constituted the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling is being conducted on a quarterly basis on the first business day of the quarter. One quarterly sample was taken on October 1, 2014 and the next scheduled sampling date is Thursday, January 1, 2015. There have been no non-compliant sampling events since issuance of the Order on November 14, 2013. Additional monitoring is also presented in Table 4. The new laboratory report obtained for the October 1, 2014 quarterly sampling event required under Paragraph 1(c) of Exhibit A to the Order is provided in Attachment B.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.

[3] As explained in the September 30th notice, Navajo reserves the right to modify the current SeRT® unit in the future should changes become necessary based on wastewater effluent characteristics, refinery operational needs or other circumstances.

6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**
7/3/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**< 0.027**	**< 0.027**
10/1/2014[4]	**T-836 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.04**	**0.04**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment C. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment D, and all of the total selenium measurements for all refinery sample locations are provided in Attachment E. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, April, May, June, July, August, and September through October 16, 2014.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the most recent sampling event, there are no new reported exceedances of the Se Limit. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit. As explained in Navajo's July 25, 2014 letter to OCD, Navajo was unable to conduct quarterly sampling on July 1, because there was no injection at the wells on that day due to PFOTs and mechanical integrity testing. Quarterly sampling was not conducted until July 3, 2014, after the discharge to the wells resumed, a delay of two days. Also, Navajo was one day late in submitting the results of its quarterly selenium sampling to OCD, which were required to be submitted by July 17, and were instead submitted on July 18, 2014. Per the stipulated penalty schedule at Section III, Paragraph 2 of the Order, Navajo calculated a stipulated penalty of $5,000.[4] This sum was paid by letter dated August 21, 2014. Navajo is taking preventive steps to help ensure timely quarterly sampling and reporting of corresponding sample results.

If you have any questions, please do not hesitate to contact me at (575) 308-1511 or brian.stone@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

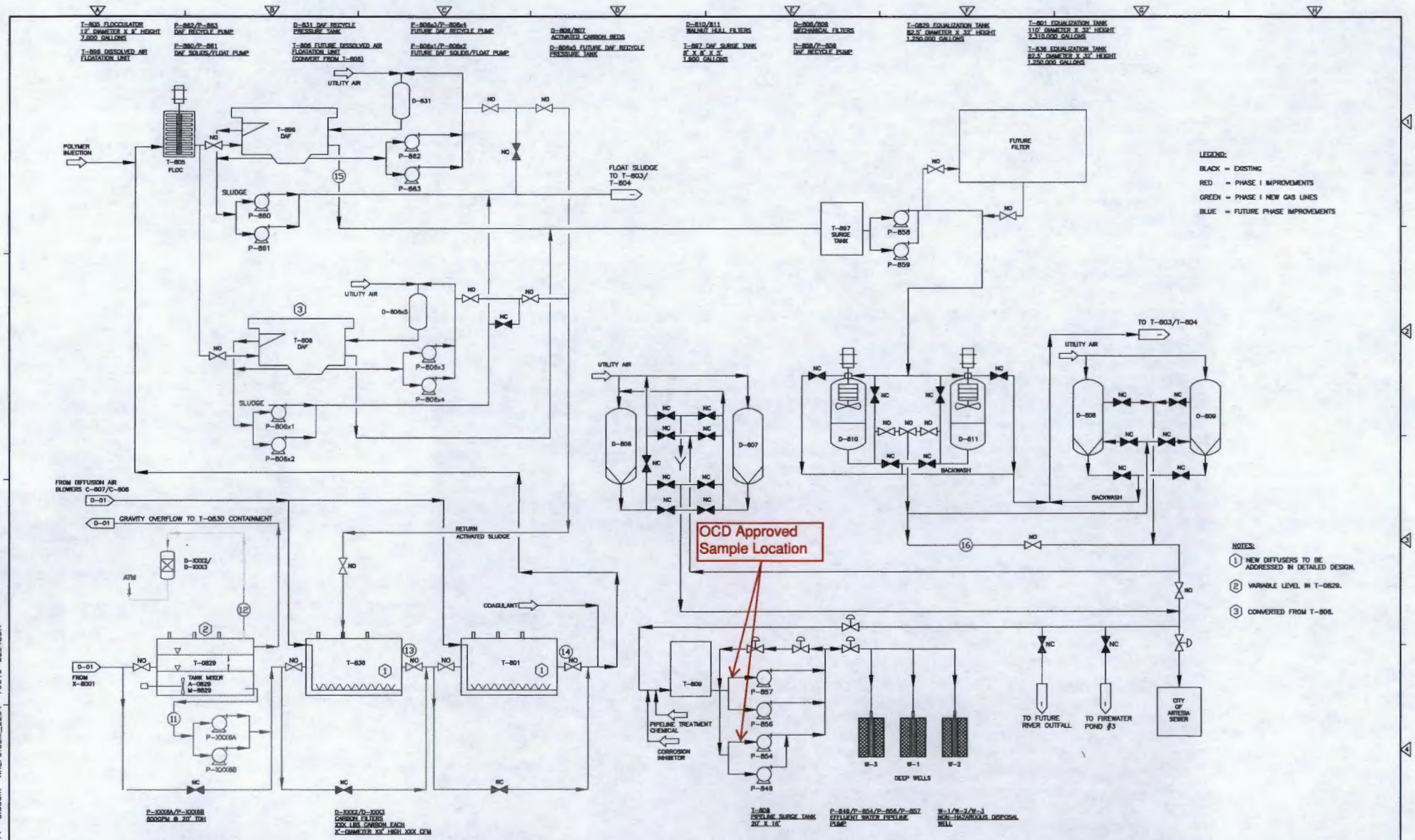
B M Stone

Brian Stone, P.E.
Environmental Specialist

Navajo Refining Company, L.L.C.

[4] Per Order Section III, Paragraph (2)(b)(4), for failure to conduct timely sampling, $2,000 per day X 2 days = $4,000; per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 1 day = $1,000.

Attachment A:
OCD-Approved Sample Location



REV. NO.	DATE	DRWN	CHKD	REMARKS
5	01/12	DN	JDC	ISSUED FOR PHA REVIEW
4	12/9	RM	JDC	CHANGED PER 12/07/10 REVIEW MEETING
3	12/6	RM	JDC	CHANGED PER 11/30/10 REVIEW MEETING
2	11/3			CHANGED DURING CLIENT REVIEW MEETING
1	10/26			CHANGED PER CLIENT 10/26/10

DESIGNED BY: J. CAMANN
DRAWN BY: R. MOORE
SHEET CHK'D BY: K. GREDHELDER
CROSS CHK'D BY: M. CARBALLA
APPROVED BY: X
DATE: DECEMBER 2010

CDM
Camp Dresser & McKee
3060 Post Oak Boulevard, Suite 300
Houston, Texas 77056
Tel: (713) 423-7500 Fax: (713) 840-0173
TBPE Firm Registration No. F-3043
consulting • engineering • construction • operations

NAVAJO REFINERY
ARTESIA, NEW MEXICO
PHASE I WWTP

PROCESS FLOW DIAGRAM PHASE I - WASTEWATER TREATMENT PLANT IMPROVEMENTS - SHEET 2 EQUALIZATION TANK TO DISCHARGE

PROJECT NO. 90538-79019
FILE NAME: G001PFD
SHEET NO. D-02

DWG: S:\90538\79019\00-EXHIBITS\DPH G001PFD-ALT.dwg USER: moorere
DATE: Jan 13, 2011 8:35am XREFS:CDM_2234 79019-22348DR

Attachment B:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 06, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Quarterly WW Effluent Monitoring OrderNo.: 1410094

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1410094**
Date Reported: **10/6/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Quarterly WW Effluent Monitoring
Collection Date: 10/1/2014 9:00:00 AM
Lab ID: 1410094-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.020	0.014	0.050	J	mg/L	1	10/3/2014 11:38:51 AM	15688

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Quarterly WW Effluent Monitoring
Collection Date: 10/1/2014 9:00:00 AM
Lab ID: 1410094-002 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.036	0.027	0.050	J	mg/L	1	10/3/2014 11:37:13 AM	15688

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410094**

06-Oct-14

Client: Navajo Refining Company

Project: Quarterly WW Effluent Monitoring

Sample ID **MB-15688**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **15688**	RunNo: **21647**
Prep Date: **10/2/2014**	Analysis Date: **10/3/2014**	SeqNo: **635277** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID **LCS-15688**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **15688**	RunNo: **21647**
Prep Date: **10/2/2014**	Analysis Date: **10/3/2014**	SeqNo: **635278** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410094**

06-Oct-14

Client: Navajo Refining Company

Project: Quarterly WW Effluent Monitoring

Sample ID	**1410094-001AMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**Effluent to Wells (lo**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635286**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.52	0.050	0.5000	0.01951	99.1	75	125			

Sample ID	**1410094-001AMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**Effluent to Wells (lo**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635287**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0.01951	95.2	75	125	3.84	20	

Sample ID	**MB-15688**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635497**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-15688**	SampType: **LCS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID: **15688**			RunNo: **21647**					
Prep Date:	**10/2/2014**	Analysis Date: **10/3/2014**			SeqNo: **635498**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1410094 RcptNo: 1

Received by/date: LM 10/02/14

Logged By: **Michelle Garcia** 10/2/2014 9:15:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 10/2/2014 9:52:56 AM Michelle Garcia

Reviewed By: 10/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☑	No ☐	Not Present ☐
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 0 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Yes			

Chain of Custody Record

Client: Navajo Refining Co.	☐ Standa ☐ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Quarterly WW Effluent Monitoring
NM 88211-0159	Project #: P.O. # 167796
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder / Dan Crawford
☐ Standard ☐ Level 4 (Full Validation)	Sampler:
☐ Other _____	
☐ EDD (Type) _____	

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		Total Se by EPA Method 6010B	TCLP Selenium 1311/6010
10/1	9am	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
10/1	9am	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date: 10/1	Time: 9am	Relinquished by: James Potts	Received by:	Date	Time
Date:	Time:	Relinquished by:	Received by: 10/02/14	Date	Time 0915

Remarks: Required to test on the first business day of each month.

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment C:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment C Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08
6/19/2014	T-801 Effluent to Wells	Hall	<0.10	-	-	<0.10
7/3/2014[4]	T-801 Effluent to Wells	Hall	< 0.027	-	-	< 0.027
7/22/2014	T-801 Effluent to Wells	Hall	<0.027	-	-	<0.027
8/25/2014	T-836 Effluent to Wells	Hall	<0.027	-	-	<0.027
8/28/2014	T-836 Effluent to Wells	Hall	<0.027	-	-	<0.027
10/1/2014[4]	T-836 Effluent to Wells	Hall	0.04	-	-	0.04

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3] Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4] Required sampling conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment D:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through October 16, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80										0.42	0.42		0.78	0.78	1.20	1.20	1.20	1.20	1.20		-		-	-	-	-				<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.60	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.30	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085
6/19/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	1406935
7/3/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407271
7/22/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407A42
8/25/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1408D15
8/28/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.027	-	-	-	-	-	-	-	-	-	1408F33
10/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.036	-	-	-	-	-	-	-	-	-	1410094

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment E:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment E Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through October 16, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310848
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59			-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.90	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																															1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.00	16.00	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5.00	<5.00	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.50	<4.50	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.10	3.20	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	-	1403561 1403562

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
																																1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404B38
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405688
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983
5/27/2014	Hall Environmental	-	-	-	-	-	-	2.90	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405B03
5/29/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405C46
6/2/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406018
6/5/2014	Hall	-	-	-	-	-	-	3.10	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406247

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #4S Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														
6/9/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406376
6/12/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406576
6/16/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406694
6/19/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.069	-	-	-	-	-	-	1406934
6/23/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406A48
6/26/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406C44
7/1/2014	Hall Environmental	-	-	-	-	-	-	2.30	0.14	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407055
7/3/2014	Hall Environmental							2.20	0.12															0.02							1407222 1407224
7/7/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407272
7/10/2014	Hall Environmental	-	-	-	-	-	-	pH 6.0 pH 5.0 pH 4.0 pH 3.5	3.2 2.10 0.21 0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407494
7/14/2014	Hall Environmental	-	-	-	-	-	-	3.20	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407602
7/17/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407867
7/21/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407986
7/24/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407C14
7/28/2014	Hall Environmental	-	-	-	-	-	-	2.50 3.60	0.28 0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407D22 1408919
7/31/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408014
8/4/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408159
8/7/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408413
8/11/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408469
8/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408846
8/21/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408B70
8/25/2014	Hall Environmental	-	-	-	-	-	-	1.60	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	-	-	-	-	-	-	1408D14 1408D15
8/28/2014[1]	Hall Environmental	-	-	-	-	-	-	2.60	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.014	-	-	-	-	-	-	1408F25 1408F33
9/2/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409074
9/4/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409240
9/8/2014	Hall Environmental	-	-	-	-	-	-	4.60	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409352
9/11/2014	Hall	-	-	-	-	-	-	4.20	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409592

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Wainut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																															
9/15/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409711
9/18/2014	Hall Environmental	-	-	-	-	-	-	5.00	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409962
9/22/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409B00
9/25/2014	Hall Environmental	-	-	-	-	-	-	6.10	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409D32
9/29/2014	Hall Environmental	-	-	-	-	-	-	6.40	0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409F12
10/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.020	-	-	-	-	-	-	-	1410094
10/2/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410152
10/6/2014	Hall Environmental	-	-	-	-	-	-	8.60	0.086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410276
10/9/2014	Hall Environmental	-	-	-	-	-	-	8.90	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410515
10/13/2014	Hall Environmental	-	-	-	-	-	-	7.30	0.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410614
10/16/2014	Hall Environmental	-	-	-	-	-	-	6.30	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1410843

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

[1] The sampling event on August 28, 2014 showed a SeRT Influent concentration of <0.05 ppm and a SeRT Effluent concentration of 2.60 ppm. Samples were likely a) switched in the field before being labeled, or b) were mislabeled. This table shows the correct concentration associated with each location.

Chavez, Carl J, EMNRD

From: Laure.Abercrombie@ch2m.com
Sent: Tuesday, September 30, 2014 7:14 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Subject: Selection of Long-Term Option for Se - September 30, 2014
Attachments: Selection of Long-Term Option for Selenium Reduction.pdf

Scott/Carl – please find attached a copy of Navajo's notice of long-term selection required by Paragraph 15 of Second Amended Exhibit A to the Amended and Supplemental Agreed Compliance Order between NRC & OCD (Dated November 14, 2013). The original hardcopy is going out to today via FedEx. Please don't hesitate to call me or Dan Crawford with any questions and thanks for your assistance in this matter.

Thanks,

Laure C. Abercrombie, P.E.*
Environmental Engineer, Denver
Water Business Group
* Licensed in TX

CH2M HILL
9193 South Jamaica Street
Englewood, CO 80112-5946
Direct 720.286.0524
Mobile 303.913.0787
Fax 720.286.8887
www.ch2mhill.com

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HOLLYFRONTIER.

September 30, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

FedEx Tracking Number
771329784181

RE: Navajo Refining Company, L.L.C. ("Navajo") / Artesia Refinery
Notice of Selection of Long-Term Option for Selenium Reduction
OCD Order No. WQA-OCD-CO-2013-001

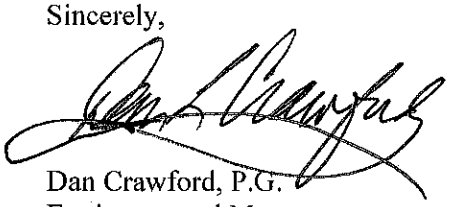
Dear Sirs:

This constitutes notice of Navajo's selection of its long-term option for addressing selenium concentrations in wastewater as required by Paragraph 15 of Second Amended Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Item 15 of Second Amended Exhibit A to the Order requires that Navajo advise OCD of it selection of long-term options for addressing selenium concentrations in wastewater and its decision regarding the implementation of SeRT® technology, including any permitting that may be required.

Since the effective date of the Order in November 2013, Navajo has been evaluating short-term and long-term options to treat selenium in refinery wastewater, including the use of SeRT®. With OCD's approval, Navajo began use of this technology onsite on February 1, 2014. As reported in greater detail in Navajo's Monthly Interim Progress Reports and September 15, 2014 Notice of Compliance with Selenium Limit, the current SeRT® unit has proven effective in reducing selenium concentrations, demonstrating an average total selenium removal efficiency of 94% and resulting in over nine consecutive months of compliant sampling at the Sampling Location. Based on this demonstrated performance of the SeRT® Unit, Navajo is selecting this unit, without modification, as its long term option for reducing selenium concentrations in wastewater. Navajo nonetheless reserves the right to modify the current SeRT® unit in the future should changes become necessary based on wastewater effluent characteristics, refinery operational needs or other circumstances. Should that occur, Navajo will apprise OCD and submit appropriate discharge permit modifications for review.

Should you have questions regarding the above, please do not hesitate to contact me at (575) 746-5487 or dan.crawford@hollyfrontier.com. Navajo appreciates the continued cooperation of OCD and thanks you for your assistance in this matter.

Sincerely,



Dan Crawford, P.G.
Environmental Manager

Navajo Refining Company, L.L.C.

HOLLYFRONTIER

October 1, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7007 3020 0000 3028 9236

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
September 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the September 2014 monthly progress report, detailing the actions taken during the preceding calendar month of August 2014, and due on the first business day of the following month (i.e., October 1, 2014). This report also includes the final analytical results as of September 22, 2014, and the actions taken through approximately September 30, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is

provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:[1]

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9;
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9;
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9;
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9;
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9;
- The May 2014 progress report was submitted on June 2, 2014 pursuant to Paragraph 9;
- The June 2014 progress report was submitted on July 1, 2014 pursuant to Paragraph 9;
- The July 2014 progress report was submitted on August 1, 2014 pursuant to Paragraph 9;
- The August 2014 progress report was submitted on September 2, 2014 pursuant to Paragraph 9;
- The notice of compliance with Se Limit was submitted on September 15, 2014 pursuant to Paragraph 13;
- The notice of selection of long-term option for addressing selenium concentrations in wastewater was submitted on September 30, 2014 pursuant to Paragraph 15.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium

[1] *See also* Letter from Michael G. McKee, Navajo, to Bill Brancard, OCD, July 25, 2014 (addressing OCD compliance status).

levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy included the potential design and installation of a 200 gpm SeRT® unit, the modification of the existing, 100 gpm trial SeRT® unit, or (as explained later in this report and in Navajo's September 30, 2014 notice) use of the existing SeRT® unit without modification. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. (Relocation of this existing unit was at that time expected to put a portion of the long-term selenium removal technology in place within an estimated 3 to 4 months. As explained in Navajo's September 30, 2014 notice, Navajo has now selected the 100 gpm SeRT® unit as its long-term option for reducing selenium concentrations in wastewater.)

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.

- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through September 22, 2014 are summarized in Table 3 below and show an average total selenium removal efficiency of 94%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%
5/27/2014	Hall Environmental	60	2.90	-	0.08	-	97%
5/29/2014	Hall Environmental	60	3.20	-	0.11	-	97%
6/2/2014	Hall Environmental	64	3.30	-	0.07	-	98%
6/5/2014	Hall Environmental	51	3.10	-	0.09	-	97%
6/9/2014	Hall Environmental	50	3.30	-	0.06	-	98%
6/12/2014	Hall Environmental	60	3.10	-	0.13	-	96%
6/16/2014	Hall Environmental	120	3.30	-	0.54	-	84%
6/19/2014	Hall Environmental	130	3.10	-	0.40	-	87%
6/23/2014	Hall Environmental	130	3.90	-	0.47	-	88%
6/26/2014	Hall Environmental	118	3.00	-	0.30	-	90%
7/1/2014	Hall Environmental	101	2.30	-	0.14	-	94%
7/3/2014	Hall Environmental	115	2.20	-	0.12	-	95%
7/7/2014	Hall Environmental	106	2.70	-	0.17	-	94%
7/14/2014	Hall Environmental	125	3.20	-	<0.05	-	98%
7/17/2014	Hall Environmental	92	2.70	-	0.07	-	97%
7/21/2014	Hall Environmental	120	2.70	-	0.23	-	91%
7/24/2014	Hall Environmental	80	2.80	-	0.14		95%
7/28/2014	Hall Environmental	114	2.50	-	0.28		89%
7/31/2014	Hall Environmental	118	3.50	-	0.32	-	91%
8/4/2014	Hall Environmental	96	3.30	-	0.06	-	98%
8/7/2014	Hall Environmental	125	3.00	-	0.04	-	99%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
8/11/2014	Hall Environmental	100	2.80	-	0.04	-	99%
8/15/2014	Hall Environmental	100	3.60	-	0.04	-	99%
8/21/2014	Hall Environmental	100	3.10	-	0.04	-	99%
8/25/2014	Hall Environmental	100	1.60	-	0.03	-	98%
8/28/2014[1]	Hall Environmental	105	2.60	-	<0.05	-	98%
9/2/2014	Hall Environmental	105	3.90	-	0.04	-	99%
9/4/2014	Hall Environmental	105	3.90	-	0.03	-	99%
9/8/2014	Hall Environmental	95	4.60	-	0.06	-	99%
9/11/2014	Hall Environmental	-	4.20	-	0.03	-	99%
9/15/2014	Hall Environmental	-	4.40	-	0.04	-	99%
9/18/2014	Hall Environmental	-	5.00	-	0.04	-	99%
9/22/2014	Hall Environmental	-	5.30	-	0.04	-	99%

[1] The sampling event on August 28, 2014 showed a SeRT Influent concentration of <0.05 ppm and a SeRT Effluent concentration of 2.60 ppm. Samples were likely either switched in the field before being labeled, or mislabeled. Table 3 shows the correct concentration associated with each location.

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- First Amendment to Exhibit A signed by Navajo and OCD.

June 2, 2014

- Navajo submitted a minor permit modification requested by OCD for the installation of the SeRT® & ICP units at the Artesia Refinery.

June 24, 2014

- OCD approved the modification request submitted on June 2nd.

June 1 to 2, 2014

- Navajo temporarily stopped injection while doing the Pressure Fall Off Tests (PFOTs) and Mechanical Integrity Testing (MIT) for Well 1.[2]

June 30 to July 2, 2014

- Navajo temporarily stopped injection while doing the PFOTs and MIT for Well 2.[2]

[2] Pressure Fall Off tests and Mechanical Integrity Testing are unrelated to selenium concentrations in the wastewater injected at the wells.

July 7-9, 2014

- Used SeRT® media was replaced by new media. The media change-out started on 7/7/14 and was completed on 7/9/14. Unit brought on-line on 7/10/14. The pH probes were also replaced.

August 11, 2014

- Met with OCD to discuss amending Exhibit A to clarify reporting and sampling in connection with cessation of well injection per Navajo's July 25, 2014 letter.

August 25-28, 2014

- Navajo temporarily stopped injection for PFOTs and MIT for Well 3.[2]

September 3 and 8, 2014

- Second Amendment to Exhibit A signed by OCD and Navajo.

September 15, 2014

- Notice of Compliance with Selenium Limit submitted to OCD.

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the trial of the 100 gpm SeRT® unit. Also, on September 30, 2014, Navajo submitted to OCD its notice of selection of long-term option for selenium reduction pursuant to Paragraph 15 of Exhibit A to the Order. Navajo selected the existing SeRT® unit, without modification, based on its proven effectiveness in reducing selenium concentrations (at an average total selenium removal efficiency of 94%) and Navajo's record of compliance with the Se Limit using this technology.[3]

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follows.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location (location shown in Attachment A) on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constituted the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling is being conducted on a quarterly basis on the first business day of the quarter. One quarterly sample was taken on July 3, 2014 and the next scheduled sampling date is Wednesday, October 1, 2014. There have been no non-compliant sampling events since issuance of the Order on November 14, 2013. Additional monitoring is also presented in Table 4. Since the July monthly

[3] As explained in the September 30th notice, Navajo reserves the right to modify the current SeRT® unit in the future should changes become necessary based on wastewater effluent characteristics, refinery operational needs or other circumstances.

progress report, no new laboratory reports have been obtained for the OCD quarterly sampling events required under Paragraph 1(c) of Exhibit A to the Order, because the next quarterly sampling event has not yet taken place. As a result, unlike most prior monthly progress reports, no laboratory report is provided in Attachment B.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**
7/3/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**< 0.027**	**< 0.027**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.
[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) *A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).*

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment C. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment D, and all of the total selenium measurements for all refinery sample locations are provided in Attachment E. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, April, May, June, July, and August 2014 through September 22, 2014.

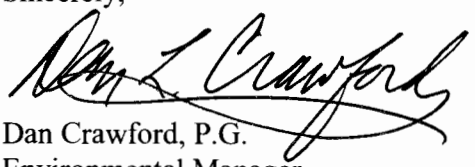
c) *The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.*

As of the most recent sampling event, there are no new reported exceedances of the Se Limit. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit. As explained in Navajo's July 25, 2014 letter to OCD, Navajo was unable to conduct quarterly sampling on July 1, because there was no

injection at the wells on that day due to PFOTs and mechanical integrity testing. Quarterly sampling was not conducted until July 3, 2014, after the discharge to the wells resumed, a delay of two days. Also, Navajo was one day late in submitting the results of its quarterly selenium sampling to OCD, which were required to be submitted by July 17, and were instead submitted on July 18, 2014. Per the stipulated penalty schedule at Section III, Paragraph 2 of the Order, Navajo calculated a stipulated penalty of $5,000.[4] This sum was paid by letter dated August 21, 2014. Navajo is taking preventive steps to help ensure timely quarterly sampling and reporting of corresponding sample results.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or dan.crawford@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

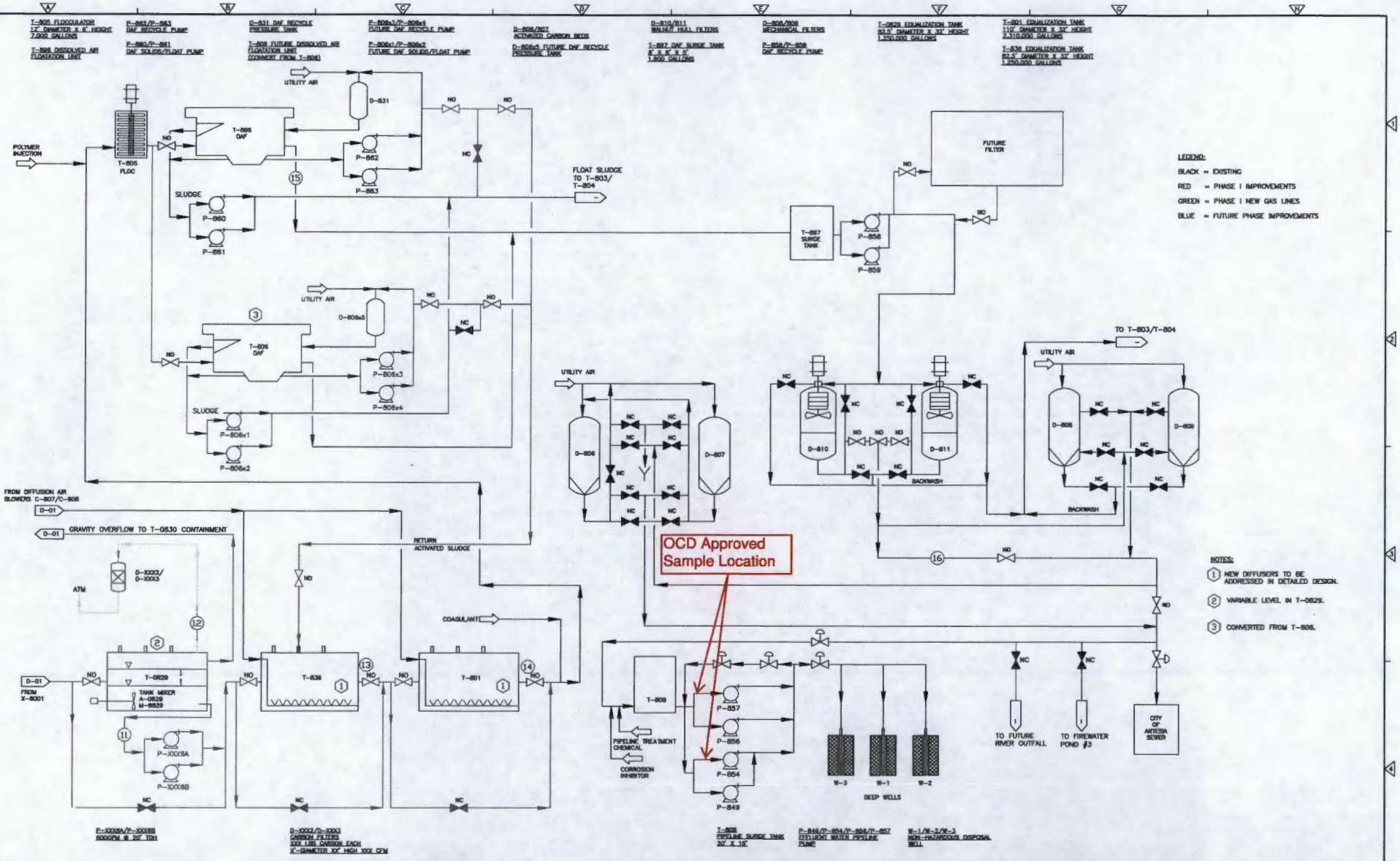


Dan Crawford, P.G.
Environmental Manager

Navajo Refining Company, L.L.C.

[4] Per Order Section III, Paragraph (2)(b)(4), for failure to conduct timely sampling, $2,000 per day X 2 days = $4,000; per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 1 day = $1,000.

Attachment A:
OCD-Approved Sample Location



REV. NO.	DATE	DRWN	CHKD	REMARKS
5	01/12	DH	JDC	ISSUED FOR PHA REVIEW
4	12/9	RM	JDC	CHANGED PER 12/07/10 REVIEW MEETING
3	12/6	RM	JDC	CHANGED PER 11/30/10 REVIEW MEETING
2	11/3			CHANGED DURING CLIENT REVIEW MEETING
1	10/26			CHANGED PER CLIENT 10/26/10

DESIGNED BY: J. CRAMIN
DRAWN BY: R. MOORE
SHEET CHK'D BY: K. GREENFELDER
CROSS CHK'D BY: M. CARBALLA
APPROVED BY: X
DATE: DECEMBER 2010

CDM
Camp Dresser & McKee
2000 Post Oak Boulevard, Suite 200
Houston, Texas 77056
Tel: (713) 423-7300 Fax: (713) 840-9175
TBPE Firm Registration No. F-3043
consulting • engineering • construction • operations

NAVAJO REFINERY
ARTESIA, NEW MEXICO
PHASE I WWTP

PROCESS FLOW DIAGRAM
PHASE I - WASTEWATER TREATMENT PLANT IMPROVEMENTS - SHEET 2
EQUALIZATION TANK TO DISCHARGE

PROJECT NO. 90538-79019
FILE NAME: G001PFD
SHEET NO. D-02

DWG: S:\90538\79019\00-EXHIBITS\DPH G001PFD-ALT.dwg USER: moorera
DATE: Jan 13, 2011 8:35am XREFS:CDM_2234 79019-2234BDR

Attachment B:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order
- No New Report

Attachment C:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment C Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08
6/19/2014	T-801 Effluent to Wells	Hall	<0.10	-	-	<0.10
7/3/2014[4]	T-801 Effluent to Wells	Hall	< 0.027	-	-	< 0.027
7/22/2014	T-801 Effluent to Wells	Hall	<0.027	-	-	<0.027
8/25/2014	T-836 Effluent to Wells	Hall	<0.027	-	-	<0.027
8/28/2014	T-836 Effluent to Wells	Hall	<0.027	-	-	<0.027

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3] Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4] Required sampling conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment D:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through September 22, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#5. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.60	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.30	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#5. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085
6/19/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	1406935
7/3/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407271
7/22/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407A42
8/25/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1408D15
8/28/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.027	-	-	-	-	-	-	-	-	-	1408F33

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment E:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment E Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through September 22, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-	-		1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.90	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																															1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.00	16.00	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5.00	<5.00	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.50	<4.50	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.10	3.20	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	-	1403561 1403562

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
																															1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404B38
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405688
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983
5/27/2014	Hall Environmental	-	-	-	-	-	-	2.90	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405B03
5/29/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405C46
6/2/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406018
6/5/2014	Hall	-	-	-	-	-	-	3.10	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406247

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														
6/9/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406376
6/12/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406576
6/16/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406694
6/19/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.069	-	-	-	-	-	1406934
6/23/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406A48
6/26/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406C44
7/1/2014	Hall Environmental	-	-	-	-	-	-	2.30	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407055
7/3/2014	Hall Environmental							2.20	0.12															0.02						1407222 1407224
7/7/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407272
7/10/2014	Hall Environmental	-	-	-	-	-	-	pH 6.0 pH 5.0 pH 4.0 pH 3.5	3.2 2.10 0.21 0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407494
7/14/2014	Hall Environmental	-	-	-	-	-	-	3.20	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407602
7/17/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407867
7/21/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407986
7/24/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407C14
7/28/2014	Hall Environmental	-	-	-	-	-	-	2.50 3.60	0.28 0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407D22 1408919
7/31/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408014
8/4/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408159
8/7/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408413
8/11/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408469
8/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408846
8/21/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408B70
8/25/2014	Hall Environmental	-	-	-	-	-	-	1.60	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	-	-	-	-	-	1408D14 1408D15
8/28/2014[1]	Hall Environmental	-	-	-	-	-	-	2.60	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.014	-	-	-	-	-	1408F25 1408F33
9/2/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409074
9/4/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409240
9/8/2014	Hall Environmental	-	-	-	-	-	-	4.60	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409352
9/11/2014	Hall	-	-	-	-	-	-	4.20	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409592

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														
9/15/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409711
9/18/2014	Hall Environmental	-	-	-	-	-	-	5.00	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409962
9/22/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409B00

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

[1] The sampling event on August 28, 2014 showed a SeRT Influent concentration of <0.05 ppm and a SeRT Effluent concentration of 2.60 ppm. Samples were likely a) switched in the field before being labeled, or b) were mislabeled. This table shows the correct concentration associated with each location.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, September 15, 2014 3:05 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: McWatters, Denise; Crawford, Dan; Holder, Mike
Subject: Notice of Compliance with Selenium Limit
Attachments: 2014-09-15 Subm' OCD Compliance Se Limit.pdf

Scott & Carl,

Per Paragraph 13 of Second Amended Exhibit A to the Amended and Supplemental Agreed Compliance Order dated November 14, 2013, attached is Navajo's Notice of Compliance with the Selenium Limit. A copy was also sent today via certified mail. Please do not hesitate to contact Dan or me with any questions. Thanks, Mike

Mike Holder
Corporate Environmental Specialist – Water & Waste
HollyFrontier
2828 North Harwood, Suite 1300
Dallas, TX 75201
(214) 954-6536 (office)
(575) 308-1115 (cell)

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HOLLYFRONTIER.

September 15, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

Certified Mail/Return Receipt
7007 3020 0000 3028 9175

RE: Navajo Refining Company, L.L.C. ("Navajo") / Artesia Refinery
Notice of Compliance with Selenium Limit
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This constitutes notice of Navajo's achievement of compliance with the Selenium ("Se") Limit as required by Paragraph 13 of Second Amended Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Item 13(d) of Second Amended Exhibit A to the Order requires that Navajo achieve compliance with the Se Limit as measured at the OCD-approved Sample Location by September 15, 2014.

The Order specifies a Se Limit of 1 milligram per liter (mg/L) selenium based on the Toxicity Characteristic Leaching Procedure ("TCLP"). Results for TCLP measurements collected at the Sample Location from November 11th, 2013 through August 28th, 2014 are summarized in Table 1 below. Table 1 includes the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, as well additional TCLP sampling undertaken by Navajo at the Sampling Location during the term of the Order. Based on these results, which mark over nine consecutive months of compliant sampling, Navajo has achieved compliance with the Se Limit as measured at the Sample Location by the September 15, 2014 milestone date specified in the Order.

Table 1: Selenium Measurements Collected at the injection Well Effluent Sampling Point from 11/11/2013 to 8/28/2014(mg/L)

DATE	Laboratory	TCLP Selenium (mg/L)
11/11/2013[1]	Hall	0.088
11/16/2013	Hall	<0.1
11/17/2013	Hall	0.96

DATE	Laboratory	TCLP Selenium (mg/L)
11/18/2013	Hall	0.78
11/19/2013	Hall	0.95
11/20/2013	Hall	0.76
11/21/2013	Hall	0.73
11/22/2013	Hall	0.80
11/23/2013	Hall	0.75
11/24/2013	Hall	0.84
11/25/2013	Hall	0.75
11/26/2013	Hall	0.72
11/27/2013	Hall	0.69
11/28/2013	Hall	0.80
11/29/2013	Hall	0.75
11/30/2013	Hall	0.76
12/2/2013	Hall	0.88
12/2/2013	Hall	0.76
12/2/2013	Hall	0.83
12/5/2013	Hall	0.47
12/9/2013	Hall	0.38
12/12/2013	Hall	0.56
12/16/2013	Hall	0.35
12/19/2013	Hall	0.24
12/23/2013	Hall	0.27
12/26/2013	Hall	0.27
12/30/2013	Hall	0.33
1/6/2014	Hall	0.23
1/9/2014	Hall	0.29
1/13/2014	Hall	0.31
1/16/2014	Hall	0.24
1/20/2014	Hall	0.51
1/23/2014	Hall	0.23
1/27/2014	Hall	0.49
1/30/2014	Hall	0.27
2/3/2014	Hall	0.56
2/6/2014	Hall	0.40
2/10/2014	Hall	0.20
2/17/2014	Hall	0.20
2/24/2014	Hall	0.28
3/3/2014	Hall	0.14
3/10/2014	Hall	0.05

DATE	Laboratory	TCLP Selenium (mg/L)
3/13/2014	Hall	0.08
3/17/2014	Hall	0.05
3/24/2014	Hall	0.15
4/1/2014	Hall	0.08
6/19/2014	Hall	<0.10
7/3/2014	Hall	< 0.027
7/22/2014	Hall	< 0.027
8/25/2014	Hall	< 0.027
8/28/2014	Hall	< 0.027

[1] Sample collected per the requirements of Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

Should you have questions regarding the above, please do not hesitate to contact Dan Crawford at (575) 746-5487 or dan.crawford@hollyfrontier.com. Navajo appreciates the continued cooperation of OCD and thanks you for your assistance in this matter.

Sincerely,

Mike Holder
Corporate Environmental Specialist
Navajo Refining Company, L.L.C.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

SECOND AMENDMENT TO AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended ("Act"), and the regulations promulgated under the Act, the Oil Conservation Commission and the Oil Conservation Division of the Energy, Minerals and Natural Resources Department of the State of New Mexico (together, "OCD") issues this Second Amendment to Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, which was issued to Navajo Refining Company, L.L.C. ("Navajo") on November 14, 2013 and which includes Exhibit A, as amended on April 22, 2014 ("Amended Exhibit A") to incorporate certain short-term remedy schedules and adjustments to Navajo's plans for long-term options to address selenium concentrations in wastewater (together, the "Order"). The Order directs compliance with the Act, the Water Quality Control Commission Regulations and permits issued under the Act.

I. FINDINGS AND DETERMINATIONS

1. Paragraph 1(d) of Amended Exhibit A requires that, if Navajo ceases injection to the wells, Navajo is to sample injection fluid prior to ceasing, and then upon resuming, injection to the wells, in each instance at the Sampling Location (defined in Amended Exhibit A).

2. Paragraph 6 of Amended Exhibit A requires that, if Navajo stops injection to the wells, Navajo is to provide OCD the results of the samples taken prior to ceasing and after

resuming injection, within the timeframes specified therein.

3. Paragraphs 7 and 8 of Amended Exhibit A also require Navajo to notify OCD by e-mail of its cessation and resumption of injection at the wells within the timeframes specified therein.

4. Consistent with the purpose of the Order to address and prevent the recurrence of exceedances of the Se Limit (defined in the Order), OCD and Navajo agree that, since the effective date of the Order, the requirements of Paragraphs 1(d), 6, 7 and 8 of Amended Exhibit A are triggered only when Navajo's cessation of injection at the wells is due to actual or potential exceedances of the Se Limit, and are not triggered when cessation of injection is due to such other causes as equipment repair, maintenance or replacement, or well testing. Further, the obligation to sample the injection fluid prior to cessation does not include emergency events or circumstances where it is infeasible to conduct sampling prior to cessation of injection at the wells.

5. OCD and Navajo have further agreed that the Order should be amended to clarify and confirm when the requirements of Paragraphs 1(d), 6, 7 and 8 of Amended Exhibit A are triggered consistent with the agreement of the parties set forth immediately above.

6. Paragraph 1.a. of Section IV of the Order provides that Navajo and OCD have the right to modify the Order by written instrument signed by both parties.

II. AMENDMENT

1. Paragraph 1(d) of Amended Exhibit A is hereby amended and restated in the attached Second Amended Exhibit A to Amended and Supplemental Agreed Compliance Order to incorporate the above agreement of the parties regarding the events that trigger requirements pertaining to cessation and resumption of injection at the wells. Further, the Order at Paragraph

6 of Amended Exhibit A is hereby amended and restated in the attached Second Amended Exhibit A in order to incorporate certain conforming changes consistent with this agreement.

2. The Order remains unchanged except as stipulated herein.

3. This Amendment may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this 3rd day of September, 2014.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Amendment, and agrees to all of the terms and provisions as set forth in the Amendment,

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: _____

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Second Amended Exhibit A to Amended and Supplemental Agreed Compliance Order (September 3, 2014)

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo ceases injection at the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting at the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

    f) For purposes of this Exhibit A (including, without limitation, Paragraphs 1(d), 6, 7, and 8), the term, "ceases injection", shall be limited to the cessation of injection at the wells due to actual or potential exceedances of the Se Limit. The term excludes cessation for all other reasons, such as equipment repair, maintenance or replacement and well testing (such as pressure fall off tests, annulus pressure tests, and mechanical integrity tests). Further, the obligation

to sample the injection fluid prior to cessation does not include emergency events or circumstances, where it is infeasible to conduct sampling prior to cessation of injection at the wells.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

    a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

    b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

    c) take such other actions as may be appropriate to address the exceedance; and

    d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo ceases injection at the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail that Navajo has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

    a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

    b) a summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

    c) the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the cause(s) of the exceedances of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

    a) its selection of a short-term remedy(ies);

    b) dates for completion of any necessary bench scale or other trials;

    c) dates of anticipated installation of any selected technology(ies); and

    d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall construct and implement the remedy selected pursuant to paragraph 12 above (the "Remediation Project") in accordance with the following schedule of milestones and deadlines following OCD approval of same.

a) Completion of scale-up trial and commencement of full-scale operation of an iron co-precipitation process via ferric chloride injection ("ICP") by February 1, 2014.

b) Completion of construction and startup of a Phillips 66, trial SeRT® unit (approximate 100 gallons per minute capacity) by February 1, 2014.

c) Confirmation of selenium reduction using trial SeRT® unit by March 31, 2014.

d) Achievement of compliance with the Se Limit as measured at the Sample Location by September 15, 2014.

Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion." Notwithstanding the foregoing, Navajo may, after notice to OCD, cease operation of ICP at any time and still satisfy requirements for Remediation Project Completion, provided that Navajo continues to achieve compliance with the Se Limit (as measured at the Sample Location).

14. Reserved.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. Depending on the efficacy of the trial SeRT® unit described in Paragraph 13, above, Navajo may elect to install and/or build a full capacity permanent SeRT® unit or modify the trial SeRT® unit. In addition, Navajo continues to evaluate alternative technologies for selenium removal. On or before September 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Wednesday, September 03, 2014 3:22 PM
To: Crawford, Dan; Brancard, Bill, EMNRD; Chavez, Carl J, EMNRD; Dawson, Scott, EMNRD
Cc: Boans, Robert; McWatters, Denise; jhurwitz@morganlewis.com; Holder, Mike
Subject: RE: Notification to OCD for Sampling Injection Wells and Shut Down
Attachments: Rpt_1408F33_Final_v2.pdf

Scott/Carl – attached are the analytical results for the sample taken at resumption of flow to the wells. Results were non-detect (ND) for both TCLP & Total Se. Please call w/any questions.

Thanks,
Mike

From: Holder, Mike
Sent: Thursday, August 28, 2014 1:13 PM
To: Crawford, Dan; Brancard, Bill, EMNRD; Chavez, Carl J, EMNRD; Dawson, Scott, EMNRD
Cc: Boans, Robert; McWatters, Denise; jhurwitz@morganlewis.com; Holder, Mike
Subject: RE: Notification to OCD for Sampling Injection Wells and Shut Down

Scott/Carl – attached are the analytical results for the sample referenced below (i.e., the "prior to" cessation sample). TCLP Se was Non-Detect w/a reporting limit of 0.10 mg/L; Total Se is 0.018 – both well below the 1.0 mg/L limit. Please do not hesitate to call w/any questions.

Thanks,
Mike

From: Crawford, Dan
Sent: Tuesday, August 26, 2014 2:24 PM
To: Brancard, Bill, EMNRD; Chavez, Carl J, EMNRD
Cc: Boans, Robert; Holder, Mike; McWatters, Denise; jhurwitz@morganlewis.com
Subject: Notification to OCD for Sampling Injection Wells and Shut Down

Hello all,

Navajo Refining Company, LLC is providing notice of sampling and notification concerning ceasing of injection of wastewater at its three underground injection control wells.

As part of the pressure fall-off testing required by OCD's permits, the Mewbourne well was blocked in at 12:05 pm on Monday, August 25th and the Chukka well was subsequently blocked in at 12:22PM. The Gains well will be shut off this evening (August 26th) around 6:00 p.m. This is the well for which the Fall Off test will be conducted.

One water sample was collected at 9:10 a.m. (August 25th)at the "approved sample location" at the WWTP prior to ceasing flow to the first two wells. We feel that this sample is representative as all of the wells receive the same water from this discharge collection point.

When the Gains well is brought back on line, we will notify you of the start-up date/time and collect a final sample after the fall-off test is completed.

Please note that we still believe that the OCD Order does not require additional sampling and reporting of selenium levels for ordinary-course cessation of injection at the three injection wells, and that Navajo has been in full compliance with those requirements. However, we are taking these steps to demonstrate our willingness to communicate actions that are occurring as part of our operations program.

Should you have any questions, please do not hesitate to contact me.

Regards,

Dan L. Crawford, P.G.
Environmental Manager
Navajo Refining Company, LLC
P.O. Box 159
Artesia, NM 88211-0159
Office: (575) 746-5487
Cell: (575) 703-0318
Fax: (575) 746-5451
dan.crawford@hollyfrontier.com

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 03, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: WW Effluent Monitoring OrderNo.: 1408F33

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/29/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1408F33**
Date Reported: **9/3/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WW Effluent Monitoring
Lab Order: 1408F33

Lab ID: 1408F33-001
Collection Date: 8/28/2014 12:07:00 PM
Client Sample ID: Effluent to Wells (location #6)
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	ND	0.027	0.10		mg/L	1	9/3/2014 9:13:32 AM	15064
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	ND	0.014	0.050		mg/L	1	9/3/2014 9:12:20 AM	15064

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F33**

03-Sep-14

Client: Navajo Refining Company

Project: WW Effluent Monitoring

Sample ID	**MB-15064**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**15064**	RunNo:	**20954**				
Prep Date:	**9/2/2014**	Analysis Date:	**9/3/2014**	SeqNo:	**609820**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-15064**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**15064**	RunNo:	**20954**				
Prep Date:	**9/2/2014**	Analysis Date:	**9/3/2014**	SeqNo:	**609821**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	93.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1408F33 RcptNo: 1

Received by/date: MG 08/29/14

Logged By: **Celina Sessa** 8/29/2014 9:15:00 AM Celina Sessa

Completed By: **Celina Sessa** 8/29/2014 10:07:44 AM Celina Sessa

Reviewed By: MG 08/29/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa X Rush Next Day

Project Name:

WW Effluent Monitoring

Project #: P.O. # 167796

Project Manager:

Mike Holder / Dan Crawford

Sampler: Aaron Strange

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408F33	Total Se by EPA Method 6010B	TCLP Selenium 1311/6010
8/28/14	12:07	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
8/28/14	12:07	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-001		X

Date	Time	Relinquished by	Received by	Date	Time
8/28/14	16:15	Aaron Strange			
				08/28/14	0915

Remarks: Startup sample after fall-off test.
Please Rush

(1) Totals method 6010B
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Tuesday, September 02, 2014 1:45 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Crawford, Dan; Holder, Mike
Subject: Monthly Interim Progress Report Submittal - August 2014
Attachments: OCD Order August 2014 Monthly Progress Report.pdf

Scott & Carl,

Please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between Navajo Refining Company (NRC) & OCD (Dated November 14, 2013). The original hardcopy is going out today via certified mail. Dan is out this week so I am sending in his stead. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

HOLLYFRONTIER.

September 2, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7007 3020 0000 3028 9113

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
August 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the August 2014 monthly progress report, detailing the actions taken during the preceding calendar month of July 2014, and due on the first business day of the following month (i.e., September 2, 2014). This report also includes the final analytical results as of August 25, 2014, and the actions taken through approximately August 28, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste

Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:[1]

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9.
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9.
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9.
- The May 2014 progress report was submitted on June 2, 2014 pursuant to Paragraph 9.
- The June 2014 progress report was submitted on July 1, 2014 pursuant to Paragraph 9.
- The July 2014 progress report was submitted on August 1, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit, the modification of the existing, 100 gpm trial SeRT® unit, or (as explained later in this report) use of the existing SeRT®

[1] *See also* Letter from Michael G. McKee, Navajo, to Bill Brancard, OCD, July 25, 2014 (addressing OCD compliance status).

unit without modification. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through August 25 are summarized in Table 3 below and show an average total selenium removal efficiency of 94%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%
5/27/2014	Hall Environmental	60	2.90	-	0.08	-	97%
5/29/2014	Hall Environmental	60	3.20	-	0.11	-	97%
6/2/2014	Hall Environmental	64	3.30	-	0.07	-	98%
6/5/2014	Hall Environmental	51	3.10	-	0.09	-	97%
6/9/2014	Hall Environmental	50	3.30	-	0.06	-	98%
6/12/2014	Hall Environmental	60	3.10	-	0.13	-	96%
6/16/2014	Hall Environmental	120	3.30	-	0.54	-	84%
6/19/2014	Hall Environmental	130	3.10	-	0.40	-	87%
6/23/2014	Hall Environmental	130	3.90	-	0.47	-	88%
6/26/2014	Hall Environmental	118	3.00	-	0.30	-	90%
7/1/2014	Hall Environmental	101	2.30	-	0.14	-	94%
7/3/2014	Hall Environmental	115	2.20	-	0.12	-	95%
7/7/2014	Hall Environmental	106	2.70	-	0.17	-	94%
7/14/2014	Hall Environmental	125	3.20	-	<0.05	-	98%
7/17/2014	Hall Environmental	92	2.70	-	0.07	-	97%
7/21/2014	Hall Environmental	120	2.70	-	0.23	-	91%
7/24/2014	Hall Environmental	80	2.80	-	0.14		95%
7/28/2014	Hall Environmental	114	2.50	-	0.28		89%
7/31/2014	Hall Environmental	-	3.50	-	0.32	-	91%
8/4/2014	Hall Environmental	-	3.30	-	0.06	-	98%
8/7/2014	Hall Environmental	-	3.00	-	0.04	-	99%
8/11/2014	Hall Environmental	-	2.80	-	0.04	-	99%
8/15/2014	Hall Environmental	-	3.60	-	0.04	-	99%
8/21/2014	Hall Environmental	-	3.10	-	0.04	-	99%
8/25/2014	Hall Environmental	-	1.60	-	0.03	-	98%

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- Amendment to Exhibit A signed by Navajo and OCD.

June 2, 2014

- Navajo submitted a minor permit modification requested by OCD for the installation of the SeRT® & ICP units at the Artesia Refinery.

June 24, 2014

- OCD approved the modification request submitted on June 2nd.

June 1 to 2, 2014

- Navajo temporarily stopped injection while doing the Pressure Fall Off Tests (PFOTs) and Mechanical Integrity Testing (MIT) for Well 1.[2]

June 30 to July 2, 2014

- Navajo temporarily stopped injection while doing the PFOTs and MIT for Well 2.[2]

July 7-9, 2014

- Used SeRT® media was replaced by new media. The media change-out started on 7/7/14 and was completed on 7/9/14. Unit brought on-line on 7/10/14. The pH probes were also replaced.

August 11, 2014

- Met with OCD to discuss amending Exhibit A to clarify reporting and sampling in connection with cessation of well injection per Navajo's July 25, 2014 letter.

August 25-28, 2014

- Navajo temporarily stopped injection for PFOTs and MIT for Well 3.[2]

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the ongoing trial of the 100 gpm SeRT® unit. Navajo has also developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. Specifically, depending on the results of the above SeRT® trial, Navajo may install a full capacity permanent SeRT® unit or modify the existing 100 gpm trial SeRT® unit, with an estimated startup goal for this installation or modification in 2015. The exact date will be determined at a later time. Also, based on the selenium removal efficiency demonstrated by the existing SeRT® unit (average 94%, per Table 3 above), Navajo is considering use of this unit without modification as its principal long-term selenium reduction technology.

Under Amended Exhibit A, Navajo is to advise the OCD on the selected long-term option for wastewater selenium concentration control by September 30, 2014.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follows.

[2] Pressure Fall Off tests and Mechanical Integrity Testing are unrelated to selenium concentrations in the wastewater injected at the wells.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location (location shown in Attachment A) on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constituted the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling is being conducted on a quarterly basis on the first business day of the quarter. One quarterly sample was taken on July 3, 2014 and the next scheduled sampling date is Wednesday, October 1, 2014. As of the most recent sampling event, Navajo has achieved over 9 consecutive months of compliant sampling since the issuance date of the Order. Additional monitoring is also presented in Table 4. Since the July monthly progress report, no new laboratory reports have been obtained for the OCD quarterly sampling events required under Paragraph 1(c) of Exhibit A to the Order, because the next quarterly sampling event has not yet taken place. As a result, unlike most prior monthly progress reports, no laboratory report is provided in Attachment B.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**
7/3/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**< 0.027**	**< 0.027**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.
[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

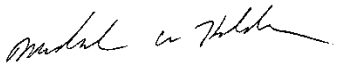
A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment C. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment D, and all of the total selenium measurements for all refinery sample locations are provided in Attachment E. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, April, May, June and July through August 25, 2014.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the August 25, 2014 sampling event, there are no new reported exceedances of the Se Limit. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit. As explained in Navajo's July 25, 2014 letter to OCD, Navajo was unable to conduct quarterly sampling on July 1, because there was no injection at the wells on that day due to PFOTs and mechanical integrity testing. Quarterly sampling was not conducted until July 3, 2014, after the discharge to the wells resumed, a delay of two days. Also, Navajo was one day late in submitting the results of its quarterly selenium sampling to OCD, which were required to be submitted by July 17, and were instead submitted on July 18, 2014. Per the stipulated penalty schedule at Section III, Paragraph 2 of the Order, Navajo calculated a stipulated penalty of $5,000.[3] This sum was paid by letter dated August 21, 2014. Navajo is taking preventive steps to help ensure timely quarterly sampling and reporting of corresponding sample results.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,



Mike Holder
Environmental Manager

Navajo Refining Company, L.L.C.

[3] Per Order Section III, Paragraph (2)(b)(4), for failure to conduct timely sampling, $2,000 per day X 2 days = $4,000; per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 1 day = $1,000.

Attachment A:
OCD-approved Sample Location

T-805 FLOCCULATOR
12' DIAMETER X 9' HEIGHT
7,000 GALLONS

T-896 DISSOLVED AIR FLOATATION UNIT

P-862/P-863
DAF RECYCLE PUMP

P-860/P-861
DAF SOLIDS/FLOAT PUMP

D-831 DAF RECYCLE PRESSURE TANK

T-806 FUTURE DISSOLVED AIR FLOATATION UNIT (CONVERT FROM T-806)

P-806x3/P-806x4
FUTURE DAF RECYCLE PUMP

P-806x1/P-806x2
FUTURE DAF SOLIDS/FLOAT PUMP

D-806/807
ACTIVATED CARBON BEDS

D-806x5 FUTURE DAF RECYCLE PRESSURE TANK

D-810/811
WALNUT HULL FILTERS

T-897 DAF SURGE TANK
8' X 8' X 5'
1,900 GALLONS

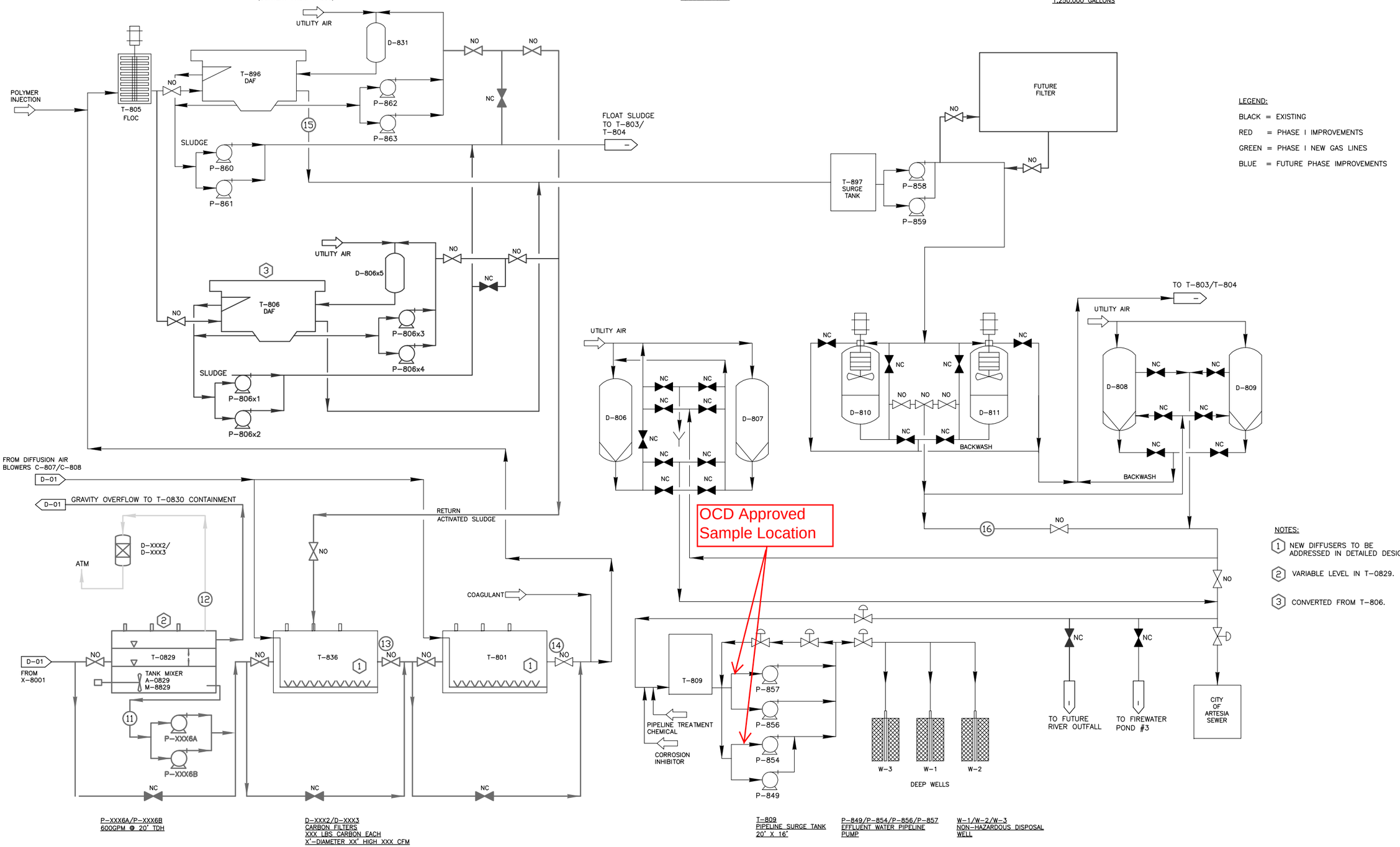
D-808/809
MECHANICAL FILTERS

P-858/P-859
DAF RECYCLE PUMP

T-0829 EQUALIZATION TANK
82.5' DIAMETER X 32' HEIGHT
1,250,000 GALLONS

T-801 EQUALIZATION TANK
110' DIAMETER X 32' HEIGHT
2,310,000 GALLONS

T-836 EQUALIZATION TANK
82.5' DIAMETER X 32' HEIGHT
1,250,000 GALLONS



LEGEND:

BLACK = EXISTING

RED = PHASE I IMPROVEMENTS

GREEN = PHASE I NEW GAS LINES

BLUE = FUTURE PHASE IMPROVEMENTS

NOTES:

1. NEW DIFFUSERS TO BE ADDRESSED IN DETAILED DESIGN.
2. VARIABLE LEVEL IN T-0829.
3. CONVERTED FROM T-806.

P-XXX6A/P-XXX6B
600GPM @ 20' TDH

D-XXX2/D-XXX3
CARBON FILTERS
XXX LBS CARBON EACH
X'-DIAMETER XX' HIGH XXX CFM

T-809
PIPELINE SURGE TANK
20' X 16'

P-849/P-854/P-856/P-857
EFFLUENT WATER PIPELINE PUMP

W-1/W-2/W-3
NON-HAZARDOUS DISPOSAL WELL

REV. NO.	DATE	DRWN	CHKD	REMARKS
5	01/12	DH	JDC	ISSUED FOR PHA REVIEW
4	12/9	RM	JDC	CHANGED PER 12/07/10 REVIEW MEETING
3	12/6	RM	JDC	CHANGED PER 11/30/10 REVIEW MEETING
2	11/3			CHANGED DURING CLIENT REVIEW MEETING
1	10/26			CHANGED PER CLIENT 10/26/10

DESIGNED BY: J. CAMANN
DRAWN BY: R. MOORE
SHEET CHK'D BY: K. GREENFELDER
CROSS CHK'D BY: M. CARBALLA
APPROVED BY: X
DATE: DECEMBER 2010

CDM
Camp Dresser & McKee
3050 Post Oak Boulevard, Suite 300
Houston, Texas 77056
Tel: (713) 423-7300 Fax: (713) 840-0173
TBPE Firm Registration No. F-3043
consulting • engineering • construction • operations

NAVAJO REFINERY
ARTESIA, NEW MEXICO
PHASE I WWTP

PROCESS FLOW DIAGRAM
PHASE I - WASTEWATER TREATMENT PLANT IMPROVEMENTS - SHEET 2
EQUALIZATION TANK TO DISCHARGE

PROJECT NO. 90538-79019
FILE NAME: G001PFD
SHEET NO.
D-02

DWG: S:\90538\79019\00-EXHIBITS\DPH G001PFD-ALT.dwg USER: moorere
DATE: Jan 13, 2011 8:35am XREFS:CDM_2234 79019-2234BDR

Attachment B:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order
- No New Report

Attachment C:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment C Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08
6/19/2014	Injection Well Effluent Sampling Point	Hall	<0.10	-	-	<0.10
7/3/2014[4]	T-801 Effluent to Wells	Hall	< 0.027	-	-	< 0.027
7/22/2014	Injection Well Effluent Sampling Point	Hall	< 0.027	-	-	< 0.027
8/25/2014	Injection Well Effluent Sampling Point	Hall	< 0.027	-	-	< 0.027

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3] Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4]Required sampling from this point forward is conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment D:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through August 25, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.60	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.30	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085
6/19/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	1406935
7/3/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407271
7/22/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1407A42
8/25/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	1408D15

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment E:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment E Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through August 25, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.90	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.00	16.00	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5.00	<5.00	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.50	<4.50	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.10	3.20	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	1403561 1403562 1403559 1403563

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404B38
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405688
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983
5/27/2014	Hall Environmental	-	-	-	-	-	-	2.90	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405B03
5/29/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405C46
6/2/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406018
6/5/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406247

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
6/9/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406376
6/12/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406576
6/16/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406694
6/19/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.069	-	-	-	-	-	-	1406934
6/23/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406A48
6/26/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406C44
7/1/2014	Hall Environmental	-	-	-	-	-	-	2.30	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407055
7/3/2014	Hall Environmental							2.20	0.12															0.02							1407222 1407224
7/7/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407272
7/10/2014	Hall Environmental	-	-	-	-	-	-	pH 6.0 pH 5.0 pH 4.0 pH 3.5	3.2 2.10 0.21 0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407494
7/14/2014	Hall Environmental	-	-	-	-	-	-	3.20	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407602
7/17/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407867
7/21/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407986
7/24/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407C14
7/28/2014	Hall Environmental	-	-	-	-	-	-	2.50 3.60	0.28 0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407D22 1408919
7/31/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408014
8/4/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408159
8/7/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408413
8/11/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408469
8/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408846
8/21/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1408B70
8/25/2014	Hall Environmental	-	-	-	-	-	-	1.60	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.018-	-	-	-	-	-	-	1408D14 1408D15

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, August 28, 2014 12:13 PM
To: Crawford, Dan; Brancard, Bill, EMNRD; Chavez, Carl J, EMNRD; Dawson, Scott, EMNRD
Cc: Boans, Robert; McWatters, Denise; jhurwitz@morganlewis.com; Holder, Mike
Subject: RE: Notification to OCD for Sampling Injection Wells and Shut Down
Attachments: Rpt_1408D15_Final_v1.pdf

Scott/Carl – attached are the analytical results for the sample referenced below (i.e., the "prior to" cessation sample). TCLP Se was Non-Detect w/a reporting limit of 0.10 mg/L; Total Se is 0.018 – both well below the 1.0 mg/L limit. Please do not hesitate to call w/any questions.

Thanks,
Mike

From: Crawford, Dan
Sent: Tuesday, August 26, 2014 2:24 PM
To: Brancard, Bill, EMNRD; Chavez, Carl J, EMNRD
Cc: Boans, Robert; Holder, Mike; McWatters, Denise; jhurwitz@morganlewis.com
Subject: Notification to OCD for Sampling Injection Wells and Shut Down

Hello all,

Navajo Refining Company, LLC is providing notice of sampling and notification concerning ceasing of injection of wastewater at its three underground injection control wells.

As part of the pressure fall-off testing required by OCD's permits, the Mewbourne well was blocked in at 12:05 pm on Monday, August 25th and the Chukka well was subsequently blocked in at 12:22PM. The Gains well will be shut off this evening (August 26th) around 6:00 p.m. This is the well for which the Fall Off test will be conducted.

One water sample was collected at 9:10 a.m. (August 25th)at the "approved sample location" at the WWTP prior to ceasing flow to the first two wells. We feel that this sample is representative as all of the wells receive the same water from this discharge collection point.

When the Gains well is brought back on line, we will notify you of the start-up date/time and collect a final sample after the fall-off test is completed.

Please note that we still believe that the OCD Order does not require additional sampling and reporting of selenium levels for ordinary-course cessation of injection at the three injection wells, and that Navajo has been in full compliance with those requirements. However, we are taking these steps to demonstrate our willingness to communicate actions that are occurring as part of our operations program.

Should you have any questions, please do not hesitate to contact me.

Regards,

Dan L. Crawford, P.G.
Environmental Manager
Navajo Refining Company, LLC

P.O. Box 159
Artesia, NM 88211-0159
Office: (575) 746-5487
Cell: (575) 703-0318
Fax: (575) 746-5451
dan.crawford@hollyfrontier.com

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 27, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Quarterly WW Effluent Monitoring OrderNo.: 1408D15

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/26/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order: **1408D15**
Date Reported: **8/27/2014**

CLIENT: Navajo Refining Company
Project: Quarterly WW Effluent Monitoring

Lab Order: 1408D15

Lab ID: 1408D15-001
Collection Date: 8/25/2014 9:10:00 AM
Client Sample ID: Effluent to Wells (location #6)
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	ND	0.027	0.10		mg/L	1	8/27/2014 10:35:09 AM	14969
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.018	0.014	0.050	J	mg/L	1	8/27/2014 10:33:53 AM	14969

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D15**

27-Aug-14

Client: Navajo Refining Company

Project: Quarterly WW Effluent Monitoring

Sample ID	**MB-14969**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**14969**	RunNo:	**20824**					
Prep Date:	**8/26/2014**	Analysis Date:	**8/27/2014**	SeqNo:	**606111**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-14969**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**14969**	RunNo:	**20824**					
Prep Date:	**8/26/2014**	Analysis Date:	**8/27/2014**	SeqNo:	**606112**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.6	80	120			

Sample ID	**LCS Spike Check**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**14969**	RunNo:	**20824**					
Prep Date:	**8/26/2014**	Analysis Date:	**8/27/2014**	SeqNo:	**606113**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	98.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1408D15 RcptNo: 1

Received by/date: LM 08/26/14

Logged By: **Celina Sessa** 8/26/2014 9:30:00 AM Celina Sessa

Completed By: **Celina Sessa** 8/26/2014 9:41:17 AM Celina Sessa

Reviewed By: 08/26/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
	Not required		
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 0 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	16.8	Good	Not Present			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa ☐ **Rush** **Next Day**

Project Name:

Quarterly WW Effluent Monitoring

Project #: P.O. # 167796

Project Manager:

Mike Holder / Dan Crawford

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 11.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408D15	Total Se by EPA Method 6010B	TCLP Selenium 1311/6010
8/25/14	09:10	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
8/25/14	09:10	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002 CS 08/26/14		X

Analysis Request

Date	Time	Relinquished by	Received by	Date	Time
8/25/14	07:15	Aaron Strange			
				08/26/14	0936

Remarks: Pre-shoutdown sample for fall-off test.

(1) Totals method 6010B

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

SECOND AMENDMENT TO AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended ("Act"), and the regulations promulgated under the Act, the Oil Conservation Commission and the Oil Conservation Division of the Energy, Minerals and Natural Resources Department of the State of New Mexico (together, "OCD") issues this Second Amendment to Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, which was issued to Navajo Refining Company, L.L.C. ("Navajo") on November 14, 2013 and which includes Exhibit A, as amended on April 22, 2014 ("Amended Exhibit A") to incorporate certain short-term remedy schedules and adjustments to Navajo's plans for long-term options to address selenium concentrations in wastewater (together, the "Order"). The Order directs compliance with the Act, the Water Quality Control Commission Regulations and permits issued under the Act.

I. FINDINGS AND DETERMINATIONS

1. Paragraph 1(d) of Amended Exhibit A requires that, if Navajo ceases injection to the wells, Navajo is to sample injection fluid prior to ceasing, and then upon resuming, injection to the wells, in each instance at the Sampling Location (defined in Amended Exhibit A).

2. Paragraph 6 of Amended Exhibit A requires that, if Navajo stops injection to the wells, Navajo is to provide OCD the results of the samples taken prior to ceasing and after

resuming injection, within the timeframes specified therein.

3. Paragraphs 7 and 8 of Amended Exhibit A also require Navajo to notify OCD by e-mail of its cessation and resumption of injection at the wells within the timeframes specified therein.

4. Consistent with the purpose of the Order to address and prevent the recurrence of exceedances of the Se Limit (defined in the Order), OCD and Navajo agree that, since the effective date of the Order, the requirements of Paragraphs 1(d), 6, 7 and 8 of Amended Exhibit A are triggered only when Navajo's cessation of injection at the wells is due to actual or potential exceedances of the Se Limit, and are not triggered when cessation of injection is due to such other causes as equipment repair, maintenance or replacement, or well testing. Further, the obligation to sample the injection fluid prior to cessation does not include emergency events or circumstances where it is infeasible to conduct sampling prior to cessation of injection at the wells.

5. OCD and Navajo have further agreed that the Order should be amended to clarify and confirm when the requirements of Paragraphs 1(d), 6, 7 and 8 of Amended Exhibit A are triggered consistent with the agreement of the parties set forth immediately above.

6. Paragraph 1.a. of Section IV of the Order provides that Navajo and OCD have the right to modify the Order by written instrument signed by both parties.

II. AMENDMENT

1. Paragraph 1(d) of Amended Exhibit A is hereby amended and restated in the attached Second Amended Exhibit A to Amended and Supplemental Agreed Compliance Order to incorporate the above agreement of the parties regarding the events that trigger requirements pertaining to cessation and resumption of injection at the wells. Further, the Order at Paragraph

6 of Amended Exhibit A is hereby amended and restated in the attached Second Amended Exhibit A in order to incorporate certain conforming changes consistent with this agreement.

2. The Order remains unchanged except as stipulated herein.

3. This Amendment may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this 3rd day of September, 2014.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Amendment, and agrees to all of the terms and provisions as set forth in the Amendment,

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 8 September 2014

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Second Amended Exhibit A to Amended and Supplemental Agreed Compliance Order (September 3, 2014)

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo ceases injection at the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting at the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

    f) For purposes of this Exhibit A (including, without limitation, Paragraphs 1(d), 6, 7, and 8), the term, "ceases injection", shall be limited to the cessation of injection at the wells due to actual or potential exceedances of the Se Limit. The term excludes cessation for all other reasons, such as equipment repair, maintenance or replacement and well testing (such as pressure fall off tests, annulus pressure tests, and mechanical integrity tests). Further, the obligation

to sample the injection fluid prior to cessation does not include emergency events or circumstances, where it is infeasible to conduct sampling prior to cessation of injection at the wells.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

    a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

    b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

    c) take such other actions as may be appropriate to address the exceedance; and

    d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo ceases injection at the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail that Navajo has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

    a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

    b) a summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

    c) the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the cause(s) of the exceedances of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

    a) its selection of a short-term remedy(ies);

    b) dates for completion of any necessary bench scale or other trials;

    c) dates of anticipated installation of any selected technology(ies); and

    d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall construct and implement the remedy selected pursuant to paragraph 12 above (the "Remediation Project") in accordance with the following schedule of milestones and deadlines following OCD approval of same.

a) Completion of scale-up trial and commencement of full-scale operation of an iron co-precipitation process via ferric chloride injection ("ICP") by February 1, 2014.

b) Completion of construction and startup of a Phillips 66, trial SeRT® unit (approximate 100 gallons per minute capacity) by February 1, 2014.

c) Confirmation of selenium reduction using trial SeRT® unit by March 31, 2014.

d) Achievement of compliance with the Se Limit as measured at the Sample Location by September 15, 2014.

Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion." Notwithstanding the foregoing, Navajo may, after notice to OCD, cease operation of ICP at any time and still satisfy requirements for Remediation Project Completion, provided that Navajo continues to achieve compliance with the Se Limit (as measured at the Sample Location).

14. Reserved.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. Depending on the efficacy of the trial SeRT® unit described in Paragraph 13, above, Navajo may elect to install and/or build a full capacity permanent SeRT® unit or modify the trial SeRT® unit. In addition, Navajo continues to evaluate alternative technologies for selenium removal. On or before September 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

Chavez, Carl J, EMNRD

From: Crawford, Dan <Dan.Crawford@HollyFrontier.com>
Sent: Friday, August 01, 2014 9:42 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Coons, Christina (Christie); Crawford, Dan
Subject: OCD Order July 2014 Monthly Progress/Status Report
Attachments: SHARPENV@HOLLYFRONTIER.COM_20140801_091541.pdf

Scott & Carl,

Please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between Navajo Refining Company (NRC) & OCD (Dated November 14, 2013).

The original hardcopy is going out today via certified mail.

Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,

Dan

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HOLLYFRONTIER.

August 1, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7007 3020 000 3028 8345

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
July 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the July 2014 monthly progress report, detailing the actions taken during the preceding calendar month of June 2014, and due on the first business day of the following month (i.e., August 1, 2014). This report also includes the final analytical results as of July 22, 2014, and the actions taken through approximately July 25, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order,

including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:[1]

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9.
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9.
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9.
- The May 2014 progress report was submitted on June 2, 2014 pursuant to Paragraph 9.
- The June 2014 progress report was submitted on July 1, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit or the modification of the existing, 100 gpm trial SeRT® unit. An updated timeline of the activities to support these solutions is provided below.

[1] *See also* Letter from Michael G. McKee, Navajo, to Bill Brancard, OCD, July 25, 2014 (addressing OCD compliance status).

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through July 21 are summarized in Table 3 below and show an average total selenium removal efficiency of 93%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%
5/27/2014	Hall Environmental	60	2.90	-	0.08	-	97%
5/29/2014	Hall Environmental	60	3.20	-	0.11	-	97%
6/2/2014	Hall Environmental	64	3.30	-	0.07	-	98%
6/5/2014	Hall Environmental	51	3.10	-	0.09	-	97%
6/9/2014	Hall Environmental	50	3.30	-	0.06	-	98%
6/12/2014	Hall Environmental	60	3.10	-	0.13	-	96%
6/16/2014	Hall Environmental	120	3.30	-	0.54	-	84%
6/19/2014	Hall Environmental	130	3.10	-	0.40	-	87%
6/23/2014	Hall Environmental	130	3.90	-	0.47	-	88%
6/26/2014	Hall Environmental	118	3.00	-	0.30	-	90%
7/1/2014	Hall Environmental	101	2.30	-	0.14	-	94%
7/3/2014	Hall Environmental	115	2.20	-	0.12	-	95%
7/7/2014	Hall Environmental	106	2.70	-	0.17	-	94%
7/14/2014	Hall Environmental	125	3.20	-	<0.05	-	98%
7/17/2014	Hall Environmental	-	2.70	-	0.07	-	97%
7/21/2014	Hall Environmental	-	2.70	-	0.23	-	91%

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- Amendment to Exhibit A signed by Navajo and OCD.

June 2, 2014

- Navajo submitted a minor permit modification requested by OCD for the installation of the SeRT® & ICP units at the Artesia Refinery.

June 24, 2014

- OCD approved the modification request submitted on June 2nd.

June 1 to 2, 2014

- Navajo temporarily stopped injection while doing the Pressure Fall Off Tests (PFOTs) and Mechanical Integrity Testing (MIT) for Well 1.

June 30 to July 2, 2014

- Navajo temporarily stopped injection while doing the PFOTs and MIT for Well 2.

July 7-9, 2014

- Used SeRT® media was replaced by new media. The media change-out started on 7/7/14 and was completed on 7/9/14. Unit brought on-line on 7/10/14. The pH probes were also replaced.

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the ongoing trial of the 100 gpm SeRT® unit. Navajo has also developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. Specifically, depending on the results of the above SeRT® trial, Navajo may install a full capacity permanent SeRT® unit or modify the existing 100 gpm trial SeRT® unit, with an estimated startup goal for this installation or modification in 2015. The exact date will be determined at a later time.

Under Amended Exhibit A, Navajo is to achieve compliance with the Se Limit by September 15, 2014 and to advise the OCD on the selected long-term option for wastewater selenium concentration control by September 30, 2014.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location (location shown in Attachment A) on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constitutes the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling is being conducted on a quarterly basis on the first business day of the quarter. One sample was taken on July 3, 2014 and the next scheduled sampling date is Wednesday October 1, 2014. As of the most recent sampling event, Navajo has achieved over 9 consecutive months of compliant sampling since the issuance date of the Order. Additional monitoring is also presented in Table 4. Since the April monthly progress report, the new laboratory reports obtained for the OCD quarterly sampling events required under Paragraph 1(c) of Exhibit A to the Order sampling event are provided in Attachment B.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.

2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**
7/3/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**< 0.027**	**< 0.027**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.
[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) *A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).*

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment C. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment D, and all of the total selenium measurements for all refinery sample locations are provided in Attachment E. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, April, May and June through July 21, 2014.

c) *The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.*

As of the July 21, 2014 sampling event, there are no new reported exceedances of the Se Limit. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit. As explained in Navajo's July 25, 2014 letter to OCD, Navajo was unable to conduct quarterly sampling on July 1, because there was no injection at the wells on that day due to PFOTs and mechanical integrity testing. Quarterly sampling was not conducted until July 3, 2014, after the discharge to the wells resumed, a delay of two days. Also, Navajo was one day late in submitting the results of its quarterly selenium sampling to OCD, which were required to be submitted by July 17, and were instead submitted on July 18, 2014. Per the stipulated penalty schedule at Section III, Paragraph 2 of the Order, Navajo has calculated a stipulated penalty of $5,000.[2] Navajo is taking preventive steps to help ensure timely quarterly sampling and reporting of corresponding sample results.

[2] Per Order Section III, Paragraph (2)(b)(4), for failure to conduct timely sampling, $2,000 per day X 2 days = $4,000; per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 1 day = $1,000.

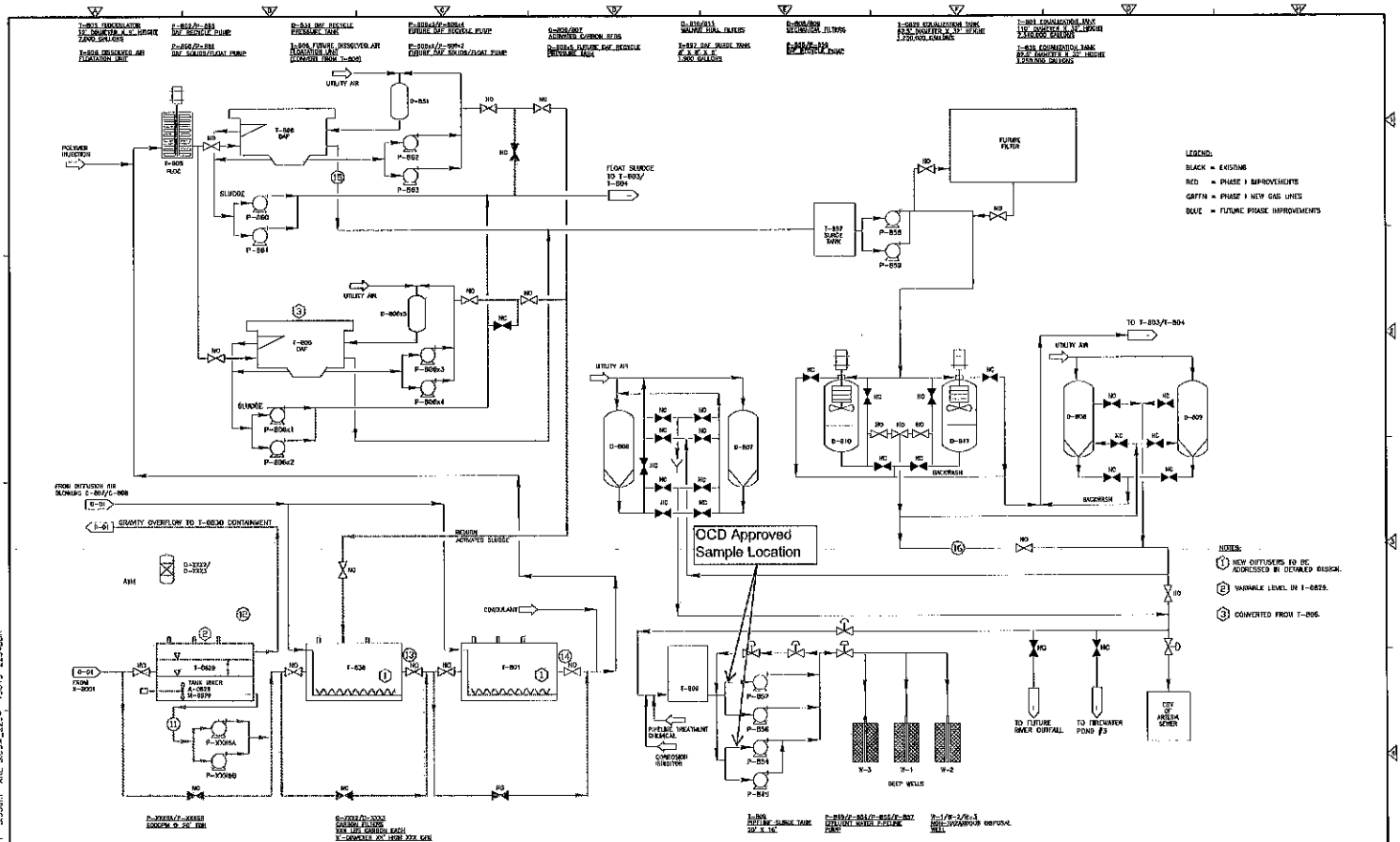
If you have any questions, please do not hesitate to contact me at (575) 746-5487 or dan.crawford@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Dan Crawford, P.G.
Environmental Manager

Navajo Refining Company, L.L.C.

Attachment A:
OCD-approved Sample Location



NO	DATE	DRAWN	CHKD	REMARKS
5	11/12	DH	JDC	ISSUED FOR PHA REVIEW
4	12/9	RM	JDC	CHANGED PER 12/07/10 ADMIN MEETING
3	12/6	RM	JDC	CHANGED PER 11/30/10 REVIEW MEETING
2	11/3			CHANGED DURING CLIENT REVIEW MEETING
1	10/26			CHANGED PER CLIENT 10/20/10

DESIGNED BY: J. CHAPMAN
DRAWN BY: R. MOORE
CHECKED BY: K. GUSTAFSON
CROSS CHKD BY: H. CARDINALE
APPROVED BY:
DATE: DECEMBER 2010

CDM
Cambridge Environmental Inc.
5000 Thiel Ct N, Suite 200
Houston, Texas 77035
Tel: (713) 623-1368 Fax: (713) 623-8483
CDM Inc. Engineering, P.C. #F-3121
Consulting • Engineering • Construction • Operations

NAVAJO REFINERY
ARTESIA, NEW MEXICO
PHASE I WWTP

PROCESS FLOW DIAGRAM
PHASE I - WASTEWATER TREATMENT PLANT IMPROVEMENTS - SHEET 2
EQUALIZATION TANK TO DISCHARGE

PROJECT NO. 90536-79019
FILE NAME: 0204FPD
SHEET NO.
D-02

DWG: S:\PROJECTS\90536\79019\CAD-EXHIBITS\PH 0204FPD-A_1.dwg USER: moorere
DATE: Jan 13, 2011 8:53am XREFS: SCCP4_2234_79019-223+BDX

Attachment B:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 14, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Monthly WW Effluent Monitoring OrderNo.: 1407271

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/7/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1407271**
Date Reported: **7/14/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Monthly WW Effluent Monitoring
Lab ID: 1407271-001 **Matrix:** AQUEOUS

Client Sample ID: Effluent to Wells (Location #6)
Collection Date: 7/3/2014 4:00:00 PM
Received Date: 7/7/2014 1:13:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	ND	0.027	1.0		mg/L	1	7/8/2014 12:10:00 PM	14096

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1407271**

14-Jul-14

Client: Navajo Refining Company

Project: Monthly WW Effluent Monitoring

Sample ID	**MB-14096**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**14096**	RunNo:	**19736**					
Prep Date:	**7/7/2014**	Analysis Date:	**7/8/2014**	SeqNo:	**577384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-14096**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**14096**	RunNo:	**19736**					
Prep Date:	**7/7/2014**	Analysis Date:	**7/8/2014**	SeqNo:	**577385**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	1.0	0.5000	0	96.1	80	120			J

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1407271 RcptNo: 1

Received by/date: [signature] 07/07/14

Logged By: Ashley Gallegos 7/7/2014 1:13:00 PM [signature]

Completed By: Ashley Gallegos 7/7/2014 1:17:14 PM [signature]

Reviewed By: AT 07/07/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standa ☐ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Monthly WW Effluent Monitoring
NM 88211-0159	Project #: P.O. # 167796
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder / Dan Crawford
☐ Standard ☐ Level 4 (Full Validation)	Sampler: David Boyer
☐ Other	On Ice: ☐ Yes ☐ No
☐ EDD (Type)	Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Analysis Request: Total Se by EPA Method 6010B	Analysis Request: TCLP Selenium 1311/6010
7/3/14	16:00	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-001		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/7/14	07:15	Aaron Strange	D.R.Boyer	7/7/14	07:15
7/7/14	0815	D.R.Boyer	Ashley Gallegos	07/07/13	13:13

Remarks: Required to test on the first business day of each month.

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment C:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment C Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08
6/19/2014	Injection Well Effluent Sampling Point	Hall	<0.10	-	-	<0.10
7/3/2014	T-801 Effluent to Wells	Hall	< 0.027	-	-	< 0.027
7/22/2014	Injection Well Effluent Sampling Point	Hall	< 0.027	-	-	< 0.027

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3]Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4]Required sampling from this point forward is conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment D:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through July 21, 2014; EPA Method SW1311/6020/6010, mg/L.

DATE	Laboratory	SWS Bottoms (W-686)		SWS Bottoms (W-30)		Desalter Effluent (W-7)		SeRT Feed	QAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-256)		Desalter Outlet (D-350)	Desalter Outlet (D-2503)	API Inlet		API Outlet	T-826		T-886		T-866 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (F-836)		T-829	Unit 245 Sour Water (W-2423)		Unit 44 Overhead Sulfiner	Unit 254 MDC Cold Separator		DAF Blend. Inclines 24	BD Reject	Lab Report
		Result	Ave[1]	Result	Ave[1]	Result	Ave[1]	Result	Result	Result	Result	Ave[1]	Result	Result	Result	Ave[1]	Result	Result	Ave[1]	Result	Ave[1]	Result	Result	Result	Result	Result	Ave[1]	Result	Result	Ave[1]	Result	Result	Ave[1]	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.86		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310804
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.86	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310471
10/21/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	1310102
10/23/2013	Hall Environmental	5.26		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.45		-	-		-	-		<1.0 (ND)	-	1310847 1310848
10/23/2013	ALS Environmental	4.84	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	1310309 1310196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.13		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310006
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	1310164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310053
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310058
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310059
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310018
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310078
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310022 1310023
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.90	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.39	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310078 1310081 1310035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.46		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.85	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311266
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.90	3.90	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-934)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	DAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-150)	Desalter Outlet (D-2101)	API-Sept		API Outlet	T-801		T-856		T-865 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-930)		T-829	Unit 445 Sour Water (W-2823)		Unit 44 Overhead Stripper	Unit 331 MDC Cold Separator		DAF Blurs, Bioflowers 24	BD Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (MD)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.53	0.53	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.97	0.97	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311908 1311905
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312D34 1312D36
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312D62 1312D63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312D01

DATE	Laboratory	SWS Bottoms (W-934)		SWS Bottoms (W-20)		Desalter Effluent (W-9)		SeRT Feed	DAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-258)		Desalter Outlet (D-330)	Desalter Outlet (D-2300)	API Inlet		API Outlet	T-901		T-935		T-965 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Steam Tank (T-800)		T-819	Unit F45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 SWIC Cold Separator		OAF Blows. Strathcona 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312657 1312658
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401125
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401368 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.36	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	-	1402070 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.60	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.30	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78

DATE	laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-2)		SeRT Feed	DAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-230)	API-Inlet		API Outlet	T-801		T-805		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Steam Tank (T-850)		T-829	Unit #45 Sour Water (W-2421)		Unit #8 Overhead Stripper	Unit #34 RMIC Cold Separator		DM Blrs. Backwash 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403090 1403092
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	-	1403349 1403349
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.045	-	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403556
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	-	1403561 1403562 1403563 1403564
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	-	1404085
6/19/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	1406935
7/3/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	-	1407271
7/22/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.027	-	-	-	-	-	-	-	-	-	-	1407442

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment E:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment E Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through July 21, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-530)	Desalter Outlet (D-2101)	API Inlet		API Outlet	T-801		T-830		T-805 Eff.	DAF Eff.	WWTP Filter Eff.	Injection Wells	Storm Tank (T-836)	T-825	Unit 865 Sour Water (W-9421)	Unit 44 Overhead Stripper	Unit 439 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310948
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C05
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.28	1.28	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D76 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.96		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1310E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.96	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.896	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.40		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.86	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.60	2.60	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-434)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-204)		Desalter Outlet (D-104)	Desalter Outlet (D-2109)	API Inlet		API Outlet	T-901		T-806		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-829)	T-829	Unit 495 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.60	2.90	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.96	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311635
11/15/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-	-		1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311749 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1312970 1312971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1313038
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1313150
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1313305
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1313906 1313905
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1313934
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1313996 1313997
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-	-	-	1313999
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1313000
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1313001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.90	2.90	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312226
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.90	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.36	0.36	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312814 1312815
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312862 1312863
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58

DATE	Laboratory	SWS Bottoms (W-434)		SWS Bottoms (W-26)		Desalter Effluent (W-7)		Salt Feed	Salt Eff.	Wet Gas Scrubber Purge (D-350)		Desalter Outlet (D-104)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-809)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Skipper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401136 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.00	16.00	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401359
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401506
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5.00	<5.00	2.80	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.28	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.50	<4.50	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401812 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.10	3.20	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-	-	-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.56	0.26	0.24	0.26	-	-	-	-	-	-	1402320 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402518
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815 1402802
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	1403561 1403562 1403559 1403563

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SWIT Feed	SWIT Eff.	Wet Gas Scrubber Purge (Q-350)		Desalter Outlet (D-150)	Desalter Outlet (D-2100)	API Inlet		API Outlet	T-801		T-806		T-806 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-809)	T-809	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Skipper	Unit #34 MMC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403968 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403840
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404825
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404938
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.066	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405588
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983
5/27/2014	Hall Environmental	-	-	-	-	-	-	2.90	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406803
5/29/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406C46
6/2/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406658
6/5/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406947

DATE	Laboratory	SWS Bottoms (W-434)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-256)		Desalter Outlet (D-156)	Desalter Outlet (D-2108)	API Inlet		API Outlet	T-801		F-816		S.Bds Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Steam Tank (T-830)	T-822	Unit 845 Sour Water (W-2424)	Unit 66 Overhead Stripper	Unit 836 MDC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
6/9/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.082	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406376
6/12/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406526
6/16/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406694
6/19/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.089	-	-	-	-	-	-	1406834
6/23/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406A48
6/26/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406C44
7/1/2014	Hall Environmental	-	-	-	-	-	-	2.30	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407055
7/3/2014	Hall Environmental							2.20	0.12															0.02							1407222 1407224
7/7/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407272
7/10/2014	Hall Environmental	-	-	-	-	-	-	pH 6.0 pH 5.0 pH 4.0 pH 3.5	pH 3.2 2.10 0.21 0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407494
7/14/2014	Hall Environmental	-	-	-	-	-	-	3.20	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407602
7/17/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407867
7/21/2014	Hall Environmental	-	-	-	-	-	-	2.70	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1407986

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Crawford, Dan <Dan.Crawford@HollyFrontier.com>
Sent: Friday, July 25, 2014 1:03 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Subject: RE: WW Effluent to Injection Wells (Location #6) - Se Sample collected 7/22/14, received 7/23/14, analyzed 7/24/14
Attachments: Rpt_1407A42_Final_v1.pdf

Hello all,

I would like to clarify a dated listed in the first sentence (see email below), after the salutation, it should read "…collected on July 22, 2014" and not July 3, 2013.

Thanks,

Dan

From: Crawford, Dan [mailto:Dan.Crawford@HollyFrontier.com]
Sent: Friday, July 25, 2014 1:16 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Subject: WW Effluent to Injection Wells (Location #6) - Se Sample collected 7/22/14, received 7/23/14, analyzed 7/24/14

Good morning Scott and Carl,

Please find attached the sample result lab report for selenium analysis (EPA METHOD 6010B: TCLP METALS**)** collected on July 3, 2014.

TCLP Se – ND (the reporting detection limit is 0.10 mg/L)

The value is below the TCLP limit of 1.0 mg/L for Se.

Thanks,
Dan

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 24, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: WW Effluent to Wells OrderNo.: 1407A42

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/23/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1407A42**
Date Reported: **7/24/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WW Effluent to Wells
Lab ID: 1407A42-001 **Matrix:** AQUEOUS

Client Sample ID: Effluent to Wells (location #6)
Collection Date: 7/22/2014 1:55:00 PM
Received Date: 7/23/2014 8:55:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	ND	0.027	0.10		mg/L	1	7/24/2014 12:04:10 PM	14389

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1407A42**

24-Jul-14

Client: Navajo Refining Company

Project: WW Effluent to Wells

Sample ID	**MB-14389**	SampType: **MBLK**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **14389**			RunNo: **20108**					
Prep Date:	**7/23/2014**	Analysis Date: **7/24/2014**			SeqNo: **584680**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-14389**	SampType: **LCS**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **14389**			RunNo: **20108**					
Prep Date:	**7/23/2014**	Analysis Date: **7/24/2014**			SeqNo: **584681**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.10	0.5000	0	90.4	80	120			

Sample ID	**1407A42-001AMS**	SampType: **MS**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**Effluent to Wells (lo**	Batch ID: **14389**			RunNo: **20108**					
Prep Date:	**7/23/2014**	Analysis Date: **7/24/2014**			SeqNo: **584694**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.53	0.10	0.5000	0	105	75	125			

Sample ID	**1407A42-001AMSD**	SampType: **MSD**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**Effluent to Wells (lo**	Batch ID: **14389**			RunNo: **20108**					
Prep Date:	**7/23/2014**	Analysis Date: **7/24/2014**			SeqNo: **584695**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.10	0.5000	0	100	75	125	4.85	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1407A42 RcptNo: 1

Received by/date: LM 07/23/14

Logged By: **Celina Sessa** 7/23/2014 8:55:00 AM Celina Sessa

Completed By: **Celina Sessa** 7/23/2014 9:14:17 AM Celina Sessa

Reviewed By: CS 07/23/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☐ Standa ☑ Rush Next Day

Project Name: WW Effluent to Wells

Project #: P.O. # 167796

Project Manager: Mike Holder / Dan Crawford

Sampler: Aaron Strange

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1407A42	Analysis Request: TCLP Selenium 1311/6010
7/22/14	13:55	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-001	X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
7/22/14	16:15	Aaron Strange				TCLP 1311/6010 Rush!!!
Date:	Time:	Relinquished by:	Received by:	07/23/14	0855	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, July 21, 2014 12:17 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Crawford, Dan; Holder, Mike
Subject: RE: July 2014 Quarterly Selenium Sampling Results
Attachments: Rpt_1407271_v2.pdf

Scott/Carl – per below I did ask the lab to reissue their report. As shown, the RL for the TCLP sample is 0.10 and the result was non-detect. Speaking w/the lab, the below reporting limit detected value was 0.0263; just below the MDL. Please let me know if any questions. Thanks, Mike

---

From: Holder, Mike
Sent: Friday, July 18, 2014 7:32 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Crawford, Dan
Subject: July 2014 Quarterly Selenium Sampling Results

Scott & Carl,

Please find attached the results of the quarterly sampling for selenium collected on July 3, 2014.

TCLP Se – ND w/a reporting limit of 1.0 mg/L

Total Se – 0.020 mg/L w/a reporting limit 0.050 mg/L

Both values are below the TCLP limit of 1.0 mg/L for Se. I have also queried the laboratory for more information of the TCLP sample to determine what (or if detected) the below reporting limit value may have been. Based on their response I may ask them to reissue the data packet.

Thanks,
Mike

Mike Holder
Corporate Environmental Specialist – Water & Waste
HollyFrontier
2828 North Harwood, Suite 1300
Dallas, TX 75201
(214) 954-6536 (office)
(575) 308-1115 (cell)

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 14, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Monthly WW Effluent Monitoring OrderNo.: 1407271

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/7/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1407271**
Date Reported: **7/14/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (Location #6)
Project: Monthly WW Effluent Monitoring
Collection Date: 7/3/2014 4:00:00 PM
Lab ID: 1407271-001 **Matrix:** AQUEOUS **Received Date:** 7/7/2014 1:13:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	ND	0.027	0.10		mg/L	1	7/8/2014 12:10:00 PM	14096

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1407271**

21-Jul-14

Client: Navajo Refining Company

Project: Monthly WW Effluent Monitoring

Sample ID	**MB-14096**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**14096**	RunNo:	**19736**					
Prep Date:	**7/7/2014**	Analysis Date:	**7/8/2014**	SeqNo:	**577384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-14096**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**14096**	RunNo:	**19736**					
Prep Date:	**7/7/2014**	Analysis Date:	**7/8/2014**	SeqNo:	**577385**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	1.0	0.5000	0	96.1	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1407271 RcptNo: 1

Received by/date: 07/07/14

Logged By: Ashley Gallegos 7/7/2014 1:13:00 PM

Completed By: Ashley Gallegos 7/7/2014 1:17:14 PM

Reviewed By: 07/07/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standa ☐ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Monthly WW Effluent Monitoring
NM 88211-0159	Project #: P.O. # 167796
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder / Dan Crawford
☐ Standard ☐ Level 4 (Full Validation)	Sampler: David Boyer
☐ Other _____	On Ice: ☒ Yes ☐ No
☐ EDD (Type) _____	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1407271	Analysis Request: Total Se by EPA Method 6010B	Analysis Request: TCLP Selenium 1311/6010
7/3/14	16:00	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-001		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/7/14	07:15	Aaron Strange	D R Boyer	7/7/14	0715
7/7/14	0815	D R Boyer	Ashley Gallegos	07/07/13	1313

Remarks: Required to test on the first business day of each month.

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HOLLYFRONTIER

July 25, 2014

VIA ELECTRONIC AND EXPRESS MAIL

Bill Brancard (Bill.brancard@state.nm.us)
General Counsel
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

Re: Navajo Refining Company, L.L.C. "(Navajo") / Oil Conservation Commission and Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department (together, "OCD") / Amended and Supplemental Agreed Compliance Order (November 14, 2013), as Further Amended on April 22, 2014 (the "OCD Order")

Dear Mr. Brancard:

This letter is a follow-up to your telephone discussion with Denise McWatters on Friday afternoon, July 18, 2014, regarding certain provisions of the above OCD Order requiring sampling and notification when Navajo's Artesia refinery ceases injection of wastewater at its three underground injection control wells. Specifically, we understand that OCD has concerns regarding Navajo's compliance with Paragraphs 1(d), 6, 7, and 8 of Exhibit A to the OCD Order. We very much appreciate the opportunity to respond to your questions, and we look forward to further discussing this with you.

As explained below, it has been Navajo's understanding that these requirements are triggered only when Navajo ceases injection at the wells due to actual or likely exceedances of the selenium limit in the OCD Order (the "Se Limit"). In point of fact, and as shown in the attached Table 1, none of the instances where Navajo ceased injection was related to selenium exceedances. On the contrary, sampling data shows that Navajo has met the Se Limit for over eight consecutive months, and that selenium concentrations have declined to very low levels as a result of Navajo's selenium reduction measures. Thus, Navajo did not believe the cited provisions of the OCD Order were triggered by recent instances where it ceased injection at the wells for operational, testing, and maintenance reasons.

First, the OCD Order was negotiated and developed against the backdrop of Navajo's receipt of data indicating that selenium concentrations in wastewater injected at the wells exceeded the Se Limit. Navajo in fact ceased injection and later resumed injection only after receiving data indicating that selenium concentrations were once again below the Se Limit. See, for example, OCD Order at Section I (Findings and Determinations), Paragraph 8 (cessation and resumption

of discharge based on selenium data); Paragraph 11 (cessation of discharge based on selenium data).

Second, the very purpose of the OCD Order was to address – and prevent the recurrence of – Se Limit exceedances. Toward that end, the OCD Order imposes a regular sampling regimen for selenium concentrations in the injection fluid. It also requires Navajo to develop and implement short- and long-term remedies to reduce selenium concentrations in refinery wastewater. Notably, the Order itself terminates once selenium concentrations remain below the Se Limit for four consecutive quarters after Remediation Project Completion (as defined under the Order).[1]

Third, there would seem to be no basis for additional sampling for selenium in the injection fluid when the refinery ceases injection for operational or other reasons unrelated to selenium concentrations. If cessation occurs due to elevated selenium levels, then sampling before and after cessation of discharge would yield valuable information on the effectiveness of remedial measures or other work undertaken during the shutdown period. Absent these circumstances, however, additional selenium data and related reporting would be unrelated to the reasons for cessation and, more broadly, the purpose of the Order.

These points are borne out by the recent real-world occurrences summarized in Table 1. The instances of discharge cessation on December 11, 2013, February 26, 2014, March 12, 2014, and July 14, 2014[2] were due to equipment repair or replacement work. The events during May 16 - 18, 2014 and June 30 - July 2, 2014 were due to pressure fall-off and mechanical integrity testing required by OCD's permits.[3] None of these events was related in any way to elevated selenium concentrations.

To summarize, it has been Navajo's understanding that the OCD Order does not require additional sampling and reporting of selenium levels for ordinary-course cessation of injection at the wells of the type set forth in Table 1. Navajo thus believes that it has been in full compliance with those requirements. Going forward, however, it would be helpful to amend the Order to clarify that these requirements apply only to circumstances where cessation of discharge is related to elevated selenium concentrations, and not driven by well testing, maintenance, or repair activity.

On a related point, Navajo did miss its deadlines for sampling and reporting under the OCD Order in two recent instances. First, Navajo was unable to conduct quarterly sampling on the

---

[1] OCD Order at Section IV, Paragraph 1(a).

[2] In addition to the quarterly sampling conducted in early July, and although Navajo does not believe it is required, on July 22, 2014, Navajo sampled the discharge to the wells in light of OCD's recent inquiry. Sample results are included in Table 1.

[3] *See* OCD Discharge Permits UICI-008-1 (WDW-1), UICI-008-2 (WDW-2), and UICI-008-3 (WDW-3), at respective Conditions 3.D. and 3.E. Navajo also provided notice to OCD of this testing pursuant to requirements of the Discharge Permits.

first business day of the third quarter because, as explained in Navajo's July 1 notice to OCD, there was no injection at the wells on that day due to mechanical integrity and pressure fall off testing.[4] Quarterly sampling was not conducted until July 3, 2014, after the discharge to the wells resumed, a delay of two days. Going forward, Navajo will put into place procedures that ensure better coordination with personnel responsible for conducting these tests. Second, Navajo was one day late in submitting the results of its quarterly selenium sampling to OCD, which were received on July 14, 2014 and were required to be submitted by July 17, 2014.[5] They were instead submitted on July 18. Navajo is taking preventive steps to help ensure timely reporting of sample results. Based on these two minor violations, Navajo has calculated a stipulated penalty of $5,000.[6] If you agree with this calculation, Navajo will promptly forward a check to OCD in this amount.

In closing, Navajo looks forward to further discussing these issues with you. I understand that you are already planning to meet with Denise McWatters on unrelated matters on August 12, and Navajo would be pleased to include these issues in the agenda for that meeting. Please let us know.

Very truly yours,

Michael G. McKee
Vice President and Refinery Manager

Attachment

c: Denise C. McWatters, Esq.

[4] Exhibit A to the OCD Order, at Paragraph 1(c), requires samples to be taken on the first business day of each quarter, which in the case of the third quarter of 2014, was July 1.
[5] Exhibit A to the OCD Order, at Paragraph 4, requires that Navajo submit results of quarterly sampling within three business days after receipt.
[6] Per Order Section III, Paragraph (2)(b)(4), for failure to conduct timely sampling, $2,000 per day X 2 days = $4,000; per Order Section III, Paragraph (2)(b)(5), for failure to timely submit any report or notification, $1,000 per day X 1 day = $1,000.

TABLE 1 - RECENT NAVAJO CESSATION OF INJECTION AT WELLS

START DATE	START TIME	END DATE	END TIME	DURATION	NATURE OF CESSATION	SAMPLE DATE PRIOR TO CESSATION	SAMPLE RESULT TCLP Se (mg/L)[3]	SAMPLE DATE AFTER CESSATION	SAMPLE RESULT TCLP Se (mg/L)[3]
12/11/13	10:00 AM	12/11/13	02:25 PM	6 HRS 25 MIN	WORK ON WALNUT FILTER – VALVE REPLACEMENT	12/09/13	0.38	12/12/13	0.56
02/26/14	07:00 AM	02/26/14	02:00 PM	7 HRS 0 MIN	WORK ON WWTP – VALVE REPLACEMENTS	02/24/14	0.28	03/03/14	0.14
03/12/14	07:45 AM	03/12/14	10:30 PM	14 HRS 45 MIN	WORK ON WWTP – VALVE REPLACEMENT AND REPAIR OF DAF UNIT	03/10/14	0.05	03/13/14	0.08
05/16/14	08:15 PM	05/18/14	12:40 PM	38 HRS 25 MIN	WELL FALL OFF TEST	04/01/14[1]	0.08	07/03/14	< 0.10 (ND)
06/30/14	08:00 PM	07/02/14	10:45 AM	38 HRS 45 MIN	WELL FALL OF TEST	04/01/14[1]	0.08	07/03/14	< 0.10 (ND)
07/14/14	05:40 AM	07/14/14	06:10 AM	0 HRS 30 MIN	$FeCl_2$ PUMP SHUTDOWN AND REPLACEMENT	04/01/14[1]	0.08	7/22/14[2]	< 0.10 (ND)[2]

1 – Quarterly sampling regimen initiated 04/01/14

2 – Sample not required; taken in light of recent OCD inquiry

3 – Se Limit in OCD Order is 1.0 mg/L based on TCLP

ND – Non-Detect

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Tuesday, July 01, 2014 3:56 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Crawford, Dan
Subject: Monthly Interim Progress Report Submittal - June 2014
Attachments: OCD Order June 2014 Monthly Progress Report.pdf

Scott & Carl,

Please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between Navajo Refining Company (NRC) & OCD (Dated November 14, 2013). The original hardcopy is going out today via certified mail. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,
Mike

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HOLLYFRONTIER.

July 1, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7007 3020 0000 3028 8161

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
June 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the June 2014 monthly progress report, detailing the actions taken during the preceding calendar month of May 2014, and due on the first business day of the following month (i.e., July 1, 2014). This report also includes the final analytical results as of June 23, 2014, and the actions taken through approximately June 25, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9.
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9.
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9.
- The May 2014 progress report was submitted on June 2, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit or the modification of the existing, 100 gpm trial SeRT® unit. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.

- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through June 23 are summarized in Table 3 below and show an average total selenium removal efficiency of 93%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
5/27/2014	Hall Environmental	60	2.90	-	0.08	-	97%
5/29/2014	Hall Environmental	60	3.20	-	0.11	-	97%
6/2/2014	Hall Environmental	64	3.30	-	0.07	-	98%
6/5/2014	Hall Environmental	51	3.10	-	0.09	-	97%
6/9/2014	Hall Environmental	50	3.30	-	0.06	-	98%
6/12/2014	Hall Environmental	60	3.10	-	0.13	-	96%
6/16/2014	Hall Environmental	120	3.30	-	0.54	-	84%
6/19/2014	Hall Environmental	130	3.10	-	0.40	-	87%
6/23/2014	Hall Environmental	130	3.90	-	0.47	-	88%

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- Amendment to Exhibit A signed by Navajo and OCD.

May 13 to 18, 2014

- Navajo temporarily stopped injection while doing the Pressure Fall Off tests (PTFOs) and Mechanical Integrity Testing (MIT) for Well 1.

June 2, 2014

- Navajo submitted a minor permit modification requested by OCD for the installation of the SeRT & ICP units at the Artesia Refinery.

June 24, 2014

- OCD approved the modification request submitted on June 2nd.

June 30, 2014

- Navajo temporarily stopped injection while doing the PTFOs and MIT for Well 2. Injection is schedule to start again on July 2nd.[1]

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the ongoing trial of the 100 gpm SeRT® unit. Navajo has also developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. Specifically, depending on the results of the above SeRT® trial, Navajo may install a full capacity permanent SeRT® unit or

[1] Pressure Fall Off tests and Mechanical Integrity Testing are unrelated to selenium concentrations in the wastewater injected at the wells.

modify the existing 100 gpm trial SeRT® unit, with an estimated startup goal for this installation or modification in 2015. The exact date will be determined at a later time.

Under Amended Exhibit A, Navajo is to achieve compliance with the Se Limit by September 15, 2014 and to advise the OCD on the selected long-term option for wastewater selenium concentration control by September 30, 2014.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location (location shown in Attachment A) on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constitutes the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling is being conducted on a quarterly basis on the first business day of the quarter. The next scheduled sampling date is Tuesday, July 1, 2014[2]. As of the most recent sampling event, Navajo has achieved over 7 consecutive months of compliant sampling since the issuance date of the Order. Additional monitoring is also presented in Table 4. Since the April monthly progress report, no new laboratory reports have been obtained for the OCD quarterly sampling events required under Paragraph 1(c) of Exhibit A to the Order, because the next quarterly sampling event has not yet taken place. As a result, unlike most prior monthly progress reports, no laboratory report is provided in Attachment B.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the

[2] The July 1 scheduled sampling date falls during the period when Navajo has temporarily stopped injection at the wells due to Pressure Fall Off tests and Mechanical Integrity Testing for Well 2. Navajo requested an extension for the quarterly sample date.

internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.

5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.
[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment C. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment D, and all of the total selenium measurements for all refinery sample locations are provided in Attachment E. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, April, and May through June 23, 2014.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the June 23, 2014 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
OCD-approved Sample Location

T-805 FLOCCULATOR
12' DIAMETER X 9' HEIGHT
7,000 GALLONS

T-896 DISSOLVED AIR FLOATATION UNIT

P-862/P-863
DAF RECYCLE PUMP

P-860/P-861
DAF SOLIDS/FLOAT PUMP

D-831 DAF RECYCLE PRESSURE TANK

T-806 FUTURE DISSOLVED AIR FLOATATION UNIT (CONVERT FROM T-806)

P-806x3/P-806x4
FUTURE DAF RECYCLE PUMP

P-806x1/P-806x2
FUTURE DAF SOLIDS/FLOAT PUMP

D-806/807
ACTIVATED CARBON BEDS

D-806x5 FUTURE DAF RECYCLE PRESSURE TANK

D-810/811
WALNUT HULL FILTERS

T-897 DAF SURGE TANK
8' X 8' X 5'
1,900 GALLONS

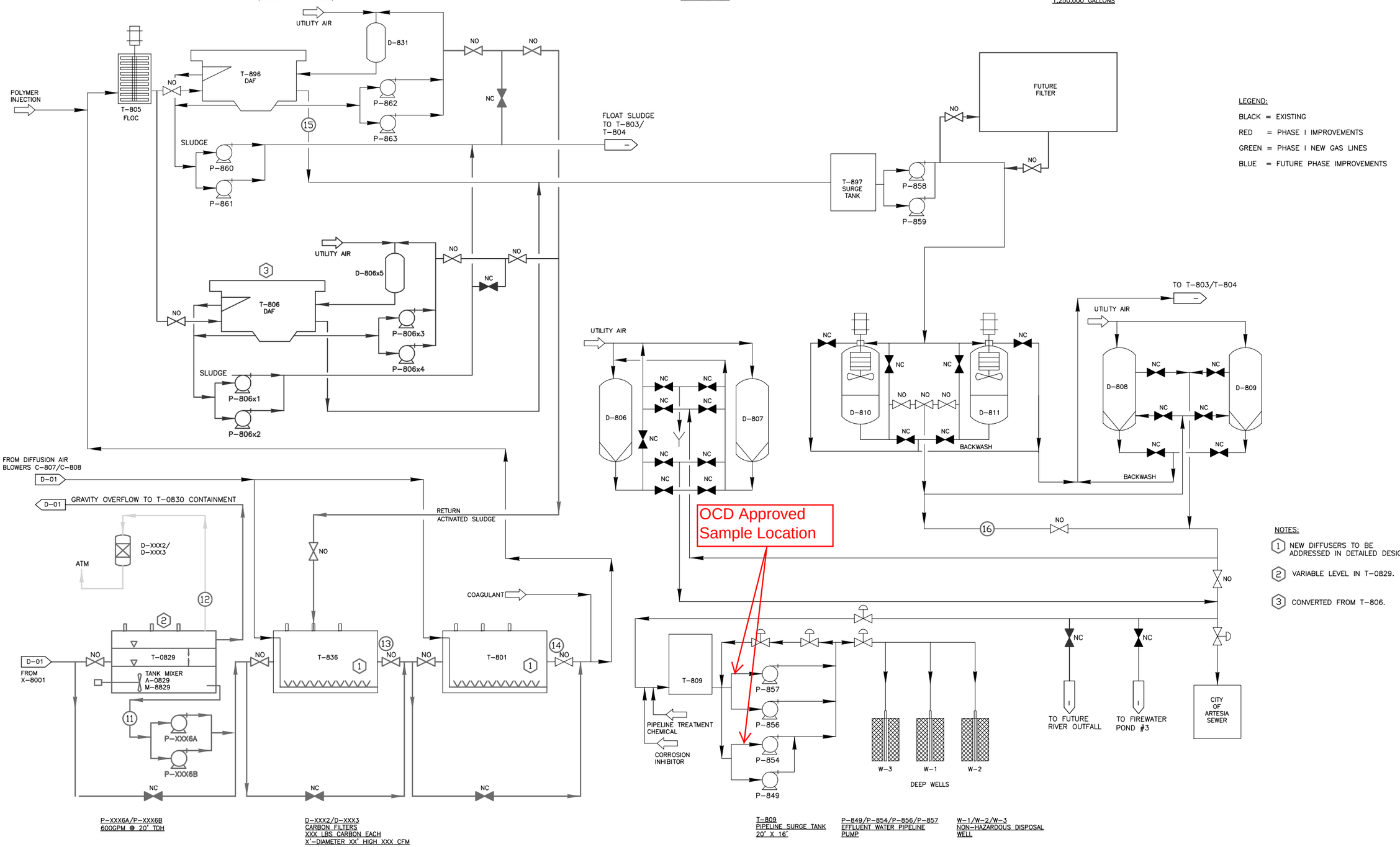
D-808/809
MECHANICAL FILTERS

P-858/P-859
DAF RECYCLE PUMP

T-0829 EQUALIZATION TANK
82.5' DIAMETER X 32' HEIGHT
1,250,000 GALLONS

T-801 EQUALIZATION TANK
110' DIAMETER X 32' HEIGHT
2,310,000 GALLONS

T-836 EQUALIZATION TANK
82.5' DIAMETER X 32' HEIGHT
1,250,000 GALLONS



LEGEND:

BLACK = EXISTING

RED = PHASE I IMPROVEMENTS

GREEN = PHASE I NEW GAS LINES

BLUE = FUTURE PHASE IMPROVEMENTS

NOTES:

1. NEW DIFFUSERS TO BE ADDRESSED IN DETAILED DESIGN.
2. VARIABLE LEVEL IN T-0829.
3. CONVERTED FROM T-806.

P-XXX6A/P-XXX6B
600GPM @ 20' TDH

D-XXX2/D-XXX3
CARBON FILTERS
XXX LBS CARBON EACH
X'-DIAMETER XX' HIGH XXX CFM

T-809
PIPELINE SURGE TANK
20' X 16'

P-849/P-854/P-856/P-857
EFFLUENT WATER PIPELINE PUMP

W-1/W-2/W-3
NON-HAZARDOUS DISPOSAL WELL

REV. NO.	DATE	DRWN	CHKD	REMARKS
5	01/12	DH	JDC	ISSUED FOR PHA REVIEW
4	12/9	RM	JDC	CHANGED PER 12/07/10 REVIEW MEETING
3	12/6	RM	JDC	CHANGED PER 11/30/10 REVIEW MEETING
2	11/3			CHANGED DURING CLIENT REVIEW MEETING
1	10/26			CHANGED PER CLIENT 10/26/10

DESIGNED BY: J. CAMANN
DRAWN BY: R. MOORE
SHEET CHK'D BY: K. GREENFELDER
CROSS CHK'D BY: M. CARBALLA
APPROVED BY: X
DATE: DECEMBER 2010

CDM
Camp Dresser & McKee
3050 Post Oak Boulevard, Suite 300
Houston, Texas 77056
Tel: (713) 423-7300 Fax: (713) 840-0173
TBPE Firm Registration No. F-3043
consulting • engineering • construction • operations

NAVAJO REFINERY
ARTESIA, NEW MEXICO
PHASE I WWTP

PROCESS FLOW DIAGRAM
PHASE I - WASTEWATER TREATMENT PLANT IMPROVEMENTS - SHEET 2
EQUALIZATION TANK TO DISCHARGE

PROJECT NO. 90538-79019
FILE NAME: G001PFD
SHEET NO.
D-02

DWG: S:\90538\79019\00-EXHIBITS\DPH G001PFD-ALT.dwg USER: moorere
DATE: Jan 13, 2011 8:35am XREFS:CDM_2234 79019-2234BDR

Attachment B:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order
– No New Report

Attachment C:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment C Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3]Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4]Required sampling from this point forward will be conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment D:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through June 23, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.60	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.30	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.50	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment E:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment E Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through June 23, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.90	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.00	16.00	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5.00	<5.00	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.50	<4.50	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.10	3.20	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	1403561 1403562 1403559 1403563

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404B38
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405688
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983
5/27/2014	Hall Environmental	-	-	-	-	-	-	2.90	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405B03
5/29/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405C46
6/2/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406018
6/5/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406247

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
6/9/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406376
6/12/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406576
6/16/2014	Hall Environmental	-	-	-	-	-	-	3.30	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406694
6/19/2014	Hall Environmental	-	-	-	-	-	-	3.10	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406934
6/23/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1406A48

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, June 02, 2014 11:03 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Crawford, Dan
Subject: Monthly Interim Progress Report Submittal - May 2014
Attachments: OCD Order May 2014 Monthly Progress Report.pdf

Scott & Carl,

Please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between Navajo Refining Company (NRC) & OCD (Dated November 14, 2013). The original hardcopy is going out today via certified mail. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

June 2, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7007 3020 0000 3028 8086

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
May 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the May 2014 monthly progress report, detailing the actions taken during the preceding calendar month of April 2014, and due on the first business day of the following month (i.e., June 2, 2014). This report also includes the final analytical results as of May 22, 2014, and the actions taken through approximately May 27, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order,

including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9.
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9.
- The April 2014 progress report was submitted on May 1, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit or the modification of the existing, 100 gpm trial SeRT® unit. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.

- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through May 22 are summarized in Table 3 below and show an average total selenium removal efficiency of 93%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	130	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	108	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	125	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	105	3.00	-	0.13	-	96%
4/24/2014	Hall Environmental	115	3.50	-	0.25	-	93%
4/28/2014	Hall Environmental	110	3.40	-	0.13	-	96%
5/1/2014	Hall Environmental	70	3.60	-	0.09	-	98%
5/5/2014	Hall Environmental	55	3.40	-	0.05	-	99%
5/8/2014	Hall Environmental	50	3.20	-	0.06	-	98%
5/12/2014	Hall Environmental	50	3.40	-	0.07	-	98%
5/15/2014	Hall Environmental	50	3.60	-	0.07	-	98%
5/19/2014	Hall Environmental	50	3.40	-	0.10	-	97%
5/22/2014	Hall Environmental	95	2.80	-	0.15	-	95%

April 1, 2014

- Required sampling from this point forward reduced to a quarterly basis per Condition 1(c) of Exhibit A to the Order.

April 22, 2014

- Exhibit A Amendment was signed by Navajo and OCD on April 22, 2014.

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the ongoing trial of the 100 gpm SeRT® unit. Navajo has also developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. Specifically, depending on the results of the above SeRT® trial, Navajo may install a full capacity permanent SeRT® unit or modify the existing 100 gpm trial SeRT® unit, with an estimated startup goal for this installation or modification of January 31, 2015.

Under Amended Exhibit A, Navajo is to achieve compliance with the Se Limit by September 15, 2014 and to advise the OCD on the selected long-term option for wastewater selenium concentration control by September 30, 2014.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constitutes the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling will now be conducted on a quarterly basis on the first business day of the quarter. The next scheduled sampling date is Tuesday, July 1, 2014. As of the most recent sampling event, Navajo has achieved over 6 consecutive months of compliant sampling since the issuance date of the Order. Additional monitoring is also presented in Table 4. Since the April monthly progress report, no new laboratory reports have been obtained for the OCD quarterly sampling events required under Paragraph 1(c) of Exhibit A to the Order, because the next quarterly sampling event is not due until July 1. As a result, unlike prior monthly progress reports, no laboratory report is provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	**T-801 Effluent to Wells**	**Hall Environmental**	**EPA6010B**	**0.08**	**0.08**

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.
[4]Required sampling conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order – accentuated as requested by Carl Chavez on April 30, 2014.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, March, and April through May 22, 2014.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the May 22, 2014 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order
– No New Report

Attachment B:

Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3]Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4]Required sampling from this point forward will be conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through May 22, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.6	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.3	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through May 22, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.9	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.0	16.0	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5	<5	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.5	<4.5	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.1	3.2	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	1403331 1403332 1403333

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884
4/24/2014	Hall Environmental	-	-	-	-	-	-	3.50	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404A30
4/28/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404B38
5/1/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405036
5/5/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405142
5/8/2014	Hall Environmental	-	-	-	-	-	-	3.20	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405348
5/12/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405453
5/15/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405688
5/19/2014	Hall Environmental	-	-	-	-	-	-	3.40	0.095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405784
5/22/2014	Hall Environmental	-	-	-	-	-	-	2.80	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1405983

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, May 28, 2014 8:13 AM
To: Brancard, Bill, EMNRD
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; Griswold, Jim, EMNRD; Dade, Randy, EMNRD
Subject: FW: Navajo Refining Company L.L.C. Administrative Compliance Order (ACOW6) Disposal Wells WDWs 1, 2 & 3 UIC Class I(NH) Disposal Wells Quarterly Report Selenium Monitoring

Bill, et al.:

FYI: Waste water effluent routed to the above subject disposal wells was sampled on March 20, 2014 around 9:00 a.m. The sample results for the compliance parameter Selenium are:

Analyzed on 3/21/14 @ 10:39: [Selenium- TCLP vs. Total] ND 0.01 mg/L vs. 0.13 mg/L

A review of lab QA/QC supports the environmental lab instrumentation analytical data results provided above.

OCD should continue to receive quarterly results for Selenium by receipt of the Quarterly Reports. Please contact me if you have questions.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
O: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Web: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental



From: Chavez, Carl J, EMNRD
Sent: Wednesday, May 28, 2014 7:14 AM
To: McKee, Michael (Michael.McKee@hollyfrontier.com)
Subject: Navajo Refining Company L.L.C. Disposal Wells WDWs 1, 2 & 3 Quarterly Report & 2013 Annual Reports

Mike:

Received. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
O: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Web: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental



May 1, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7006 0100 0003 6610 0200

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
April 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the April 2014 monthly progress report, detailing the actions taken during the preceding calendar month of March 2014, and due on the first business day of the following month (i.e., May 1, 2014). This report also includes the final analytical results as of April 21, 2014, and the actions taken through approximately April 24, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9.
- The March 2014 progress report was submitted on April 1, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit or the modification of the existing, 100 gpm trial SeRT® unit. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation of 100 gpm trial SeRT unit.

March 31, 2014

- Confirmed that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through April 21 are summarized in Table 3 below and show an average total selenium removal efficiency of 92%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%
3/24/2014	Hall Environmental	100	4.70	5.40	0.22	0.28	95%
3/27/2014	Hall Environmental	94	3.90	-	0.12	-	97%
3/31/2014	Hall Environmental	112	4.40	-	0.15	-	97%
4/1/2014	Hall Environmental	-	-	-	-	-	-
4/3/2014	Hall Environmental	125	3.60	-	0.12	-	97%
4/7/2014	Hall Environmental	110	4.70	-	0.13	-	97%
4/10/2014	Hall Environmental	-	4.10	-	0.14	-	97%
4/14/2014	Hall Environmental	-	3.90	-	0.16	-	96%
4/17/2014	Hall Environmental	-	4.00	-	0.14	-	97%
4/21/2014	Hall Environmental	-	3.00	-	0.13	-	96%

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the ongoing trial of the 100 gpm SeRT® unit. Navajo has also developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. Specifically, depending on the results of the above SeRT® trial, Navajo may install a full capacity permanent SeRT® unit or modify the existing 100 gpm trial SeRT® unit, with an estimated startup goal for this installation or modification of January 31, 2015.

Navajo submitted an Order amendment that includes a schedule of milestones and deadlines for purposes of amending Exhibit A to the Order, as set forth in Paragraph 14 of that Exhibit. The Exhibit A Amendment was signed by both parties on April 22, 2014. Under Amended Exhibit A, Navajo is to achieve compliance with the Se Limit by September 15, 2014 and to advise the OCD on the selected long-term option for wastewater selenium concentration control by September 30, 2014.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order up to April 1, 2014. The April 1 sampling event constitutes the fourth consecutive monthly sample below the 1.0 mg/L limit and, therefore, pursuant to Condition 1(c) of Exhibit A to the Order, sampling will now be conducted on a quarterly basis on the first business day of the quarter. The next scheduled sampling date is Tuesday, July 1, 2014. The data provided in Table 4 is for all sample results that were final at the time of this report (i.e., samples collected through April 21, 2014). As of the sample collected on April 21, 2014, Navajo has achieved 5 consecutive months of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 4. The laboratory reports for samples collected in December through April 21, 2014, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is

then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.

6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.15	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall Environmental	EPA6010B	0.08	0.08

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2]For split samples.

[3]Digestion procedure and sample processing altered as described above.

[4]Required sampling from this point forward will be conducted on a quarterly basis per Condition 1(c) of Exhibit A to the Order.

b) *A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).*

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, February, and March through April 21, 2014.

c) *The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.*

As of the April 21, 2014 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to Paragraph 1 of Exhibit A to the Order

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-001 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/4/2013 6:54:13 PM	10631
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.051	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Barium	0.032	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Cadmium	ND	0.0020		mg/L	1	12/3/2013 3:05:00 PM	10606
Chromium	ND	0.0060		mg/L	1	12/3/2013 3:05:00 PM	10606
Lead	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606
Selenium	0.77	0.050		mg/L	1	12/3/2013 3:05:00 PM	10606
Silver	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10631**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439377**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10631**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439378**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**PBW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438128** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10606**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**LCSW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.50	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-002
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY, TCLP						Analyst: **JML**
Mercury	ND	0.020		mg/L	1	12/4/2013 7:36:06 PM
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**
Arsenic	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Barium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Cadmium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Chromium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Lead	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Selenium	0.88	0.10		mg/L	1	12/4/2013 11:20:03 AM
Silver	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10632**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10632**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439385**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

Sample ID	**1312047-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439387**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.7	75	125			

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439388**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10620**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439004** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10620**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	105	80	120			
Barium	ND	100	0.5000	0	94.2	80	120			
Cadmium	ND	1.0	0.5000	0	104	80	120			
Chromium	ND	5.0	0.5000	0	95.6	80	120			
Lead	ND	5.0	0.5000	0	95.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	108	80	120			

Sample ID **1312047-002AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.10	0.5000	0.04824	101	75	125			
Barium	0.52	0.10	0.5000	0.07379	89.8	75	125			
Cadmium	0.50	0.10	0.5000	0	100	75	125			
Chromium	0.45	0.10	0.5000	0	90.8	75	125			
Lead	0.45	0.10	0.5000	0	90.1	75	125			
Silver	0.10	0.10	0.1000	0	103	75	125			

Sample ID **1312047-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04824	95.1	75	125	5.40	20	
Barium	0.50	0.10	0.5000	0.07379	84.8	75	125	4.83	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10620**	RunNo:	**15224**
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.10	0.5000	0	95.2	75	125	5.31	20	
Chromium	0.43	0.10	0.5000	0	86.1	75	125	5.28	20	
Lead	0.43	0.10	0.5000	0	85.3	75	125	5.47	20	
Silver	ND	0.10	0.1000	0	98.1	75	125	200	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312046

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312046**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-001
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.37	0.050		mg/L	1	12/3/2013 2:11:58 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-002 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.48	0.10		mg/L	1	12/4/2013 10:54:34 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-003 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	7.5	1.0		mg/L	20	12/3/2013 2:25:28 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-004 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	9.4	1.0		mg/L	10	12/4/2013 11:27:09 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-005 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 2:36:48 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-006 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.9	0.50		mg/L	5	12/4/2013 11:29:30 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-007 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.82	0.25		mg/L	5	12/3/2013 2:53:49 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-008 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.76	0.10		mg/L	1	12/4/2013 11:01:39 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-009
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.63	0.050		mg/L	1	12/3/2013 2:56:31 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-010 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.83	0.10		mg/L	1	12/4/2013 11:04:02 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-011
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 3:02:04 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-012
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.8	0.50		mg/L	5	12/4/2013 11:31:53 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10620**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439004**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10620**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439005**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**PBW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438128**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10606**	SampType: **LCS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**LCSW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438129**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0	101	80	120			

Sample ID	**1312046-005AMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438177**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.6	0.25	0.5000	3.188	90.1	75	125			

Sample ID	**1312046-005AMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438178**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.7	0.25	0.5000	3.188	94.2	75	125	0.565	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312046 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:42:42 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required)	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)? (Not required)	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

Added 2mL HNO_3 to 003A for acceptable pH. 12/02/13

of preserved bottles checked for pH: 6 (<2 or >12 unless noted)

Adjusted? yes

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Change~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312045	Total Selenium 2008 6010	TCLP Selenium 1311/6010
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	HNO3	-001	X	
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	NEAT	-002		X
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	HNO3	-003	X	
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	NEAT	-004		X
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	HNO3	-005	X	
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	NEAT	-006		X
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	HNO3	-007	X	
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	NEAT	-008		X
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	HNO3	-009	X	
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	NEAT	-010		X
12/2/13	6:30	Liquid	W-20	Plastic-1	HNO3	-011	X	
12/2/13	6:30	Liquid	W-20	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	Anthony Widman			
				12/02/13	1443

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312316

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312316**
Date: **12/11/2013**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

All samples, excluding Hg, digested using EPA Method 3010.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-001
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/10/2013 4:25:22 PM	10723
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.031	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Barium	0.022	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Cadmium	ND	0.0020		mg/L	1	12/11/2013 10:15:00 AM	10734
Chromium	ND	0.0060		mg/L	1	12/11/2013 10:15:00 AM	10734
Lead	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734
Selenium	0.37	0.050		mg/L	1	12/11/2013 10:15:00 AM	10734
Silver	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/10/2013 4:59:51 PM	10731
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Barium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Cadmium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Chromium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Lead	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Selenium	0.38	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Silver	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10723**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443477**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10723**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443478**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.8	80	120			

Sample ID	**1312297-001GMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443481**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	75	125			

Sample ID	**1312297-001GMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443482**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.3	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10731**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443489**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10731**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443490**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Sample ID	**1312287-001AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	75	125			

Sample ID	**1312287-001AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.5	80	120			
Barium	ND	100	0.5000	0	87.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.6	80	120			
Chromium	ND	5.0	0.5000	0	88.8	80	120			
Lead	ND	5.0	0.5000	0	88.1	80	120			
Selenium	ND	1.0	0.5000	0	88.2	80	120			
Silver	ND	5.0	0.1000	0	97.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.5	80	120			
Barium	0.44	0.020	0.5000	0	87.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.6	80	120			
Chromium	0.44	0.0060	0.5000	0	88.8	80	120			
Lead	0.44	0.0050	0.5000	0	88.1	80	120			
Selenium	0.44	0.050	0.5000	0	88.2	80	120			
Silver	0.098	0.0050	0.1000	0	97.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: **1312316** RcptNo: 1

Received by/date: MG 12/09/13

Logged By: **Michelle Garcia** 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/9/2013 2:30:49 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ✔	
9. Was preservative added to bottles?	Yes ✔	No ☐	NA ☐
	Added 1 mL HNO3 to 001A for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? YES
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 6°

HEAL No. 1312316

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	Total Selenium 200.8	TCLP Selenium 1311/6010	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	HNO3			X	
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	Neat				X

Date	Time	Relinquished by	Received by	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312315

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312315**
Date Reported: **12/11/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312315-001 **Matrix:** AQUEOUS

Client Sample ID: D-250 Flu Gas Scrubber
Collection Date: 12/9/2013 6:00:00 AM
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.9	1.0		mg/L	20	12/11/2013 10:45:44 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	7.4	1.0		mg/L	20	12/11/2013 10:48:06 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-003
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.5	0.25		mg/L	5	12/11/2013 10:50:27 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-004
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/11/2013 10:52:48 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-005 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 10:59:18 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-006
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 11:01:40 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-007
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:04:03 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-008
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:06:25 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-009
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:11:11 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-010
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:13:35 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-011
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.38	0.050		mg/L	1	12/11/2013 10:10:17 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-012
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.28	0.050		mg/L	1	12/11/2013 10:12:38 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312315 RcptNo: 1

Received by/date: MG 12/09/13

Logged By: Michelle Garcia 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/9/2013 2:31:56 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑ not required	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ Not required	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ☑	
9. Was preservative added to bottles?	Yes ☑	No	NA
10. VOA vials have zero headspace?	Yes ☐	No ☐	See Remarks No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No	Adjusted? Yes
14. Is it clear what analyses were requested?	Yes ☑	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standard ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312315	Total Selenium 6010	TCLP Selenium 1311/6010
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	HNO3	-001	X	
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	Neat	-002		X
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	HNO3	-003	X	
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	Neat	-004		X
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	HNO3	-005	X	
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	Neat	-006		X
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	HNO3	-007	X	
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	Neat	-008		X
12/9/13	6:00	Liquid	W-634	Plastic-1	HNO3	-009	X	
12/9/13	6:00	Liquid	W-634	Plastic-1	Neat	-010		X
12-9-13	0600	Liquid	T-830	Plastic-1	HNO3	-011	X	
12-9-13	0600	Liquid	T-830	Plastic-1	Neat	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 20, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312687

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312687**
Date Reported: **12/20/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **IDC**	
Mercury	ND	0.00020		mg/L	1	12/20/2013 1:52:17 PM	10902
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.042	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Barium	0.024	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Cadmium	ND	0.0020		mg/L	1	12/18/2013 3:08:18 PM	10852
Chromium	ND	0.0060		mg/L	1	12/18/2013 3:08:18 PM	10852
Lead	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852
Selenium	0.43	0.050		mg/L	1	12/18/2013 3:08:18 PM	10852
Silver	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **IDC**	
Mercury	ND	0.020		mg/L	1	12/20/2013 1:11:22 PM	10901
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Barium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Cadmium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Chromium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Lead	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Selenium	0.35	0.050		mg/L	1	12/18/2013 3:10:42 PM	10852
Silver	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10902**	SampType:	**mblk**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451283**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10902**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451284**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10901**	SampType:	**mblk**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451196**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10901**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451197**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448892**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10852**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	94.9	80	120			
Barium	ND	100	0.5000	0	92.0	80	120			
Cadmium	ND	1.0	0.5000	0	95.7	80	120			
Chromium	ND	5.0	0.5000	0	92.9	80	120			
Lead	ND	5.0	0.5000	0	90.4	80	120			
Selenium	ND	1.0	0.5000	0	91.3	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312687 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 4:03:17 PM Michelle Garcia

Reviewed By: MNS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: \
(<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312487	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	HNO3	001	X	
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
12/16/13	10:30	Anthony Widman		12/16/13	1500	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date	Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 19, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312686

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312686**
Date Reported: **12/19/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.4	5.0		mg/L	100	12/18/2013 1:14:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	11	1.0		mg/L	20	12/18/2013 1:24:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-003 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 1:29:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-004 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.4	0.25		mg/L	5	12/18/2013 1:43:46 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-005
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.37	0.050		mg/L	1	12/18/2013 1:46:09 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-006
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.23	0.050		mg/L	1	12/18/2013 1:48:30 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-007
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.5	0.25		mg/L	5	12/18/2013 1:53:22 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-008 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/18/2013 2:22:57 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-009
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.8	0.25		mg/L	5	12/18/2013 2:27:43 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-010 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/18/2013 2:32:14 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-011 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 3:01:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-012
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.6	0.25		mg/L	5	12/18/2013 3:05:54 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312686**

19-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448892**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0								

Sample ID	**LCS-10852**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448893**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0	0.5000	0	91.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312686 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 3:58:04 PM Michelle Garcia

Reviewed By: KMS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☑ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required) Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? (Not required) Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☐ No ☑
9. Was preservative added to bottles? Yes ☑ No ☐ NA ☐

FOR METALS ANALYSIS: ADDED 1mL HNO3 TO 001A, 2mL HNO3 TO 007A, AND 2 mL HNO3 TO 009A FOR ACCEPTABLE pH

10. VOA vials have zero headspace? See Remarks Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? ~~_____~~ NO
Checked by: _____

12/16

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks: JA 12/16/13

~~Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.~~

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: ~~Kara Germaine~~ Kelvin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 4.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312686	Total Selenium 6010/6020	TCLP Selenium 1311/6010
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	HNO3	001	X	
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	NEAT	002		X
12/16/13	6:10	Liquid	W-20	Plastic-1	HNO3	003	X	
12/16/13	6:10	Liquid	W20	Plastic-1	NEAT	004		X
12/16/13	7:20	Liquid	Tank 830	Plastic-1	HNO3	005	X	
12/16/13	7:20	Liquid	Tank 830	Plastic-1	NEAT	006		X
12/16/13	5:55	Liquid	D2101 outlet	Plastic-1	HNO3	007	X	
12/16/13	5:55	Liquid	D2101 Outlet	Plastic-1	NEAT	008		X
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	HNO3	009	X	
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	NEAT	010		X
12/16/13	6:25	Liquid	W-634	Plastic-1	HNO3	011	X	
12/16/13	6:25	Liquid	W-634	Plastic-1	NEAT	012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/16/13	10:00	Anthony Widman		12/16/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B14

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B14**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-001
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/27/2013 1:46:49 PM	11002
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.040	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Barium	0.042	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Cadmium	ND	0.0020		mg/L	1	12/30/2013 3:55:17 PM	11005
Chromium	0.0070	0.0060		mg/L	1	12/30/2013 3:55:17 PM	11005
Lead	ND	0.0050		mg/L	1	12/27/2013 10:13:49 AM	11005
Selenium	0.27	0.050		mg/L	1	12/27/2013 10:13:49 AM	11005
Silver	ND	0.0050		mg/L	1	12/30/2013 3:55:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/27/2013 3:02:36 PM	11004
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Barium	0.12	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Cadmium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Chromium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Lead	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Selenium	0.27	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Silver	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11002**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455051**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11002**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455052**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11004**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455102**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11004**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455103**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.4	80	120			
Barium	ND	100	0.5000	0	92.9	80	120			
Cadmium	ND	1.0	0.5000	0	98.7	80	120			
Chromium	ND	5.0	0.5000	0	93.2	80	120			
Lead	ND	5.0	0.5000	0	93.1	80	120			
Selenium	ND	1.0	0.5000	0	94.4	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	93.4	80	120			
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.7	80	120			
Chromium	0.47	0.0060	0.5000	0	93.2	80	120			
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B14 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:44:48 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312814	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	HNO3	-001	X	
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	12:00	Anthony Widman		12/23/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B16

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 14 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B16**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-001 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.6	0.25		mg/L	5	12/30/2013 3:57:41 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	4.8	0.50		mg/L	5	12/30/2013 4:00:05 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-003
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	14	10		mg/L	200	12/30/2013 4:12:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-004 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	17	2.0		mg/L	20	12/30/2013 4:14:33 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-005 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.4	0.25		mg/L	5	12/30/2013 4:16:56 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-006 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.0	0.50		mg/L	5	12/30/2013 4:19:20 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-007
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	0.41	0.050		mg/L	1	12/30/2013 4:21:46 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-008
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.32	0.10		mg/L	1	12/30/2013 4:24:09 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-009 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.1	1.0		mg/L	20	12/30/2013 4:26:34 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-010 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.10	0.10		mg/L	1	12/30/2013 4:29:01 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-011 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	2.1	0.25		mg/L	5	12/30/2013 4:36:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-012
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.3	0.50		mg/L	5	12/30/2013 4:38:32 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-013 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.8	0.25		mg/L	5	12/30/2013 4:40:55 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-014 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	5.0	1.0		mg/L	10	12/30/2013 4:43:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455301**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455302**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	94.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456705**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456706**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	94.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B16 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:50:54 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑ SEE REMARKS	NA ☐ 12/23/13
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 4 (<2 or >12 unless noted)

Adjusted? 16

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: FOR METALS ANALYSIS: ADDED 4mL HNO_3 TO -003A & -005A AND 2mL TO -007A & -011A FOR ACCEPTABLE pH 12/23/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312316	Total Selenium 6010	TCLP Selenium 1311/6010
12/23/13	6:00	Liquid	WW20	plastic 1	HNO3	-001	X	
12/23/13	6:00	Liquid	WW20	plastic 1	NEAT	-002		X
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	HNO3	-003	X	
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	NEAT	-004		X
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	HNO3	-005	X	
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	NEAT	-006		X
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	HNO3	-007	X	
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	NEAT	-008		X
12/23/13	6:28	Liquid	836 Discharge	plastic 1	HNO3	-009	X	
12/23/13	6:28	Liquid	836 Discharge	plastic 1	NEAT	-010		X
12/23/13	6:40	Liquid	D2101 - Desalter	plastic 1	HNO3	-011	X	
12/23/13	6:40	Liquid	D2101 Desalter	plastic 1	NEAT	-012		X

Date: 12/23/13	Time: 10:00	Relinquished by: Anthony Widmer	Received by:	Date: 12/23/13	Time: 1500
Date:	Time:	Relinquished by:	Received by:	Date:	Time:

Remarks: Expedited turn-around and results sent to Mike Holder

Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312R16	Total Selenium 2 (6010)	TCLP Selenium 1311/6010
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	HNO3	-05	X	
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	NEAT	-06		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	10:00	Anthony Widman			
Date:	Time:	Relinquished by:	Received by:	12/23/13	1500

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 10, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C58

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312C58**
Date Reported: **1/10/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/1/2014 12:58:17 PM	11042
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.045	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Barium	0.032	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Cadmium	ND	0.0020		mg/L	1	1/2/2014 10:53:15 AM	11044
Chromium	ND	0.0060		mg/L	1	1/2/2014 10:53:15 AM	11044
Lead	ND	0.0050		mg/L	1	1/2/2014 10:53:15 AM	11044
Selenium	0.33	0.050		mg/L	1	1/2/2014 10:53:15 AM	11044
Silver	ND	0.0050	B	mg/L	1	1/2/2014 10:53:15 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/1/2014 1:41:46 PM	11043
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Barium	0.16	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Cadmium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Chromium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Lead	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Selenium	0.33	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Silver	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11042**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457324**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11042**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457325**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1312C58-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457327**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.7	75	125			

Sample ID	**1312C58-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457328**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.2	75	125	1.68	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11043**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457333**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11043**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457334**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Sample ID	**1312C58-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457336**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.9	75	125			

Sample ID	**1312C58-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457337**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.5	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457226** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457227** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.1	80	120			
Barium	0.47	0.10	0.5000	0	94.8	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.48	0.10	0.5000	0	95.5	80	120			
Lead	0.48	0.10	0.5000	0	95.8	80	120			
Selenium	0.49	0.10	0.5000	0	97.5	80	120			
Silver	0.12	0.10	0.1000	0	116	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	0.027	0.0050								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.1	80	120			
Barium	0.47	0.020	0.5000	0	94.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.48	0.0060	0.5000	0	95.5	80	120			
Lead	0.48	0.0050	0.5000	0	95.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.12	0.0050	0.1000	0	116	80	120			B

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C58 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 3:03:51 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: ____ (<2 or >12 unless noted)

Adjusted? ____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project Name: Wastewater Effluent Monitoring
Phone #: 575-748-3311	Project #:
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kelsey Newton / Byron Tommy
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312C58	Total Selenium 200.8	TCLP Selenium 1311/6010	① Total RCRA 8 metals	② TCLP RCRA 8 metals
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	HNO3	-001			X	
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	NEAT	-002				X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman			
				12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010 [redacted] AW
② TCLP Method 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C57

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312C57**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regrading total selenium for samples "D-250 Flu Gas Scrubber" and "Tank 836". The internal standard was elevated for these samples.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.43	0.022	0.050		mg/L	1	1/2/2014 8:55:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.34	0.031	0.10		mg/L	1	1/2/2014 9:10:18 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-003
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.9	0.22	0.50		mg/L	10	1/2/2014 11:41:40 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-004
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	1/2/2014 11:44:02 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-005 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	7.3	4.5	10	J	mg/L	200	1/2/2014 11:08:34 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-006 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	15	0.62	2.0		mg/L	20	1/2/2014 11:10:57 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-007
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	2.3	0.11	0.25		mg/L	5	1/2/2014 11:13:19 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-008 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	2.6	0.15	0.50		mg/L	5	1/2/2014 11:15:41 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-009
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.97	0.022	0.050		mg/L	1	1/2/2014 9:27:14 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-010 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	1.8	0.15	0.50		mg/L	5	1/2/2014 11:18:04 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-011
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.9	0.11	0.25		mg/L	5	1/2/2014 11:20:25 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-012 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.9	0.15	0.50		mg/L	5	1/2/2014 11:25:03 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-013
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.6	1.1	2.5	J	mg/L	50	1/2/2014 11:46:26 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-014
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	1/2/2014 10:43:38 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-015
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.63	0.11	0.25		mg/L	5	1/2/2014 11:55:48 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-016
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.35	0.031	0.10		mg/L	1	1/2/2014 10:48:22 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-017
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.88	0.45	1.0	J	mg/L	20	1/2/2014 12:10:07 PM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-018
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.88	0.031	0.10		mg/L	1	1/2/2014 10:57:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457226**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457227**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312C57-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457244**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.94	0.050	0.5000	0.4257	102	75	125			

Sample ID	**1312C57-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457245**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.96	0.050	0.5000	0.4257	107	75	125	2.55	20	

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457261**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457262**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.5	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C57 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 2:59:39 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? YES
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: Added 5 mL HNO_3 to 005 for acceptable pH. Added 1 mL HNO_3 to 007 and 009 for acceptable pH. MG 12/30/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton / Tormey
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1312657	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	Out of Walnut Filters	plastic-1	HNO3	001	X	
12/30/13	6:20	Liquid	Out of Walnut Filters	plastic-1	NEAT	002		X
12/30/13	5:55	Liquid	W-20	plastic-1	HNO3	003	X	
12/30/13	5:55	Liquid	W-20	plastic-1	NEAT	004		X
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	HNO3	005	X	
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	NEAT	006		X
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	HNO3	007	X	
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	NEAT	008		X
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	HNO3	009	X	
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	NEAT	010		X
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	HNO3	011	X	
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	NEAT	012		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widmer	Michelle Garcia	12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Aaron Strange / Kevin Newton / Byron Ironmonger

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312057	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	T-805	plastic 1	HNO3	013	X	
12/30/13	6:00	Liquid	T-805	plastic-1	NEAT	014		X
12/30/13	6:00	Liquid	DAF	plastic-1	HNO3	015	X	
12/30/13	6:00	Liquid	DAF	plastic-1	NEAT	016		X
12/30/13	6:00	Liquid	Tank 836	plastic 1	HNO3	017	X	
12/30/13	6:00	Liquid	Tank 836	plastic 1	NEAT	018		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman	Michelle Garcia	12/30/13	1430
		Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401126

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401126**
Date Reported: **1/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/7/2014 5:38:31 PM	11110
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Barium	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Cadmium	ND	0.0020		mg/L	1	1/8/2014 2:57:35 PM	11119
Chromium	ND	0.0060		mg/L	1	1/8/2014 2:57:35 PM	11119
Lead	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119
Selenium	0.30	0.050		mg/L	1	1/8/2014 2:57:35 PM	11119
Silver	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/7/2014 6:26:10 PM	11114
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Barium	0.26	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Cadmium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Chromium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Lead	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Selenium	0.23	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Silver	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11110**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459784**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11110**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459785**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID	**1401126-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459787**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0044	0.00020	0.005000	0	87.7	75	125			

Sample ID	**1401126-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459788**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.9	75	125	2.46	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11114**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459793**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11114**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459794**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.8	80	120			
Barium	0.47	0.10	0.5000	0	93.9	80	120			
Cadmium	0.49	0.10	0.5000	0	99.0	80	120			
Chromium	0.48	0.10	0.5000	0	95.6	80	120			
Lead	0.47	0.10	0.5000	0	95.0	80	120			
Selenium	0.49	0.10	0.5000	0	97.4	80	120			
Silver	ND	0.10	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.8	80	120			
Barium	0.47	0.020	0.5000	0	93.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	99.0	80	120			
Chromium	0.48	0.0060	0.5000	0	95.6	80	120			
Lead	0.47	0.0050	0.5000	0	95.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.4	80	120			
Silver	0.099	0.0050	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401126 RcptNo: 1

Received by/date: MG 01/06/14

Logged By: Michelle Garcia 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: Michelle Garcia 1/6/2014 2:19:46 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401126	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
1/6/14	10:00	Anthony Widmer	[illegible]	1/06/14 1410	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401138

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401138**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the total selenium analysis for the following samples:
T-805 (FLDC)
836 TK
D-250 Flu Gas Scrubber

The above samples had elevated recoveries for the internal standards.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.22	0.50		mg/L	10	1/8/2014 3:01:31 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	6.0	0.31	1.0		mg/L	10	1/8/2014 3:11:03 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 (FLDC)
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-003 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.2	0.45	1.0		mg/L	20	1/8/2014 3:13:39 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-004 **Matrix:** AQUEOUS

Client Sample ID: T-805 (FLDC) TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.17	0.031	0.10		mg/L	1	1/8/2014 3:15:59 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-005 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.27	0.022	0.050		mg/L	1	1/8/2014 3:17:08 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-006 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.20	0.031	0.10		mg/L	1	1/8/2014 3:22:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-007 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.0	0.45	1.0		mg/L	20	1/8/2014 3:25:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-008 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.56	0.031	0.10		mg/L	1	1/8/2014 3:24:24 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-009
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.34	0.022	0.050		mg/L	1	1/8/2014 3:27:55 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-010 **Matrix:** AQUEOUS

Client Sample ID: Out of DAF TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.18	0.031	0.10		mg/L	1	1/8/2014 3:29:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-011
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	4.5	0.11	0.25		mg/L	5	1/8/2014 3:43:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-012
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.3	0.15	0.50		mg/L	5	1/8/2014 3:45:19 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-013
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	ND	0.45	1.0		mg/L	20	1/8/2014 3:46:32 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-014
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.19	0.031	0.10		mg/L	1	1/8/2014 3:48:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-015 **Matrix:** AQUEOUS

Client Sample ID: D 130 Outlet Desalter
Collection Date: 1/6/2014 6:20:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.0	0.11	0.25		mg/L	5	1/8/2014 3:54:46 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D 130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:20:00 AM
Lab ID: 1401138-016
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.2	0.15	0.50		mg/L	5	1/8/2014 4:05:54 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-017
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.4	0.22	0.50		mg/L	10	1/8/2014 4:07:16 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 364 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-018
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.8	0.31	1.0		mg/L	10	1/8/2014 4:08:40 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459944**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459945**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401138 RcptNo: 1

Received by/date:

Logged By: **Michelle Garcia** 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 1/6/2014 3:32:30 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☐	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
	Added 5 mL HNO3 to 013 for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 8 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? yes
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MK

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 10°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	5:55	Liquid	W-20	plastic-1	HNO3	-001	X	
1/6/14	5:55	Liquid	W-20	plastic-1	NEAT	-002		X
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	HNO3	-003	X	
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	NEAT	-004		X
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	HNO3	-005	X	
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	NEAT	-006		X
1/6/14	6:00	Liquid	836 TK	plastic-1	HNO3	-007	X	
1/6/14	6:00	Liquid	836 TK	plastic-1	NEAT	-008		X
1/6/14	6:00	Liquid	Out of DAF	plastic-1	HNO3	-009	X	
1/6/14	6:00	Liquid	Out of DAF	plastic-1	NEAT	-010		X
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	HNO3	-011	X	
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/6/14	10:00	Anthony Widmen			
				01/06/14	1410

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	10:20	Liquid	D250 Flu Gas Scrubber	plastic	HNO3	-013	X	
1/6/14	10:00	Liquid	D250 Flu Gas Scrubber	plastic	NEAT	-014		X
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	HNO3	-015	X	
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	NEAT	-016		X
1/6/14	5:50	Liquid	634 outlet	plastic	HNO3	-017	X	
1/6/14	5:50	Liquid	634 outlet	plastic	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date Time
1/6/14	10:00			01/06/14 1410
Date:	Time:	Relinquished by:	Received by:	Date Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 21, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401508

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401508**
Date Reported: **1/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **TES**	
Mercury	ND	0.00020		mg/L	1	1/18/2014 11:49:50 AM	11287
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.036	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Barium	0.029	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Cadmium	ND	0.0020		mg/L	1	1/15/2014 3:44:35 PM	11233
Chromium	ND	0.0060		mg/L	1	1/15/2014 3:44:35 PM	11233
Lead	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233
Selenium	0.35	0.050		mg/L	1	1/15/2014 3:44:35 PM	11233
Silver	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-002 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **TES**	
Mercury	ND	0.020		mg/L	1	1/18/2014 12:51:48 PM	11288
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Barium	0.10	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Cadmium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Chromium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Lead	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Selenium	0.31	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Silver	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11287**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465495**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11287**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465496**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11288**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466007**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11288**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466008**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463359** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.10	0.5000	0	103	80	120			
Barium	0.46	0.10	0.5000	0	92.9	80	120			
Cadmium	0.49	0.10	0.5000	0	98.5	80	120			
Chromium	0.46	0.10	0.5000	0	92.5	80	120			
Lead	0.49	0.10	0.5000	0	98.7	80	120			
Selenium	0.51	0.10	0.5000	0	101	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1401508-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463365**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0.03565	106	75	125			
Barium	0.48	0.020	0.5000	0.02901	90.5	75	125			
Cadmium	0.50	0.0020	0.5000	0	100	75	125			
Chromium	0.46	0.0060	0.5000	0	91.5	75	125			
Lead	0.49	0.0050	0.5000	0	98.9	75	125			
Selenium	0.86	0.050	0.5000	0.3543	100	75	125			
Silver	0.10	0.0050	0.1000	0	102	75	125			

Sample ID	**1401508-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463366**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.56	0.020	0.5000	0.03565	104	75	125	1.85	20	
Barium	0.49	0.020	0.5000	0.02901	92.6	75	125	2.15	20	
Cadmium	0.50	0.0020	0.5000	0	100	75	125	0.0540	20	
Chromium	0.46	0.0060	0.5000	0	91.4	75	125	0.105	20	
Lead	0.49	0.0050	0.5000	0	97.9	75	125	1.02	20	
Selenium	0.85	0.050	0.5000	0.3543	99.8	75	125	0.336	20	
Silver	0.10	0.0050	0.1000	0	104	75	125	2.05	20	

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463376**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463377**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.5	80	120			
Chromium	0.46	0.0060	0.5000	0	92.5	80	120			
Lead	0.49	0.0050	0.5000	0	98.7	80	120			
Selenium	0.51	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401508 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:22:11 PM

Reviewed By: IO 01/13/2014 IO 01/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401508	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/13/14	6:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/13/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/13/14	12:00	Anthony Widman		01/13/14	14:10
		Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401507

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401507**
Date: **1/20/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Remarks regarding Total selenium for sample "TK 836":
Sample "TK 836" is being reported with an elevated internal standard.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.1	1.1	2.5	J	mg/L	50	1/15/2014 3:57:59 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-002
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.34	0.031	0.10		mg/L	1	1/15/2014 3:50:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401507-003 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/13/2014 6:00:00 AM
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.37	0.022	0.050		mg/L	1	1/15/2014 3:55:08 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-004
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.35	0.031	0.10		mg/L	1	1/15/2014 4:03:26 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-005
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.45	1.0		mg/L	20	1/15/2014 4:12:16 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-006
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.0	0.15	0.50		mg/L	5	1/15/2014 4:14:38 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-007
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.11	0.25		mg/L	5	1/15/2014 4:15:44 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-008
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.5	0.15	0.50		mg/L	5	1/15/2014 4:26:49 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-009
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.41	0.022	0.050		mg/L	1	1/15/2014 4:18:17 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-010 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.33	0.031	0.10		mg/L	1	1/15/2014 4:28:24 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-011
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.3	0.22	0.50		mg/L	10	1/15/2014 4:34:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-012
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.7	0.31	1.0		mg/L	10	1/15/2014 4:36:21 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-013
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	18	11	25	J	mg/L	500	1/15/2014 4:45:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-014
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	18	1.5	5.0		mg/L	50	1/15/2014 4:51:22 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-015
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.22	0.50		mg/L	10	1/15/2014 4:52:41 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-016 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.4	0.31	1.0		mg/L	10	1/15/2014 4:54:07 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-017
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.7	0.11	0.25		mg/L	5	1/15/2014 5:02:37 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet DesalterTCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-018
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	3.0	0.15	0.50		mg/L	5	1/15/2014 5:04:00 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463358**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463359**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.51	0.10	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463376**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401507 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:09:26 PM

Reviewed By: IO 01/13/2014

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No~~ ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

01/13/14

of preserved bottles checked for pH: 9 (<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: -013 FOR METALS ANALYSIS: ADDED 2mL HNO_3 TO -013A AND 1mL HNO_3 TO -017A FOR ACCEPTABLE PH. 01/13/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	HNO3	-001	X	
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	NEAT	-002		X
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	HNO3	-003	X	
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	NEAT	-004		X
1/13/14	6:00	Liquid	TK 830	plastic-1	HNO3	-005	X	
1/13/14	6:00	Liquid	TK 830	plastic-1	NEAT	-006		X
1/13/14	6:30	Liquid	D-130 after Desalter	plastic-1	HNO3	-007	X	
1/13/14	6:30	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-008		X
1/13/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/13/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/13/14	6:15	Liquid	W-20	plastic-1	HNO3	-011	X	
1/13/14	6:15	Liquid	W-20	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/13/14	10:00	Anthony Widman		01/13/14	1410
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-013	X	
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-014		X
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	HNO3	-015	X	
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	NEAT	-016		X
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	HNO3	-017	X	
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
1/13/14	10:00	Anthony Widman		01/13/14	12:10	Expedited turn-around and results sent to Mike Holder
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 24, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401813

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401813**
Date Reported: **1/24/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **ELS**	
Mercury	ND	0.00020		mg/L	1	1/23/2014 8:39:48 AM	11339
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.030	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Barium	0.026	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Cadmium	ND	0.0020		mg/L	1	1/23/2014 11:17:28 AM	11353
Chromium	ND	0.0060		mg/L	1	1/23/2014 11:17:28 AM	11353
Lead	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353
Selenium	0.51	0.050		mg/L	1	1/23/2014 11:17:28 AM	11353
Silver	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-002 **Matrix:** AQUEOUS **Received Date:** 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **ELS**	
Mercury	ND	0.020		mg/L	1	1/24/2014 7:50:29 AM	11362
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Barium	0.12	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Cadmium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Chromium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Lead	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Selenium	0.51	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Silver	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11339**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468302**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11339**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468303**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11362**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**				
Client ID:	**PBW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469084**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11362**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**LCSW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469085**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Sample ID	**1401813-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469089**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.3	75	125			

Sample ID	**1401813-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469090**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.10	0.5000	0	92.5	80	120			
Barium	0.46	0.10	0.5000	0	91.8	80	120			
Cadmium	0.47	0.10	0.5000	0	93.1	80	120			
Chromium	0.45	0.10	0.5000	0	90.8	80	120			
Lead	0.45	0.10	0.5000	0	90.9	80	120			
Selenium	0.45	0.10	0.5000	0	90.2	80	120			
Silver	ND	0.10	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468523**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468524**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	92.5	80	120			
Barium	0.46	0.020	0.5000	0	91.8	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.1	80	120			
Chromium	0.45	0.0060	0.5000	0	90.8	80	120			
Lead	0.45	0.0050	0.5000	0	90.9	80	120			
Selenium	0.45	0.050	0.5000	0	90.2	80	120			
Silver	0.095	0.0050	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401813 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:46:48 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401813	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widman	Ashley Gallegos	01/20	1507

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 28, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401811

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/20/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 24th, 2014.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401811**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.9	0.11	0.25		mg/L	5	1/23/2014 11:54:04 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-002
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	3.0	0.15	0.50		mg/L	5	1/23/2014 11:55:14 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-003
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.11	0.25		mg/L	5	1/23/2014 12:00:39 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-004
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.15	0.50		mg/L	5	1/23/2014 12:05:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-005
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.6	0.45	1.0		mg/L	20	1/23/2014 12:07:55 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-006
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.71	0.031	0.10		mg/L	1	1/23/2014 11:32:45 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-007
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.54	0.022	0.050		mg/L	1	1/23/2014 11:33:52 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-008
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:35:03 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-009
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.75	0.045	0.10		mg/L	2	1/23/2014 12:09:23 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-010
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.57	0.031	0.10		mg/L	1	1/23/2014 11:38:32 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-011
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.0	0.22	0.50		mg/L	10	1/23/2014 12:10:31 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-012
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:41:18 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-013
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.8	0.11	0.25		mg/L	5	1/23/2014 12:14:24 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-014
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.5	0.31	1.0		mg/L	10	1/23/2014 12:15:36 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-015
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	ND	4.5	10		mg/L	200	1/23/2014 12:26:20 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-016
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.098	0.031	0.10	J	mg/L	1	1/23/2014 11:50:30 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-017
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.9	0.22	0.50		mg/L	10	1/23/2014 12:27:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-018
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.2	0.31	1.0		mg/L	10	1/23/2014 12:28:41 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**
28-Jan-14

Client: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.10	0.5000	0	90.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468523**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11353**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468524**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	90.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401811 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:34:52 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☑
9. Was preservative added to bottles? Yes ☑ No ☑ NA ☐

- metals analysis: Added 1mL HNO_3 to -003A, 2mL HNO_3 to -015A for acceptable pH.

10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: 9 (<2 or >12 unless noted) 01/21/14
Adjusted? YES
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	HNO3	-001	X	
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	NEAT	-002		X
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	HNO3	-003	X	
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-004		X
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	HNO3	-005	X	
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	NEAT	-006		X
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	HNO3	-007	X	
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	NEAT	-008		X
1/20/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/20/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/20/14	6:00	Liquid	out of FLOC	plastic-1	HNO3	-011	X	
1/20/14	6:00	Liquid	out of FLOC	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	HNO3	-013	X	
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	NEAT	-014		X
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-015	X	
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	NEAT	-016		X
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	HNO3	-017	X	
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	NEAT	-018		X

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks: Expedited turn-around and results sent to Mike Holder
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507	
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A62

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401A62**
Date Reported: **1/31/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-001
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.00020		mg/L	1	1/30/2014 12:31:11 PM	11463
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.037	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Barium	0.026	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Cadmium	ND	0.0020		mg/L	1	1/30/2014 6:46:11 AM	11461
Chromium	ND	0.0060		mg/L	1	1/30/2014 6:46:11 AM	11461
Lead	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461
Selenium	0.52	0.050		mg/L	1	1/30/2014 12:43:22 PM	11461
Silver	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-002 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **DBD**	
Mercury	ND	0.020		mg/L	1	1/30/2014 10:50:53 AM	11464
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Barium	0.15	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Cadmium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Chromium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Lead	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Selenium	0.49	0.10		mg/L	1	1/30/2014 12:44:37 PM	11461
Silver	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11463**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473049**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11463**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473050**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11464**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473005**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11464**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473006**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472329**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472330**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.10	0.5000	0	86.2	80	120			
Barium	0.42	0.10	0.5000	0	84.4	80	120			
Cadmium	0.43	0.10	0.5000	0	85.1	80	120			E
Chromium	0.42	0.10	0.5000	0	84.5	80	120			E
Lead	0.42	0.10	0.5000	0	84.1	80	120			E
Silver	ND	0.10	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472418**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Silver	ND	0.0050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472419**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.020	0.5000	0	86.2	80	120			
Barium	0.42	0.020	0.5000	0	84.4	80	120			
Cadmium	0.43	0.0020	0.5000	0	85.1	80	120			
Chromium	0.42	0.0060	0.5000	0	84.5	80	120			
Lead	0.42	0.0050	0.5000	0	84.1	80	120			
Silver	0.087	0.0050	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A62 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:37:54 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A02	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/27/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	01/27/14	14:50

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A61

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-001 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.0	0.11	0.25		mg/L	5	1/30/2014 11:50:25 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-002
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	2.0	0.15	0.50		mg/L	5	1/30/2014 11:51:40 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-003 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.8	0.11	0.25		mg/L	5	1/30/2014 12:04:46 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-004
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.4	0.15	0.50		mg/L	5	1/30/2014 12:05:59 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-005 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.2	0.11	0.25		mg/L	5	1/30/2014 12:07:11 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-006 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.2	0.15	0.50		mg/L	5	1/30/2014 12:08:26 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-007
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	17	4.5	10		mg/L	200	1/30/2014 12:11:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-008
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	10	0.31	1.0		mg/L	10	1/30/2014 12:12:47 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-009
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.55	0.022	0.050		mg/L	1	1/30/2014 12:18:04 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-010 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.58	0.062	0.20		mg/L	2	1/30/2014 12:26:49 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-011 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.22	0.50		mg/L	10	1/30/2014 3:36:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-012 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.43	0.031	0.10		mg/L	1	1/30/2014 12:22:38 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401A61-013 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/27/2014 6:20:00 AM
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.51	0.022	0.050		mg/L	1	1/30/2014 12:25:32 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-014
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.51	0.031	0.10		mg/L	1	1/30/2014 12:30:56 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-015
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.9	1.1	2.5	J	mg/L	50	1/30/2014 12:38:25 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-016
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.15	0.031	0.10		mg/L	1	1/30/2014 12:39:40 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-017
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.11	0.25		mg/L	5	1/30/2014 12:40:55 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-018
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.3	0.15	0.50		mg/L	5	1/30/2014 12:42:08 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Sample ID	**1401A61-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472814**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.5	0.50	0.5000	2.006	93.8	75	125			

Sample ID	**1401A61-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472815**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.6	0.50	0.5000	2.006	121	75	125	5.32	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.023	0.050								J

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A61 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:22:04 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? Yes
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: For -001, 2mL HNO3 was added for acceptable pH. Added 11mL HNO3 to -007 for acceptable pH. Added 4mL HNO3 to -003 for acceptable pH. mg 01/27/14

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ **Rush** **Next Day**

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A21	Total Selenium 6010	TCLP Selenium 1311/6010
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
1/27/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
1/27/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
1/27/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
1/27/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	14:50

Date	Time	Relinquished by	Received by	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401141	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	HNO3	-001013	X	
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	NEAT	-002014		X
1/27/14	6:15	liquid	Out of T-801	Plastic-1	HNO3	-003015	X	
1/27/14	6:15	liquid	Out of T-801	Plastic-1	NEAT	-004016		X
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	HNO3	-005017	X	
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	NEAT	-006018		X

01/27/14

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	1450

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402075

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402075**
Date Reported: **2/7/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-001 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.0010		mg/L	5	2/5/2014 3:52:21 PM	11565
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.086	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Barium	0.027	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Cadmium	ND	0.0020		mg/L	1	2/5/2014 12:48:42 PM	11564
Chromium	ND	0.0060		mg/L	1	2/5/2014 12:48:42 PM	11564
Lead	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564
Selenium	0.64	0.050		mg/L	1	2/5/2014 12:48:42 PM	11564
Silver	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-002 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/5/2014 4:37:16 PM	11566
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Barium	0.11	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Cadmium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Chromium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Lead	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Selenium	0.56	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Silver	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11565**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476431**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11565**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476432**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1402075-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476437**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0060	0.0010	0.005000	0	120	75	125			

Sample ID	**1402075-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476438**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.0010	0.005000	0	113	75	125	6.40	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11566**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476453**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11566**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476454**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476361**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11564**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476362**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	89.2	80	120			
Barium	ND	100	0.5000	0	89.6	80	120			
Cadmium	ND	1.0	0.5000	0	93.2	80	120			
Chromium	ND	5.0	0.5000	0	90.1	80	120			
Lead	ND	5.0	0.5000	0	87.8	80	120			
Selenium	ND	1.0	0.5000	0	91.0	80	120			
Silver	ND	5.0	0.1000	0	96.3	80	120			

Sample ID	**1402075-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476365**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04825	93.4	75	125			
Barium	0.57	0.10	0.5000	0.1089	91.2	75	125			
Cadmium	0.46	0.10	0.5000	0	92.4	75	125			
Chromium	0.44	0.10	0.5000	0	87.8	75	125			
Lead	0.42	0.10	0.5000	0	83.8	75	125			
Silver	ND	0.10	0.1000	0	97.6	75	125			

Sample ID	**1402075-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476366**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0.04825	85.1	75	125	8.45	20	
Barium	0.52	0.10	0.5000	0.1089	81.6	75	125	8.90	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402075-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**	RunNo:	**16546**
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.43	0.10	0.5000	0	85.3	75	125	8.08	20	
Chromium	0.40	0.10	0.5000	0	81.0	75	125	8.05	20	
Lead	0.39	0.10	0.5000	0	78.1	75	125	7.10	20	
Silver	ND	0.10	0.1000	0	88.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0	89.2	80	120			
Barium	0.45	0.020	0.5000	0	89.6	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.2	80	120			
Chromium	0.45	0.0060	0.5000	0	90.1	80	120			
Lead	0.44	0.0050	0.5000	0	87.8	80	120			
Selenium	0.45	0.050	0.5000	0	91.0	80	120			
Silver	0.096	0.0050	0.1000	0	96.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402075 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:08:22 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/3/14	13:15	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/3/14	~~6:00~~ 13:15	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/3/14	14:30	Jerry Sosa	Michelle Gilbert	02/04/14	0900
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402076

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-001
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.19	0.022	0.050		mg/L	1	2/5/2014 1:06:27 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-002
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.16	0.031	0.10		mg/L	1	2/5/2014 1:08:10 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-003
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.23	0.022	0.050		mg/L	1	2/5/2014 1:09:27 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-004
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.22	0.031	0.10		mg/L	1	2/5/2014 1:10:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-005
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.0	0.22	0.50		mg/L	10	2/5/2014 1:40:48 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-006
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.1	0.31	1.0		mg/L	10	2/5/2014 1:39:34 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-007
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	16	2.2	5.0		mg/L	100	2/5/2014 1:44:43 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-008
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	17	0.62	2.0		mg/L	20	2/5/2014 1:45:59 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-009
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.60	0.022	0.050		mg/L	1	2/5/2014 1:17:07 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-010
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:22:20 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-011
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.22	0.50		mg/L	10	2/5/2014 1:48:26 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-012
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.63	0.031	0.10		mg/L	1	2/5/2014 1:25:15 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-013
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.59	0.022	0.050		mg/L	1	2/5/2014 1:26:28 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-014
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:27:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-836
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-015
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	1.1	2.5	J	mg/L	50	2/5/2014 2:24:11 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-016
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:30:41 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-017
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.4	0.22	0.50		mg/L	10	2/5/2014 2:21:44 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-018
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.2	0.31	1.0		mg/L	10	2/5/2014 2:22:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402076**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476361**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476362**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	1.0	0.5000	0	91.0	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402076**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	91.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402076 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:17:39 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
	See Section 17.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9

(<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks: For metals analysis: Added 5mL HNO_3 to -007A, 3mL HNO_3 to -001A, & -003A for acceptable pH. MG 02/04/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standar ☑ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder
☐ Standard ☐ Level 4 (Full Validation)	Sampler: Kevin Newton
☐ Other _____	On Ice: ☑ Yes ☐ No
☐ EDD (Type) _____	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
2/3/14	13:15	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
2/3/14	13:15	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
2/3/14	13:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
2/3/14	13:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
2/3/14	13:15	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
2/3/14	13:15	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
2/3/14	13:15	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
2/3/14	13:15	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
2/3/14	13:15	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
2/3/14	13:15	liquid	Out of DAF	Plastic-1	NEAT	-010		X
2/3/14	13:15	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
2/3/14	13:15	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
2/3/14	14:30	Jerry Sosa			
				02/04/14	0900

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.6

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1402075	Total Selenium 6010	TCLP Selenium 1311/6010
2/3/14	13:15	liquid	Out of Walnut Filters	Plastic-1	HNO3	-013	X	
2/3/14	13:15	liquid	Out of Walnut Filters	Plastic-1	NEAT	-014		X
2/3/14	13:15	liquid	Out of T-836	Plastic-1	HNO3	-015	X	
2/3/14	13:15	liquid	Out of T-836	Plastic-1	NEAT	-016		X
2/3/14	13:15	liquid	W-634 Outlet	Plastic-1	HNO3	-017	X	
2/3/14	13:15	liquid	W-634 Outlet	Plastic-1	NEAT	-018		X

Date	Time	Relinquished by	Received by	Date	Time
2/3/14	14:30	Jerry Sosa			
				02/04/14	0900

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402324

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402324**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-001 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/11/2014 4:25:23 PM	11676
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.035	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Barium	0.023	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Cadmium	ND	0.0020		mg/L	1	2/13/2014 9:07:30 AM	11692
Chromium	ND	0.0060		mg/L	1	2/13/2014 9:07:30 AM	11692
Lead	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692
Selenium	0.26	0.050		mg/L	1	2/13/2014 12:16:38 PM	11692
Silver	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-002 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/12/2014 3:43:01 PM	11695
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Barium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Cadmium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Chromium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Lead	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Selenium	0.20	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Silver	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11676**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480486**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11676**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480487**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11695**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480751**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11695**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480752**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	**1402324-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480754**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.3	75	125			

Sample ID	**1402324-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480755**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11692**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481463** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11692**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481464** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.3	80	120			
Barium	ND	100	0.5000	0	89.0	80	120			
Cadmium	ND	1.0	0.5000	0	91.7	80	120			
Chromium	ND	5.0	0.5000	0	89.0	80	120			
Lead	ND	5.0	0.5000	0	87.9	80	120			
Selenium	ND	1.0	0.5000	0	83.9	80	120			
Silver	ND	5.0	0.1000	0	93.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481425**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0.03462	84.5	75	125			
Barium	0.42	0.020	0.5000	0.02307	79.3	75	125			
Cadmium	0.41	0.0020	0.5000	0	82.8	75	125			
Chromium	0.40	0.0060	0.5000	0	79.8	75	125			
Lead	0.39	0.0050	0.5000	0	77.1	75	125			
Silver	0.084	0.0050	0.1000	0	83.7	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481426**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0.03462	82.2	75	125	2.59	20	
Barium	0.41	0.020	0.5000	0.02307	78.3	75	125	1.20	20	
Cadmium	0.41	0.0020	0.5000	0	82.0	75	125	1.01	20	
Chromium	0.39	0.0060	0.5000	0	78.5	75	125	1.76	20	
Lead	0.38	0.0050	0.5000	0	76.2	75	125	1.15	20	
Silver	0.083	0.0050	0.1000	0	82.8	75	125	1.08	20	

Sample ID	**MB-11692**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481498**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.3	80	120			
Barium	0.44	0.020	0.5000	0	89.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	91.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.44	0.0060	0.5000	0	89.0	80	120			
Lead	0.44	0.0050	0.5000	0	87.9	80	120			
Selenium	0.42	0.050	0.5000	0	83.9	80	120			
Silver	0.094	0.0050	0.1000	0	93.9	80	120			

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481526**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.67	0.050	0.5000	0.2584	83.1	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481527**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.65	0.050	0.5000	0.2584	77.9	75	125	3.92	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402324 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: **Ashley Gallegos** 2/10/2014 1:57:00 PM

Completed By: **Ashley Gallegos** 2/10/2014 2:18:28 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403324	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa		02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402326

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1402326**
Date: **2/13/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the Total and TCLP Se Sample "D-250 Flu Gas Scrubber"
Both the total and TCLP samples are being reported with elevated internal standard recoveries. This data is estimated.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-001
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.45	0.014	0.050		mg/L	1	2/13/2014 9:21:18 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-002
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.38	0.031	0.10		mg/L	1	2/13/2014 9:22:34 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-003
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.25	0.014	0.050		mg/L	1	2/13/2014 9:23:50 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-004
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.25	0.031	0.10		mg/L	1	2/13/2014 9:25:03 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-005 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.14	0.50		mg/L	10	2/13/2014 10:48:07 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-006 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	2/13/2014 10:35:08 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-007
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.048	0.014	0.050	J	mg/L	1	2/13/2014 9:28:46 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-008 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.14	0.031	1.0	J	mg/L	1	2/13/2014 9:30:09 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-009 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.26	0.014	0.050		mg/L	1	2/13/2014 9:31:24 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-010 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.28	0.031	0.10		mg/L	1	2/13/2014 9:32:40 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-011
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.58	0.14	0.50		mg/L	10	2/13/2014 10:51:49 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-012
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.28	0.031	0.10		mg/L	1	2/13/2014 9:39:00 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-013 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.24	0.014	0.050		mg/L	1	2/13/2014 9:40:14 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-014
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.27	0.031	0.10		mg/L	1	2/13/2014 9:41:29 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of T-836
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-015 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.36	0.14	0.50	J	mg/L	10	2/13/2014 10:53:03 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of T-836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-016 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	2/13/2014 9:43:59 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-017
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.3	0.14	0.50		mg/L	10	2/13/2014 10:56:52 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-018 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	2/13/2014 10:58:10 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402326**

14-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11691**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11691**	RunNo:	**16728**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481418**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11691**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11691**	RunNo:	**16728**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481419**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	1.0	0.5000	0	84.2	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402326**

14-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402325-002AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**BatchQC**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481430**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.70	0.050	0.5000	0.3129	77.2	75	125			

Sample ID	**1402325-002AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**BatchQC**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481431**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.79	0.050	0.5000	0.3129	95.1	75	125	12.0	20	

Sample ID	**MB-11691**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481492**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11691**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481493**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	0.050	0.5000	0	84.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402326 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: Ashley Gallegos 2/10/2014 1:57:00 PM

Completed By: Ashley Gallegos 2/10/2014 2:24:52 PM

Reviewed By: KMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No ☑~~	NA ☐
-007A = FOR METALS ANALYSIS: ADDED 3mL HNO3 FOR ACCEPTABLE pH. 02/10/14			
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9

(<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☐ **Rush** **Next Day**
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403326	Total Selenium 6010	TCLP Selenium 1311/6010
2/10/14	6:00	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
2/10/14	6:00	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
2/10/14	6:00	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
2/10/14	6:00	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
2/10/14	6:00	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
2/10/14	6:00	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
2/10/14	6:00	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
2/10/14	6:00	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
2/10/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
2/10/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
2/10/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
2/10/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date: 2/10/14	Time: 10:00	Relinquished by: Jerry Sosa	Received by:	Date 02/10/14	Time 1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403203	Total Selenium 6010	TCLP Selenium 1311/6010
2/10/14	6:00	liquid	Out of Walnut Filters	Plastic-1	HNO3	-013	X	
2/10/14	6:00	liquid	Out of Walnut Filters	Plastic-1	NEAT	-014		X
2/10/14	6:00	liquid	Out of T-836	Plastic-1	HNO3	-015	X	
2/10/14	6:00	liquid	Out of T-836	Plastic-1	NEAT	-016		X
2/10/14	6:00	liquid	W-634 Outlet	Plastic-1	HNO3	-017	X	
2/10/14	6:00	liquid	W-634 Outlet	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by: Jerry Sosa	Received by:	Date	Time
2/10/14	10:00			02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: CERT Unit OrderNo.: 1402325

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402325**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: CERT Unit
Lab ID: 1402325-001 **Matrix:** AQUEOUS

Client Sample ID: D-7111 CERT Inlet
Collection Date: 2/10/2014 8:00:00 AM
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	5.2	0.50		mg/L	10	2/13/2014 10:32:37 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: CERT Unit
Lab ID: 1402325-002 **Matrix:** AQUEOUS

Client Sample ID: D-7111 CERT Outlet
Collection Date: 2/10/2014 8:00:00 AM
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.31	0.050		mg/L	1	2/13/2014 9:13:45 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402325**

13-Feb-14

Client: Navajo Refining Company

Project: CERT Unit

Sample ID **1402325-002AMS** SampType: **MS** TestCode: **EPA 6010B: Total Metals**

Client ID: **D-7111 CERT Outlet** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481430** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.70	0.050	0.5000	0.3129	77.2	75	125			

Sample ID **1402325-002AMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **D-7111 CERT Outlet** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481431** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.79	0.050	0.5000	0.3129	95.1	75	125	12.0	20	

Sample ID **MB-11691** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481492** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID **LCS-11691** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	0.050	0.5000	0	84.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402325 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: Ashley Gallegos 2/10/2014 1:57:00 PM

Completed By: Ashley Gallegos 2/10/2014 2:21:24 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 02 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:
CERT Unit
~~Wastewater Effluent Monitoring~~

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1402325	Total Selenium 6010
2/10/14	8:00	liquid	D-7111 CERT Inlet	Plastic-1	HNO3	-001	X
2/10/14	8:00	liquid	D-7113 CERT Outlet	Plastic-1	HNO3	-002	X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				02/10/14	1357

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402624

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402624**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-001 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/18/2014 4:49:02 PM	11776
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.038	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Barium	0.060	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Cadmium	ND	0.0020		mg/L	1	2/19/2014 8:09:08 AM	11796
Chromium	ND	0.0060		mg/L	1	2/19/2014 8:09:08 AM	11796
Lead	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796
Selenium	0.20	0.050		mg/L	1	2/19/2014 8:09:08 AM	11796
Silver	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6) T
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-002
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/18/2014 5:40:58 PM	11777
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Barium	0.16	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Cadmium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Chromium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Lead	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Selenium	0.20	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Silver	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11776**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484820**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11776**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	103	80	120			

Sample ID	**1402624-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484823**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	99.0	75	125			

Sample ID	**1402624-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484824**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	75	125	4.26	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11777**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484236**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11777**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484237**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.6	80	120			
Barium	0.48	0.10	0.5000	0	96.0	80	120			
Cadmium	0.48	0.10	0.5000	0	96.7	80	120			
Chromium	0.48	0.10	0.5000	0	95.9	80	120			
Lead	0.46	0.10	0.5000	0	92.4	80	120			
Selenium	0.46	0.10	0.5000	0	92.6	80	120			
Silver	ND	0.10	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.6	80	120			
Barium	0.48	0.020	0.5000	0	96.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.7	80	120			
Chromium	0.48	0.0060	0.5000	0	95.9	80	120			
Lead	0.46	0.0050	0.5000	0	92.4	80	120			
Selenium	0.46	0.050	0.5000	0	92.6	80	120			
Silver	0.098	0.0050	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402624 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:41:07 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 0.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402624	Analysis Request: (1) Total RCRA 8 Metals	Analysis Request: (2) TCLP RCRA 8 Metals
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
2/17/14	10:00	Jerry Sosa			(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time 02/17/14 1445	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402626

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402626**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/17/2014 8:00:00 AM
Lab ID: 1402626-001
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.2	0.25		mg/L	5	2/19/2014 8:30:36 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/17/2014 8:00:00 AM
Lab ID: 1402626-002 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.2	0.50		mg/L	5	2/19/2014 8:31:53 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402626**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.10	0.5000	0	92.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402626**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.050	0.5000	0	92.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402626 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:46:18 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 6.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402621	Total Selenium 6010	TCLP Selenium 1311/6010
2/17/14	0800	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
2/17/14	0800	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Analysis Request

Date	Time	Relinquished by	Received by	Date	Time
2/17/14	10:00	Jerry Sosa			
				02/17/14	1445

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 25, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402904

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402904**
Date Reported: **2/25/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/24/2014 8:20:00 AM
Lab ID: 1402904-001
Matrix: AQUEOUS
Received Date: 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **TES**	
Selenium	0.38	0.050		mg/L	1	2/25/2014 9:18:14 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/24/2014 8:20:00 AM
Lab ID: 1402904-002 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **TES**	
Selenium	0.35	0.10		mg/L	1	2/25/2014 9:22:31 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402904**

25-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487507**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487508**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402904**

25-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487531**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487532**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402904 RcptNo: 1

Received by/date: 02/24/14

Logged By: **Ashley Gallegos** 2/24/2014 2:30:00 PM

Completed By: **Ashley Gallegos** 2/24/2014 3:09:53 PM

Reviewed By: mg 02/24/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted? N/A
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402904	Total Selenium 6010	TCLP Selenium 1311/6010
2/24/14	0820	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
2/24/14	0820	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/24/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	02/24/14	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 26, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402903

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402903**
Date Reported: **2/26/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells (Location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/24/2014 6:00:00 AM
Lab ID: 1402903-001 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/25/2014 5:02:40 PM	11888
EPA 6010B: TOTAL METALS						Analyst: **TES**	
Arsenic	0.030	0.020		mg/L	1	2/25/2014 9:15:39 AM	11873
Barium	0.046	0.020		mg/L	1	2/25/2014 9:15:39 AM	11873
Cadmium	ND	0.0020		mg/L	1	2/25/2014 9:15:39 AM	11873
Chromium	ND	0.0060		mg/L	1	2/25/2014 9:15:39 AM	11873
Lead	ND	0.0050		mg/L	1	2/25/2014 9:15:39 AM	11873
Selenium	0.27	0.050		mg/L	1	2/25/2014 9:15:39 AM	11873
Silver	ND	0.0050		mg/L	1	2/25/2014 9:15:39 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells (Location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/24/2014 6:00:00 AM
Lab ID: 1402903-002 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/25/2014 3:57:17 PM	11889
EPA METHOD 6010B: TCLP METALS						Analyst: **TES**	
Arsenic	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Barium	0.12	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Cadmium	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Chromium	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Lead	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Selenium	0.28	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Silver	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11888**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487839**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11888**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487840**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Sample ID	**1402903-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487842**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.3	75	125			

Sample ID	**1402903-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487843**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.2	75	125	0.938	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11889**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487813**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020									

Sample ID	**LCS-11889**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487814**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	100	80	120				

Sample ID	**1402903-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	88.8	75	125				

Sample ID	**1402903-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487822**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487507** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487508** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.2	80	120			
Barium	0.47	0.10	0.5000	0	93.4	80	120			
Cadmium	0.47	0.10	0.5000	0	94.3	80	120			
Chromium	0.47	0.10	0.5000	0	93.3	80	120			
Lead	0.45	0.10	0.5000	0	89.6	80	120			
Selenium	0.44	0.10	0.5000	0	87.1	80	120			
Silver	ND	0.10	0.1000	0	94.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.2	80	120			
Barium	0.47	0.020	0.5000	0	93.4	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.3	80	120			
Chromium	0.47	0.0060	0.5000	0	93.3	80	120			
Lead	0.45	0.0050	0.5000	0	89.6	80	120			
Selenium	0.44	0.050	0.5000	0	87.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402903 RcptNo: 1

Received by/date: 02/24/14

Logged By: **Ashley Gallegos** 2/24/2014 2:30:00 PM

Completed By: **Ashley Gallegos** 2/24/2014 3:06:54 PM

Reviewed By: 02/24/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? No

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 0.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402703	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
2/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
2/24/14	10:00	Jerry Sosa			
				02/24/14	1430
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 04, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1403030

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/3/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403030**
Date Reported: **3/4/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 3/3/2014 8:00:00 AM
Lab ID: 1403030-001 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.31	0.050		mg/L	1	3/4/2014 9:47:40 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 3/3/2014 8:00:00 AM
Lab ID: 1403030-002 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.24	0.10		mg/L	1	3/4/2014 9:48:52 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403030**

04-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491142**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491143**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.10	0.5000	0	93.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403030**

04-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491177**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491178**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	93.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403030 RcptNo: 1

Received by/date: MG 03/03/14

Logged By: **Michelle Garcia** 3/3/2014 2:05:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 3/3/2014 2:37:20 PM Michelle Garcia

Reviewed By: 03/03/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? No

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☐ **Rush** **Next Day**
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Bobby C
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403030	Total Selenium 6010	TCLP Selenium 1311/6010
3/3/14	0800	liquid	W-7 Effluent	Plastic-1	HNO3	001	X	
3/3/14	0800	liquid	W-7 Effluent	Plastic-1	NEAT	002		X

Date: 3/3/14	Time: 10:00	Relinquished by: Jerry Sosa	Received by:	Date	Time
Date:	Time:	Relinquished by:	Received by:	03/03/14 Date	1405 Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 05, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403032

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/3/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403032**
Date Reported: **3/5/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-001
Matrix: AQUEOUS
Received Date: 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	3/5/2014 12:09:14 PM	12001
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Barium	0.038	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Cadmium	ND	0.0020		mg/L	1	3/4/2014 11:35:37 AM	11992
Chromium	ND	0.0060		mg/L	1	3/4/2014 11:35:37 AM	11992
Lead	ND	0.0050		mg/L	1	3/4/2014 9:50:07 AM	11992
Selenium	0.12	0.050		mg/L	1	3/4/2014 9:50:07 AM	11992
Silver	ND	0.0050		mg/L	1	3/4/2014 11:35:37 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-002 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	3/5/2014 12:46:13 PM	12002
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Barium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Cadmium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Chromium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Lead	ND	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Selenium	0.14	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Silver	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12001**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492024**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12001**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492025**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0055	0.00020	0.005000	0	110	80	120			

Sample ID	**1403032-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492027**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.5	75	125			

Sample ID	**1403032-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492028**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	75	125	0.954	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12002**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492054**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12002**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492055**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491142**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.10								
Selenium	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491143**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.10	0.5000	0	93.1	80	120			
Selenium	0.47	0.10	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491379**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491380**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.9	80	120			
Barium	0.49	0.10	0.5000	0	98.9	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.50	0.10	0.5000	0	99.3	80	120			
Silver	0.10	0.10	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491177**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								
Selenium	ND	0.050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491178**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491383**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.9	80	120			
Barium	0.49	0.020	0.5000	0	98.9	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403032 RcptNo: 1

Received by/date: MG 03/03/14

Logged By: Michelle Garcia 3/3/2014 2:05:00 PM Michelle Garcia

Completed By: Michelle Garcia 3/3/2014 2:47:25 PM Michelle Garcia

Reviewed By: 03/03/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? NO

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403032	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/3/14	10:00	Jerry Sosa		03/03/14	1405
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: SeRT (DAF Floc. Effluent) OrderNo.: 1403332

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 4 sample(s) on 3/10/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued March 11, 2014.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403332**
Date Reported: **3/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: SeRT (DAF Floc. Effluent)
Lab ID: 1403332-001 **Matrix:** AQUEOUS

Client Sample ID: DAF Floc. Effluent (Location #5
Collection Date: 3/10/2014 6:00:00 AM
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.16	0.14	0.50	J	mg/L	10	3/11/2014 9:04:44 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF Floc. Effluent (Location #5
Project: SeRT (DAF Floc. Effluent)
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403332-002 **Matrix:** AQUEOUS **Received Date:** 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.044	0.031	0.10	J	mg/L	1	3/11/2014 8:48:33 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: SeRT (DAF Floc. Effluent)
Lab ID: 1403332-003 **Matrix:** AQUEOUS

Client Sample ID: DAF Out Of
Collection Date: 3/10/2014 6:00:00 AM
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.067	0.014	0.050		mg/L	1	3/11/2014 8:49:48 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: SeRT (DAF Floc. Effluent)
Lab ID: 1403332-004 **Matrix:** AQUEOUS

Client Sample ID: DAF Out Of
Collection Date: 3/10/2014 6:00:00 AM
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.048	0.031	0.10	J	mg/L	1	3/11/2014 8:51:02 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403332**

13-Mar-14

Client: Navajo Refining Company

Project: SeRT (DAF Floc. Effluent)

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495339**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495340**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	0.10	0.5000	0	96.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403332**

13-Mar-14

Client: Navajo Refining Company

Project: SeRT (DAF Floc. Effluent)

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495464**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495465**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	0.050	0.5000	0	96.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403332 RcptNo: 1

Received by/date: 03/10/14

Logged By: **Lindsay Mangin** 3/10/2014 2:15:00 PM

Completed By: **Lindsay Mangin** 3/10/2014 2:38:29 PM

Reviewed By: 03/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 2 (<2 or >12 unless noted)

Adjusted? 02

Checked by: MY

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standard ☒ Rush_ ASAP
	Project Name: SeRT (DAF Floc. Effluent)
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)	
Accreditation: ☐ NELAP ☐ Other_____	Sampler: Bobby C
☐ EDD (Type) _____	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403332	Total Se by EPA Method 6010B	Selenite/Thiosulfate/Thiocyanate	TSS by SM 2540D	TOC by EPA Method 9060	EPA Method 1664 O&G	Total Phenols EPA Method 9067	TCLP Selenium 1311/6010	pH						
03/10/14	0000	Liquid	DAF Floc. Effluent (location #5)	1-500ml HDPE	HNO3	-001	X													
03/10/14	0600	Liquid	DAF Floc. Effluent (location #5)	1-500ml HDPE	Neat	-002							X							
03/10/14	0600	Liquid	DAF ~~Effluent~~ OUT OF		HNO3	-003	X													
03/10/14	0600	Liquid	DAF ~~Effluent~~ OUT OF		NEAT	-004							X							

Date:	Time:	Relinquished by:	Received by:	Date	Time
~~3/6/14~~ 03/10/14	0000	Jerry Sosa		03/10/14	1215
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Send results to Mike Holder and Aaron Strange

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytica

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403331

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403331**
Date Reported: **3/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403331-001
Matrix: AQUEOUS
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	ND	0.000087	0.00020		mg/L	1	3/12/2014 12:17:10 PM	12132
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.019	0.0076	0.020	J	mg/L	1	3/11/2014 8:44:50 AM	12109
Barium	0.037	0.0016	0.020		mg/L	1	3/11/2014 8:44:50 AM	12109
Cadmium	ND	0.0012	0.0020		mg/L	1	3/11/2014 8:44:50 AM	12109
Chromium	ND	0.0019	0.0060		mg/L	1	3/11/2014 8:44:50 AM	12109
Lead	ND	0.0047	0.0050		mg/L	1	3/11/2014 8:44:50 AM	12109
Selenium	0.067	0.014	0.050		mg/L	1	3/11/2014 8:44:50 AM	12109
Silver	ND	0.0013	0.0050		mg/L	1	3/11/2014 8:44:50 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403331-002
Matrix: AQUEOUS
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/12/2014 2:31:23 PM	12135
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.021	0.015	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Barium	0.071	0.0024	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Cadmium	ND	0.0014	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Chromium	ND	0.0012	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Lead	ND	0.0059	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Selenium	0.046	0.031	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Silver	ND	0.0051	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12132**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496782**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12132**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496783**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

Sample ID	**1403331-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496785**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.6	75	125			

Sample ID	**1403331-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496786**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	90.4	75	125	0.953	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12135**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12135**	RunNo:	**17252**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496858**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12135**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12135**	RunNo:	**17252**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496859**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	99.6	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495339** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495340** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.2	80	120			
Barium	0.50	0.10	0.5000	0	99.6	80	120			
Cadmium	0.50	0.10	0.5000	0	101	80	120			
Chromium	0.49	0.10	0.5000	0	98.0	80	120			
Lead	0.48	0.10	0.5000	0	96.1	80	120			
Selenium	0.48	0.10	0.5000	0	96.0	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495464**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495465**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.2	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Chromium	0.49	0.0060	0.5000	0	98.0	80	120			
Lead	0.48	0.0050	0.5000	0	96.1	80	120			
Selenium	0.48	0.050	0.5000	0	96.0	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403331 RcptNo: 1

Received by/date: 03/10/14

Logged By: **Lindsay Mangin** 3/10/2014 2:15:00 PM

Completed By: **Lindsay Mangin** 3/10/2014 2:31:37 PM

Reviewed By: 03/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes			

Chain-of-Custody Record

Client: Nav[illegible]efining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa ☐ Rush next Day

Project Name:

Wastewater Effluent Monitoring/SeRT

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402331	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
03/10/14	600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
03/10/14	600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
~~2/24/14~~ 03/10/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	03/10/14	1215

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 21, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring (Mondays) OrderNo.: 1403704

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1403704**
Date Reported: **3/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring (Mondays)
Lab Order: 1403704

Lab ID: 1403704-001 **Collection Date:** 3/17/2014 8:15:00 AM
Client Sample ID: W-7 Effluent **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.50	0.050		mg/L	1	3/19/2014 8:54:35 AM	12226

Lab ID: 1403704-002 **Collection Date:** 3/17/2014 8:15:00 AM
Client Sample ID: W-7 Effluent **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.26	0.10		mg/L	1	3/19/2014 8:55:50 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403704**

21-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring (Mondays)

Sample ID	**LCS-12226**	SampType: **LCS**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501609**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.10	0.5000	0	97.2	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501612**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403704**

21-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring (Mondays)

Sample ID	**1403702-003BMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**BatchQC**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501624**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.64	0.050	0.5000	0.1439	99.2	75	125			

Sample ID	**1403702-003BMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**BatchQC**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501625**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.72	0.050	0.5000	0.1439	115	75	125	11.6	20	

Sample ID	**LCS-12226**	SampType: **LCS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501645**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.2	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501646**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.020	0.050								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403704 RcptNo: 1

Received by/date: 03/17/14

Logged By: **Lindsay Mangin** 3/17/2014 1:30:00 PM

Completed By: **Lindsay Mangin** 3/17/2014 2:08:28 PM

Reviewed By: KMS 3/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☐ **Rush** **Next Day**

Project Name:

WW Effluent Monitoring (Mondays)

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1403704	Total Selenium 6010	TCLP Selenium 1311/6010
3/17/14	0915	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
3/17/14	0915	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/17/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				3/17/14	1330

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT Monday OrderNo.: 1403705

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403705**
Date Reported: **3/20/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT M
Collection Date: 3/17/2014 6:00:00 AM
Lab ID: 1403705-001 **Matrix:** AQUEOUS **Received Date:** 3/17/2014 1:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	ND	0.000087	0.00020		mg/L	1	3/18/2014 2:49:20 PM	12230
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.028	0.0076	0.020		mg/L	1	3/19/2014 10:02:13 AM	12226
Barium	0.043	0.0016	0.020		mg/L	1	3/19/2014 8:35:01 AM	12226
Cadmium	ND	0.0012	0.0020		mg/L	1	3/19/2014 8:35:01 AM	12226
Chromium	ND	0.0019	0.0060		mg/L	1	3/19/2014 8:35:01 AM	12226
Lead	ND	0.0047	0.0050		mg/L	1	3/19/2014 8:35:01 AM	12226
Selenium	0.081	0.014	0.050		mg/L	1	3/19/2014 8:35:01 AM	12226
Silver	ND	0.0013	0.0050		mg/L	1	3/19/2014 8:35:01 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT M
Collection Date: 3/17/2014 6:00:00 AM
Lab ID: 1403705-002
Matrix: AQUEOUS
Received Date: 3/17/2014 1:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/19/2014 2:39:23 PM	12256
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.029	0.015	0.10	J	mg/L	1	3/19/2014 10:03:27 AM	12226
Barium	0.078	0.0024	0.10	J	mg/L	1	3/19/2014 8:36:15 AM	12226
Cadmium	ND	0.0014	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Chromium	ND	0.0012	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Lead	ND	0.0059	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Selenium	0.052	0.031	0.10	J	mg/L	1	3/19/2014 8:36:15 AM	12226
Silver	ND	0.0051	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**MB-12230**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501079**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12230**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501080**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.6	80	120			

Sample ID	**1403705-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501082**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	86.3	75	125			

Sample ID	**1403705-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501083**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	86.8	75	125	0.554	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**MB-12256**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12256**	RunNo:	**17422**					
Prep Date:	**3/19/2014**	Analysis Date:	**3/19/2014**	SeqNo:	**501893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12256**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12256**	RunNo:	**17422**					
Prep Date:	**3/19/2014**	Analysis Date:	**3/19/2014**	SeqNo:	**501894**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.020	0.005000	0	103	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501609**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.10	0.5000	0	104	80	120			
Cadmium	0.52	0.10	0.5000	0	103	80	120			
Chromium	0.51	0.10	0.5000	0	102	80	120			
Lead	0.50	0.10	0.5000	0	99.7	80	120			
Selenium	0.49	0.10	0.5000	0	97.2	80	120			
Silver	0.10	0.10	0.1000	0	104	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501612**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17416**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501654**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17416**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501655**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17415**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501645**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.020	0.5000	0	104	80	120			
Cadmium	0.52	0.0020	0.5000	0	103	80	120			
Chromium	0.51	0.0060	0.5000	0	102	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.49	0.050	0.5000	0	97.2	80	120			
Silver	0.10	0.0050	0.1000	0	104	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17415**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501646**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	0.020	0.050								J
Silver	ND	0.0050								

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17416**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501671**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17416**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501672**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403705 RcptNo: 1

Received by/date: 03/17/14

Logged By: **Lindsay Mangin** 3/17/2014 1:30:00 PM

Completed By: **Lindsay Mangin** 3/17/2014 2:11:40 PM

Reviewed By: 3/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standa ☐ **Rush** **Next Day**
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	WW Effluent Monitoring/SeRT (Mondays)
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Mike Holder
	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 2.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403705	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
3/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
3/17/14	10:00	Jerry Sosa			
				03/17/14	1330

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 27, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT (Mondays) OrderNo.: 1403966

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location # 6)
Project: Wastewater Effluent Monitoring/SeRT (
Collection Date: 3/24/2014 6:00:00 AM
Lab ID: 1403966-001 **Matrix:** AQUEOUS **Received Date:** 3/24/2014 1:47:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	0.00042	0.000087	0.00020		mg/L	1	3/24/2014 5:58:53 PM	12328
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.032	0.0076	0.020		mg/L	1	3/25/2014 9:11:06 AM	12339
Barium	0.073	0.0016	0.020		mg/L	1	3/25/2014 9:11:06 AM	12339
Cadmium	ND	0.0012	0.0020		mg/L	1	3/25/2014 9:11:06 AM	12339
Chromium	0.0070	0.0019	0.0060		mg/L	1	3/25/2014 9:11:06 AM	12339
Lead	0.0066	0.0047	0.0050		mg/L	1	3/25/2014 9:11:06 AM	12339
Selenium	0.12	0.014	0.050		mg/L	1	3/25/2014 9:11:06 AM	12339
Silver	ND	0.0013	0.0050		mg/L	1	3/25/2014 9:11:06 AM	12339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT (
Collection Date: 3/24/2014 6:00:00 AM
Lab ID: 1403966-002 **Matrix:** AQUEOUS **Received Date:** 3/24/2014 1:47:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/25/2014 5:34:38 PM	12358
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.016	0.015	0.10	J	mg/L	1	3/25/2014 9:12:26 AM	12339
Barium	0.080	0.0024	0.10	J	mg/L	1	3/25/2014 9:12:26 AM	12339
Cadmium	ND	0.0014	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Chromium	ND	0.0012	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Lead	ND	0.0059	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Selenium	0.15	0.031	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Silver	ND	0.0051	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12328**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12328**	RunNo:	**17527**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/24/2014**	SeqNo:	**505323**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12328**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12328**	RunNo:	**17527**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/24/2014**	SeqNo:	**505324**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12358**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12358**	RunNo:	**17559**					
Prep Date:	**3/25/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505757**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12358**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12358**	RunNo:	**17559**					
Prep Date:	**3/25/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505758**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.020	0.005000	0	103	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12339**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**12339**	RunNo:	**17546**
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505482** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-12339**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**12339**	RunNo:	**17546**
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0	104	80	120			
Barium	0.50	0.10	0.5000	0	99.2	80	120			
Cadmium	0.50	0.10	0.5000	0	101	80	120			
Chromium	0.49	0.10	0.5000	0	98.8	80	120			
Lead	0.50	0.10	0.5000	0	100	80	120			
Selenium	0.50	0.10	0.5000	0	99.6	80	120			
Silver	0.11	0.10	0.1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12339**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12339**	RunNo:	**17546**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505593**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	0.017	0.050								J
Silver	ND	0.0050								

Sample ID	**LCS-12339**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12339**	RunNo:	**17546**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505594**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	104	80	120			
Barium	0.50	0.020	0.5000	0	99.2	80	120			
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Chromium	0.49	0.0060	0.5000	0	98.8	80	120			
Lead	0.50	0.0050	0.5000	0	100	80	120			
Selenium	0.50	0.050	0.5000	0	99.6	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403966 RcptNo: 1

Received by/date: AG 03/24/14

Logged By: **Lindsay Mangin** 3/24/2014 1:47:00 PM

Completed By: **Lindsay Mangin** 3/24/2014 1:51:45 PM

Reviewed By: CS 03/24/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MJ

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: WW Effluent Monitoring/SeRT (Mondays)
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.5

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403966	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
3/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
3/24/14	10:00	Jerry Sosa			
				03/24/14	1347
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 08, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1404085

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1404085**
Date Reported: **4/8/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (Location #6)
Project: Wastewater Effluent Monitoring
Collection Date: 4/1/2014 10:45:00 AM
Lab ID: 1404085-001 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.076	0.050		mg/L	1	4/3/2014 11:21:34 AM	12503

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (Location #6)
Project: Wastewater Effluent Monitoring
Collection Date: 4/1/2014 10:45:00 AM
Lab ID: 1404085-002 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.076	0.050		mg/L	1	4/3/2014 11:23:29 AM	12503

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404085**

08-Apr-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-12503**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512092**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	0.050									

Sample ID	**LCS-12503**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512093**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	0.50	0.050	0.5000	0	99.7	80	120				

Sample ID	**1404085-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**Effluent to Wells (L**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512096**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	1.0	0.5000	0.07623	102	75	125				

Sample ID	**1404085-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**Effluent to Wells (L**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512097**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	1.0	0.5000	0.07623	104	75	125	0	20		

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404085**

08-Apr-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-12503**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12503**	RunNo:	**17771**					
Prep Date:	***4/2/2014***	Analysis Date:	***4/3/2014***	SeqNo:	**512102**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-12503**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12503**	RunNo:	**17771**					
Prep Date:	***4/2/2014***	Analysis Date:	***4/3/2014***	SeqNo:	**512103**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0	99.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1404085 RcptNo: 1

Received by/date: 04/02/14

Logged By: **Lindsay Mangin** 4/2/2014 9:30:00 AM

Completed By: **Lindsay Mangin** 4/2/2014 9:56:05 AM

Reviewed By: 04/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa ☐ Rush Next Day

Project Name:

WW Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1404085	Total Se by EPA Method 6010B	TCLP Selenium 1311/6010
4/1/14	10:45	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
4/1/14	10:45	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/1/14	16:15	Aaron Strange			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				04/02/14	0900

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment B:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013[3]	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05
3/24/2014	T-801 Effluent to Wells	Hall	0.15	-	-	0.15
4/1/2014[4]	T-801 Effluent to Wells	Hall	0.08	-	-	0.08

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

[3]Digestion procedure and sample processing altered as described in the text above based upon the December 4, 2013 CH2M HILL review of selenium sampling data report.

[4]Required sampling from this point forward will be conducted on a quarterly basis per Exhibit A, Condition 1(c) of the Order.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through April 21, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		-	-	-	<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	-	-	-	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		-	-	-	<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	-	-	-	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		-	-	-	<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	-	-	-	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		-	-	-	<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	-	-	-	0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	-	-	-	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	-	-	-	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	-	-	-	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	-	-	-	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		-	-	-	10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	-	-	-	9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		-	-	-	14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	-	-	-	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		-	-	-	14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	-	-	-	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		-	-	-	14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	-	-	-	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	-	-	-	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	-	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	-	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	-	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-	-	-	-	12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-	-	-	-	11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-	-	-	-	7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-	-	-	-	17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	-	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	-	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	-	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	-	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	-	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	-	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	-	-	-	0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	-	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-	-	-	-	9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-	-	-	-	17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-	-	-	-	15.00	15.00	0.19	0.29	-	-	-	0.6	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-	-	-	-	0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.3	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	-	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.25	0.25	5.40	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.150	-	-	-	-	-	-	-	-	-	1403966 1403967 1403968
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	1404085

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through April 21, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		-	-	0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	-	-	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		-	-	0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	-	-	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		-	-	0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	-	-	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		-	-	0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	-	-	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	-	-	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	-	-	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	-	-	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		-	-	3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	-	-	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		-	-	5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	-	-	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		-	-	1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	-	-	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		-	-	3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	-	-	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	-	-	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	-	-	9.9	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-	-	-	11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-	-	-	9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-	-	-	6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-	-	-	14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-	-	-	3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-	-	-	7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-	-	-	16.0	16.0	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	-	-	<5	<5	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	-	-	<4.5	<4.5	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.1	3.2	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	1403331 1403332 1403333

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870
3/24/2014	Hall Environmental	-	-	-	-	0.61	0.61	4.70	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	1403966 1403967 1403968
3/27/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403B40
3/31/2014	Hall Environmental	-	-	-	-	-	-	4.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403C50
4/1/2014	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.076	-	-	-	-	-	-	1404085
4/3/2014	Hall Environmental	-	-	-	-	-	-	3.60	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404180
4/7/2014	Hall Environmental	-	-	-	-	-	-	4.70	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404270
4/10/2014	Hall Environmental	-	-	-	-	-	-	4.10	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404505
4/14/2014	Hall Environmental	-	-	-	-	-	-	3.90	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404611
4/17/2014	Hall Environmental	-	-	-	-	-	-	4.00	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404826
4/21/2014	Hall Environmental	-	-	-	-	-	-	3.00	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1404884

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

AMENDMENT TO AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended ("Act"), and the regulations promulgated under the Act, the Oil Conservation Commission and the Oil Conservation Division of the Energy Minerals and Natural Resources Department of the State of New Mexico (together, "OCD") issues this Amendment to Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, which was issued to Navajo Refining Company, L.L.C. ("Navajo") on November 14, 2013 and which includes Exhibit A (together, the "Order"). The Order directs compliance with the Act, the Water Quality Control Commission Regulations and permits issued under the Act.

I. FINDINGS AND DETERMINATIONS

1. The Order at Paragraph 12 of Exhibit A requires that Navajo complete a technical evaluation of potential short-term refinery process changes to reduce selenium concentrations in wastewater and provide OCD with a summary of same on or before December 13, 2013, including its selection of short-term remedies.

2. On or before December 13, 2013, Navajo completed and submitted to OCD its technical evaluation and selection of short-term remedies as required under Paragraph 12 of Exhibit A. Navajo selected as its short-term remedies Iron Co-precipitation via ferric chloride injection ("ICP") and the installation of an approximate 100-gallon per minute, trial SeRT® unit.

3. The Order at Paragraph 13 of Exhibit A requires that, following OCD approval, Navajo commence permitting (if required) and commence and complete construction of the short-term remedies selected pursuant to Paragraph 12 of Exhibit A and that Navajo thereafter achieve compliance with the Se Limit (defined in the Order), all in accordance with general timeframes and conditions provided in the Order.

4. On or about December 16, 2013, OCD conditionally approved Navajo's selected short-term remedies to reduce selenium concentrations in wastewater.

5. Navajo has accelerated its progress in constructing and implementing the approved short-term remedies and kept OCD informed of its progress through monthly interim progress reports and other correspondence.

6. The Order at Paragraph 14 of Exhibit A requires that OCD and Navajo amend Exhibit A to establish milestones and deadlines for the construction and completion of the short-term remedies selected pursuant to Paragraph 12 of Exhibit A and achievement of the Se Limit. OCD and Navajo have agreed to a schedule of these milestones and deadlines. OCD and Navajo have further agreed that Navajo may at any time, after notice to OCD, cease operation of ICP and still satisfy requirements pertaining to these milestones and deadlines, provided that Navajo continues to achieve compliance with the Se Limit.

7. The Order at Paragraph 15 of Exhibit A describes certain long-term options under consideration by Navajo for addressing selenium concentrations in wastewater and requires that Navajo advise OCD of its selection of these options by May 30, 2014. Based on the results of Navajo's technical evaluation and ongoing related work, Navajo has adjusted certain of its plans regarding long-term options for addressing selenium concentrations in wastewater and requires additional time to evaluate and advise OCD of its selection of these long-term options. It is

therefore necessary and appropriate to modify Paragraph 15 of Exhibit A.

8. Paragraph 1.a. of Section IV of the Order provides that Navajo and OCD have the right to modify the Order by written instrument signed by both parties.

II. AMENDMENT

1. The Order at Paragraphs 13 – 15 of Exhibit A are hereby amended and restated in the attached Amended Exhibit A to Amended and Supplemental Agreed Compliance Order to incorporate (a) the agreed-upon schedule of milestones and deadlines for implementation of Navajo's selected short-term remedies to reduce selenium concentrations in wastewater, and (b) adjustments to Navajo's plans regarding long-term options for addressing selenium concentrations in wastewater and the date for selection of these options.

2. The Order remains unchanged except as stipulated herein.

3. This Amendment may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this ___ day of April, 2014.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Amendment, and agrees to all of the terms and provisions as set forth in the Amendment,

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 22 April 2014

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Amended Exhibit A to Amended and Supplemental Agreed Compliance Order (April 21, 2014)

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo stops injection to the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting to the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

c) take such other actions as may be appropriate to address the exceedance; and

d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo stops injection to the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. Navajo shall notify OCD by e-mail that it has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

    a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

b) a summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

c) the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the causes of the exceedences of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

    a) its selection of a short-term remedy(ies);

    b) dates for completion of any necessary bench scale or other trials;

    c) dates of anticipated installation of any selected technology(ies); and

    d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall construct and implement the remedy selected pursuant to paragraph 12 above (the "Remediation Project") in accordance with the following schedule of milestones and deadlines following OCD approval of same.

    a) Completion of scale-up trial and commencement of full-scale operation of an iron co-precipitation process via ferric chloride injection ("ICP") by February 1, 2014.
    b) Completion of construction and startup of a Phillips 66, trial SeRT® unit (approximate 100 gallons per minute capacity) by February 1, 2014.
    c) Confirmation of selenium reduction using trial SeRT® unit by March 31, 2014.
    d) Achievement of compliance with the Se Limit as measured at the Sample Location by September 15, 2014.

    Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion." Notwithstanding the foregoing, Navajo may, after notice to OCD, cease operation of ICP at any time and still satisfy requirements for Remediation Project Completion, provided that Navajo continues to achieve compliance with the Se Limit (as measured at the Sample Location).

14. Reserved.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. Depending on the efficacy of the trial SeRT® unit described in Paragraph 13, above, Navajo may elect to install and/or build a full capacity permanent SeRT® unit or modify the trial SeRT® unit. In addition, Navajo continues to evaluate alternative technologies for selenium removal. On or before September 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Tuesday, April 08, 2014 1:35 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Crawford, Dan
Subject: 4/2/14 Effluent Se Results
Attachments: Rpt_1404085_Final_v1.pdf

Scott/Carl – attached are the effluent selenium results for April 2, 2014.

For 4/2/14:

Total Effluent Se = 0.076 mg/L

TCLP Effluent Se = 0.076 mg/L

Per Exhibit A, Condition 1(c) to the Amended and supplemented Order dated November 14, 2013, this constitutes the fourth consecutive monthly sample below the 1.0 mg/L limit (the monthly sampling requirement began in January 2014). Therefore, sampling will now be conducted on a quarterly basis, per Condition 1(c) on the first business day of the quarter- the next scheduled sampling date will be Tuesday, July 1, 2014. Please let me know if you have a different interpretation or if you have any questions or comments. Thanks again for your assistance in this matter.

I am also copying Dan Crawford on this email. Dan is my replacement and the new Environmental Manager at the Refinery. In the near future we can schedule a call to introduce you or possibly come to Santa Fe so you can meet in person.

Thanks,
Mike

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 08, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1404085

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1404085**
Date Reported: **4/8/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (Location #6)
Project: Wastewater Effluent Monitoring
Collection Date: 4/1/2014 10:45:00 AM
Lab ID: 1404085-001 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.076	0.050		mg/L	1	4/3/2014 11:21:34 AM	12503

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (Location #6)
Project: Wastewater Effluent Monitoring
Collection Date: 4/1/2014 10:45:00 AM
Lab ID: 1404085-002 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.076	0.050		mg/L	1	4/3/2014 11:23:29 AM	12503

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404085**

08-Apr-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-12503**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512092**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	0.050									

Sample ID	**LCS-12503**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512093**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	0.50	0.050	0.5000	0	99.7	80	120				

Sample ID	**1404085-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**Effluent to Wells (L**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512096**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	1.0	0.5000	0.07623	102	75	125				

Sample ID	**1404085-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**Effluent to Wells (L**	Batch ID:	**12503**		RunNo:	**17771**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/3/2014**		SeqNo:	**512097**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	1.0	0.5000	0.07623	104	75	125	0	20		

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404085**

08-Apr-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-12503**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12503**	RunNo:	**17771**					
Prep Date:	***4/2/2014***	Analysis Date:	***4/3/2014***	SeqNo:	**512102**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-12503**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12503**	RunNo:	**17771**					
Prep Date:	***4/2/2014***	Analysis Date:	***4/3/2014***	SeqNo:	**512103**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0	99.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1404085 RcptNo: 1

Received by/date: 04/02/14

Logged By: **Lindsay Mangin** 4/2/2014 9:30:00 AM

Completed By: **Lindsay Mangin** 4/2/2014 9:56:05 AM

Reviewed By: 04/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa ☐ Rush Next Day

Project Name:

WW Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1404085	Total Se by EPA Method 6010B	TCLP Selenium 1311/6010
4/1/14	10:45	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
4/1/14	10:45	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/1/14	16:15	Aaron Strange			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				04/02/14	0900

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, March 31, 2014 3:38 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Monthly Interim Progress Report Submittal - March 2014
Attachments: OCD Order March 2014 Monthly Progress Report.pdf

Scott & Carl,

Please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between Navajo Refining Company (NRC) & OCD (Dated November 14, 2013). The original hardcopy is going out to April 1, 2014 via certified mail. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,
Mike

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HOLLYFRONTIER.

April 1, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7006 0100 0003 6610 0033

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
March 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the March 2014 monthly progress report, detailing the actions taken during the preceding calendar month of February 2014, and due on the first business day of the following month (i.e., April 1, 2014). This report also includes the final analytical results as of March 20, 2014, and the actions taken through approximately March 27, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste

Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.
- The February 2014 progress report was submitted on March 3, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit or the modification of the existing, 100 gpm trial SeRT® unit. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.

- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® unit.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co-Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® unit.

March 20, 2014

- Achieved stable operation; in process of confirming that selenium reduction is being achieved by the 100 gpm trial SeRT® unit. The trial results through March 20 are summarized in Table 3 below and show an average total selenium removal efficiency of 90%.

Table 3: Selenium Measurements Collected During the 100 gpm Trial SeRT® Unit

		Flow to SeRT	SeRT Influent		SeRT Effluent		Removal Efficiency
		-	Total Se	TCLP Se	Total Se	TCLP Se	On Total Se
DATE	Laboratory	(gpm)	(ppm)	(ppm)	(ppm)	(ppm)	-
2/10/2014	Hall Environmental	75	5.20	-	0.31	-	94%
2/12/2014	Hall Environmental	85	6.50	-	0.60	-	91%
2/13/2014	Hall Environmental	85	6.00	6.50	0.81	0.83	87%
2/17/2014	Hall Environmental	100	6.60	8.30	1.20	1.70	82%
2/19/2014	Hall Environmental	85	7.20	7.50	1.20	1.30	83%
2/20/2014	Hall Environmental	98	7.00	7.50	1.40	1.70	80%
2/24/2014	Hall Environmental	102	7.00	6.90	1.50	1.70	79%
2/26/2014	Hall Environmental	102	6.60	5.70	1.50	1.40	77%
2/27/2014	Hall Environmental	104	5.80	6.20	0.46	0.50	92%
3/3/2014	Hall Environmental	104	5.60	5.60	0.49	0.57	91%
3/5/2014	Hall Environmental	106	5.70	5.40	0.56	0.61	90%
3/6/2014	Hall Environmental	115	5.40	5.40	0.44	0.52	92%
3/10/2014	Hall Environmental	115	5.30	5.70	0.19	0.23	96%
3/12/2014	Hall Environmental	113	5.20	5.10	0.21	0.23	96%
3/13/2014	Hall Environmental	115	5.00	5.30	0.14	0.16	97%
3/17/2014	Hall Environmental	120	4.40	4.80	0.14	0.19	97%
3/19/2014	Hall Environmental	110	3.90	4.30	0.17	0.20	96%
3/20/2014	Hall Environmental	84	4.40	4.80	0.11	0.11	98%

As noted in the February 2014 monthly interim progress report, submitted on March 3, 2014, Navajo will consider discontinuing ferric chloride injection based on the results of the ongoing trial of the 100 gpm SeRT® unit. Navajo has also developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. Specifically, depending on the results of the above SeRT® trial, Navajo may install a full capacity permanent SeRT® unit or modify the existing 100 gpm trial SeRT® unit, with an estimated startup goal for this installation or modification of January 31, 2015.

Navajo will submit shortly a draft Order amendment that includes a schedule of milestones and deadlines for purposes of amending Exhibit A to the Order, as set forth in Paragraph 14 of that Exhibit.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 4. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through March 20, 2014). As of the sample collected on March 17, 2014, Navajo has achieved nineteen consecutive weeks of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 4. The laboratory reports for the samples collected in December through March 17, 2014, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 4: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent	Hall Environmental	EPA 6010B	0.088	0.088

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
	Sampling Point				
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28
3/3/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.14	0.14
3/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05
3/13/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.08	0.08
3/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.05	0.05

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October, November, December, January, and February through March 20, 2014.

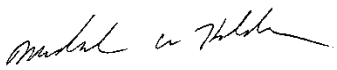
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the March 17, 2014 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013

Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,



Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-001 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/4/2013 6:54:13 PM	10631
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.051	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Barium	0.032	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Cadmium	ND	0.0020		mg/L	1	12/3/2013 3:05:00 PM	10606
Chromium	ND	0.0060		mg/L	1	12/3/2013 3:05:00 PM	10606
Lead	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606
Selenium	0.77	0.050		mg/L	1	12/3/2013 3:05:00 PM	10606
Silver	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10631**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439377**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10631**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439378**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**PBW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438128** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10606**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**LCSW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.50	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-002
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY, TCLP						Analyst: **JML**
Mercury	ND	0.020		mg/L	1	12/4/2013 7:36:06 PM
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**
Arsenic	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Barium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Cadmium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Chromium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Lead	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Selenium	0.88	0.10		mg/L	1	12/4/2013 11:20:03 AM
Silver	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10632**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10632**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439385**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

Sample ID	**1312047-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439387**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.7	75	125			

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439388**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10620**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439004** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10620**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	105	80	120			
Barium	ND	100	0.5000	0	94.2	80	120			
Cadmium	ND	1.0	0.5000	0	104	80	120			
Chromium	ND	5.0	0.5000	0	95.6	80	120			
Lead	ND	5.0	0.5000	0	95.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	108	80	120			

Sample ID **1312047-002AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.10	0.5000	0.04824	101	75	125			
Barium	0.52	0.10	0.5000	0.07379	89.8	75	125			
Cadmium	0.50	0.10	0.5000	0	100	75	125			
Chromium	0.45	0.10	0.5000	0	90.8	75	125			
Lead	0.45	0.10	0.5000	0	90.1	75	125			
Silver	0.10	0.10	0.1000	0	103	75	125			

Sample ID **1312047-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04824	95.1	75	125	5.40	20	
Barium	0.50	0.10	0.5000	0.07379	84.8	75	125	4.83	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10620**	RunNo:	**15224**
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.10	0.5000	0	95.2	75	125	5.31	20	
Chromium	0.43	0.10	0.5000	0	86.1	75	125	5.28	20	
Lead	0.43	0.10	0.5000	0	85.3	75	125	5.47	20	
Silver	ND	0.10	0.1000	0	98.1	75	125	200	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312046

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312046**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-001
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.37	0.050		mg/L	1	12/3/2013 2:11:58 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-002 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.48	0.10		mg/L	1	12/4/2013 10:54:34 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-003 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	7.5	1.0		mg/L	20	12/3/2013 2:25:28 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-004 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	9.4	1.0		mg/L	10	12/4/2013 11:27:09 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-005 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 2:36:48 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-006 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.9	0.50		mg/L	5	12/4/2013 11:29:30 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-007 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.82	0.25		mg/L	5	12/3/2013 2:53:49 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-008 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.76	0.10		mg/L	1	12/4/2013 11:01:39 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-009
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.63	0.050		mg/L	1	12/3/2013 2:56:31 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-010 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.83	0.10		mg/L	1	12/4/2013 11:04:02 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-011
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 3:02:04 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-012
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.8	0.50		mg/L	5	12/4/2013 11:31:53 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10620**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439004**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10620**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439005**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**PBW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438128**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10606**	SampType: **LCS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**LCSW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438129**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0	101	80	120			

Sample ID	**1312046-005AMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438177**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.6	0.25	0.5000	3.188	90.1	75	125			

Sample ID	**1312046-005AMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438178**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.7	0.25	0.5000	3.188	94.2	75	125	0.565	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312046 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:42:42 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required)	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)? (Not required)	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

Added 2mL HNO_3 to 003A for acceptable pH. 12/02/13

of preserved bottles checked for pH: 6 (<2 or >12 unless noted)

Adjusted? yes

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Change~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312045	Total Selenium 2008 6010	TCLP Selenium 1311/6010
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	HNO3	-001	X	
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	NEAT	-002		X
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	HNO3	-003	X	
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	NEAT	-004		X
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	HNO3	-005	X	
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	NEAT	-006		X
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	HNO3	-007	X	
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	NEAT	-008		X
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	HNO3	-009	X	
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	NEAT	-010		X
12/2/13	6:30	Liquid	W-20	Plastic-1	HNO3	-011	X	
12/2/13	6:30	Liquid	W-20	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	Anthony Widman			
				12/02/13	1443

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312316

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312316**
Date: **12/11/2013**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

All samples, excluding Hg, digested using EPA Method 3010.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-001
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/10/2013 4:25:22 PM	10723
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.031	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Barium	0.022	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Cadmium	ND	0.0020		mg/L	1	12/11/2013 10:15:00 AM	10734
Chromium	ND	0.0060		mg/L	1	12/11/2013 10:15:00 AM	10734
Lead	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734
Selenium	0.37	0.050		mg/L	1	12/11/2013 10:15:00 AM	10734
Silver	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/10/2013 4:59:51 PM	10731
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Barium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Cadmium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Chromium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Lead	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Selenium	0.38	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Silver	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10723**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443477**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10723**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443478**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.8	80	120			

Sample ID	**1312297-001GMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443481**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	75	125			

Sample ID	**1312297-001GMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443482**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.3	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10731**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443489**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10731**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443490**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Sample ID	**1312287-001AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	75	125			

Sample ID	**1312287-001AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.5	80	120			
Barium	ND	100	0.5000	0	87.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.6	80	120			
Chromium	ND	5.0	0.5000	0	88.8	80	120			
Lead	ND	5.0	0.5000	0	88.1	80	120			
Selenium	ND	1.0	0.5000	0	88.2	80	120			
Silver	ND	5.0	0.1000	0	97.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.5	80	120			
Barium	0.44	0.020	0.5000	0	87.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.6	80	120			
Chromium	0.44	0.0060	0.5000	0	88.8	80	120			
Lead	0.44	0.0050	0.5000	0	88.1	80	120			
Selenium	0.44	0.050	0.5000	0	88.2	80	120			
Silver	0.098	0.0050	0.1000	0	97.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: **1312316** RcptNo: 1

Received by/date: MG 12/09/13

Logged By: **Michelle Garcia** 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/9/2013 2:30:49 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ✔	
9. Was preservative added to bottles?	Yes ✔	No ☐	NA ☐
	Added 1 mL HNO3 to 001A for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? YES
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 6°

HEAL No. 1312316

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	Total Selenium 200.8	TCLP Selenium 1311/6010	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	HNO3			X	
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	Neat				X

Date	Time	Relinquished by	Received by	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312315

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312315**
Date Reported: **12/11/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312315-001 **Matrix:** AQUEOUS

Client Sample ID: D-250 Flu Gas Scrubber
Collection Date: 12/9/2013 6:00:00 AM
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.9	1.0		mg/L	20	12/11/2013 10:45:44 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	7.4	1.0		mg/L	20	12/11/2013 10:48:06 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-003
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.5	0.25		mg/L	5	12/11/2013 10:50:27 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-004
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/11/2013 10:52:48 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-005 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 10:59:18 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-006
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 11:01:40 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-007
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:04:03 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-008
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:06:25 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-009
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:11:11 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-010
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:13:35 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-011
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.38	0.050		mg/L	1	12/11/2013 10:10:17 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-012
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.28	0.050		mg/L	1	12/11/2013 10:12:38 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312315 RcptNo: 1

Received by/date: MG 12/09/13

Logged By: Michelle Garcia 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/9/2013 2:31:56 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑ not required	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ Not required	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ☑	
9. Was preservative added to bottles?	Yes ☑	No	NA
10. VOA vials have zero headspace?	Yes ☐	No ☐	See Remarks No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No	Adjusted? Yes
14. Is it clear what analyses were requested?	Yes ☑	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standard ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312315	Total Selenium 6010	TCLP Selenium 1311/6010
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	HNO3	-001	X	
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	Neat	-002		X
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	HNO3	-003	X	
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	Neat	-004		X
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	HNO3	-005	X	
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	Neat	-006		X
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	HNO3	-007	X	
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	Neat	-008		X
12/9/13	6:00	Liquid	W-634	Plastic-1	HNO3	-009	X	
12/9/13	6:00	Liquid	W-634	Plastic-1	Neat	-010		X
12-9-13	0600	Liquid	T-830	Plastic-1	HNO3	-011	X	
12-9-13	0600	Liquid	T-830	Plastic-1	Neat	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 20, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312687

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312687**
Date Reported: **12/20/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **IDC**	
Mercury	ND	0.00020		mg/L	1	12/20/2013 1:52:17 PM	10902
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.042	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Barium	0.024	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Cadmium	ND	0.0020		mg/L	1	12/18/2013 3:08:18 PM	10852
Chromium	ND	0.0060		mg/L	1	12/18/2013 3:08:18 PM	10852
Lead	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852
Selenium	0.43	0.050		mg/L	1	12/18/2013 3:08:18 PM	10852
Silver	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **IDC**	
Mercury	ND	0.020		mg/L	1	12/20/2013 1:11:22 PM	10901
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Barium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Cadmium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Chromium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Lead	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Selenium	0.35	0.050		mg/L	1	12/18/2013 3:10:42 PM	10852
Silver	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10902**	SampType:	**mblk**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451283**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10902**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451284**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10901**	SampType:	**mblk**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451196**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10901**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451197**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448892**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10852**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	94.9	80	120			
Barium	ND	100	0.5000	0	92.0	80	120			
Cadmium	ND	1.0	0.5000	0	95.7	80	120			
Chromium	ND	5.0	0.5000	0	92.9	80	120			
Lead	ND	5.0	0.5000	0	90.4	80	120			
Selenium	ND	1.0	0.5000	0	91.3	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312687 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 4:03:17 PM Michelle Garcia

Reviewed By: MNS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: \
(<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312487	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	HNO3	001	X	
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
12/16/13	10:30	Anthony Widman		12/16/13	1500	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date	Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 19, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312686

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312686**
Date Reported: **12/19/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.4	5.0		mg/L	100	12/18/2013 1:14:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	11	1.0		mg/L	20	12/18/2013 1:24:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-003 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 1:29:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-004 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.4	0.25		mg/L	5	12/18/2013 1:43:46 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-005
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.37	0.050		mg/L	1	12/18/2013 1:46:09 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-006
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.23	0.050		mg/L	1	12/18/2013 1:48:30 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-007
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.5	0.25		mg/L	5	12/18/2013 1:53:22 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-008 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/18/2013 2:22:57 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-009
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.8	0.25		mg/L	5	12/18/2013 2:27:43 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-010 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/18/2013 2:32:14 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-011 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 3:01:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-012
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.6	0.25		mg/L	5	12/18/2013 3:05:54 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312686**

19-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448892**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0								

Sample ID	**LCS-10852**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448893**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0	0.5000	0	91.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312686 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 3:58:04 PM Michelle Garcia

Reviewed By: KMS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☑ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required) Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? (Not required) Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☐ No ☑
9. Was preservative added to bottles? Yes ☑ No ☐ NA ☐

FOR METALS ANALYSIS: ADDED 1mL HNO3 TO 001A, 2mL HNO3 TO 007A, AND 2 mL HNO3 TO 009A FOR ACCEPTABLE pH

10. VOA vials have zero headspace? See Remarks Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? ~~_____~~ NO
Checked by: _____

12/16

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks: JA 12/16/13

~~Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.~~

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: ~~Kara Germaine~~ Kelvin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 4.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312686	Total Selenium 6010/6020	TCLP Selenium 1311/6010
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	HNO3	001	X	
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	NEAT	002		X
12/16/13	6:10	Liquid	W-20	Plastic-1	HNO3	003	X	
12/16/13	6:10	Liquid	W20	Plastic-1	NEAT	004		X
12/16/13	7:20	Liquid	Tank 830	Plastic-1	HNO3	005	X	
12/16/13	7:20	Liquid	Tank 830	Plastic-1	NEAT	006		X
12/16/13	5:55	Liquid	D2101 outlet	Plastic-1	HNO3	007	X	
12/16/13	5:55	Liquid	D2101 Outlet	Plastic-1	NEAT	008		X
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	HNO3	009	X	
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	NEAT	010		X
12/16/13	6:25	Liquid	W-634	Plastic-1	HNO3	011	X	
12/16/13	6:25	Liquid	W-634	Plastic-1	NEAT	012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/16/13	10:00	Anthony Widman		12/16/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B14

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B14**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-001
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/27/2013 1:46:49 PM	11002
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.040	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Barium	0.042	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Cadmium	ND	0.0020		mg/L	1	12/30/2013 3:55:17 PM	11005
Chromium	0.0070	0.0060		mg/L	1	12/30/2013 3:55:17 PM	11005
Lead	ND	0.0050		mg/L	1	12/27/2013 10:13:49 AM	11005
Selenium	0.27	0.050		mg/L	1	12/27/2013 10:13:49 AM	11005
Silver	ND	0.0050		mg/L	1	12/30/2013 3:55:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/27/2013 3:02:36 PM	11004
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Barium	0.12	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Cadmium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Chromium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Lead	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Selenium	0.27	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Silver	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11002**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455051**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11002**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455052**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11004**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455102**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11004**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455103**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.4	80	120			
Barium	ND	100	0.5000	0	92.9	80	120			
Cadmium	ND	1.0	0.5000	0	98.7	80	120			
Chromium	ND	5.0	0.5000	0	93.2	80	120			
Lead	ND	5.0	0.5000	0	93.1	80	120			
Selenium	ND	1.0	0.5000	0	94.4	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	93.4	80	120			
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.7	80	120			
Chromium	0.47	0.0060	0.5000	0	93.2	80	120			
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B14 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:44:48 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312814	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	HNO3	-001	X	
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	12:00	Anthony Widman		12/23/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B16

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 14 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B16**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-001 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.6	0.25		mg/L	5	12/30/2013 3:57:41 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	4.8	0.50		mg/L	5	12/30/2013 4:00:05 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-003
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	14	10		mg/L	200	12/30/2013 4:12:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-004 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	17	2.0		mg/L	20	12/30/2013 4:14:33 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-005 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.4	0.25		mg/L	5	12/30/2013 4:16:56 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-006 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.0	0.50		mg/L	5	12/30/2013 4:19:20 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-007
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	0.41	0.050		mg/L	1	12/30/2013 4:21:46 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-008
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.32	0.10		mg/L	1	12/30/2013 4:24:09 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-009 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.1	1.0		mg/L	20	12/30/2013 4:26:34 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-010 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.10	0.10		mg/L	1	12/30/2013 4:29:01 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-011 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	2.1	0.25		mg/L	5	12/30/2013 4:36:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-012
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.3	0.50		mg/L	5	12/30/2013 4:38:32 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-013 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.8	0.25		mg/L	5	12/30/2013 4:40:55 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-014 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	5.0	1.0		mg/L	10	12/30/2013 4:43:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455301**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455302**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	94.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456705**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456706**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	94.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B16 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:50:54 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑ SEE REMARKS	NA ☐ 12/23/13
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 4 (<2 or >12 unless noted)

Adjusted? 16

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: FOR METALS ANALYSIS: ADDED 4mL HNO_3 TO -003A & -005A AND 2mL TO -007A & -011A FOR ACCEPTABLE pH 12/23/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312316	Total Selenium 6010	TCLP Selenium 1311/6010
12/23/13	6:00	Liquid	WW20	plastic 1	HNO3	-001	X	
12/23/13	6:00	Liquid	WW20	plastic 1	NEAT	-002		X
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	HNO3	-003	X	
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	NEAT	-004		X
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	HNO3	-005	X	
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	NEAT	-006		X
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	HNO3	-007	X	
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	NEAT	-008		X
12/23/13	6:28	Liquid	836 Discharge	plastic 1	HNO3	-009	X	
12/23/13	6:28	Liquid	836 Discharge	plastic 1	NEAT	-010		X
12/23/13	6:40	Liquid	D2101 - Desalter	plastic 1	HNO3	-011	X	
12/23/13	6:40	Liquid	D2101 Desalter	plastic 1	NEAT	-012		X

Date: 12/23/13	Time: 10:00	Relinquished by: Anthony Widmer	Received by:	Date: 12/23/13	Time: 1500
Date:	Time:	Relinquished by:	Received by:	Date:	Time:

Remarks: Expedited turn-around and results sent to Mike Holder

Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312R16	Total Selenium 2 (6010)	TCLP Selenium 1311/6010
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	HNO3	-05	X	
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	NEAT	-06		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	10:00	Anthony Widman			
Date:	Time:	Relinquished by:	Received by:	12/23/13	1500

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 10, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C58

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312C58**
Date Reported: **1/10/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/1/2014 12:58:17 PM	11042
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.045	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Barium	0.032	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Cadmium	ND	0.0020		mg/L	1	1/2/2014 10:53:15 AM	11044
Chromium	ND	0.0060		mg/L	1	1/2/2014 10:53:15 AM	11044
Lead	ND	0.0050		mg/L	1	1/2/2014 10:53:15 AM	11044
Selenium	0.33	0.050		mg/L	1	1/2/2014 10:53:15 AM	11044
Silver	ND	0.0050	B	mg/L	1	1/2/2014 10:53:15 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/1/2014 1:41:46 PM	11043
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Barium	0.16	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Cadmium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Chromium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Lead	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Selenium	0.33	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Silver	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11042**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457324**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11042**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457325**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1312C58-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457327**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.7	75	125			

Sample ID	**1312C58-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457328**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.2	75	125	1.68	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11043**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457333**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11043**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457334**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Sample ID	**1312C58-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457336**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.9	75	125			

Sample ID	**1312C58-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457337**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.5	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457226** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457227** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.1	80	120			
Barium	0.47	0.10	0.5000	0	94.8	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.48	0.10	0.5000	0	95.5	80	120			
Lead	0.48	0.10	0.5000	0	95.8	80	120			
Selenium	0.49	0.10	0.5000	0	97.5	80	120			
Silver	0.12	0.10	0.1000	0	116	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	0.027	0.0050								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.1	80	120			
Barium	0.47	0.020	0.5000	0	94.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.48	0.0060	0.5000	0	95.5	80	120			
Lead	0.48	0.0050	0.5000	0	95.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.12	0.0050	0.1000	0	116	80	120			B

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C58 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 3:03:51 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: ____ (<2 or >12 unless noted)

Adjusted? ____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project Name: Wastewater Effluent Monitoring
Phone #: 575-748-3311	Project #:
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kelsey Newton / Byron Tommy
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312C58	Total Selenium 200.8	TCLP Selenium 1311/6010	① Total RCRA 8 metals	② TCLP RCRA 8 metals
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	HNO3	-001			X	
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	NEAT	-002				X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman			
				12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010 [redacted] AW
② TCLP Method 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C57

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312C57**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regrading total selenium for samples "D-250 Flu Gas Scrubber" and "Tank 836". The internal standard was elevated for these samples.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.43	0.022	0.050		mg/L	1	1/2/2014 8:55:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.34	0.031	0.10		mg/L	1	1/2/2014 9:10:18 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-003
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.9	0.22	0.50		mg/L	10	1/2/2014 11:41:40 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-004
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	1/2/2014 11:44:02 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-005 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	7.3	4.5	10	J	mg/L	200	1/2/2014 11:08:34 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-006 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	15	0.62	2.0		mg/L	20	1/2/2014 11:10:57 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-007
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	2.3	0.11	0.25		mg/L	5	1/2/2014 11:13:19 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-008 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	2.6	0.15	0.50		mg/L	5	1/2/2014 11:15:41 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-009
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.97	0.022	0.050		mg/L	1	1/2/2014 9:27:14 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-010 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	1.8	0.15	0.50		mg/L	5	1/2/2014 11:18:04 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-011
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.9	0.11	0.25		mg/L	5	1/2/2014 11:20:25 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-012 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.9	0.15	0.50		mg/L	5	1/2/2014 11:25:03 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-013
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.6	1.1	2.5	J	mg/L	50	1/2/2014 11:46:26 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-014
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	1/2/2014 10:43:38 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-015
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.63	0.11	0.25		mg/L	5	1/2/2014 11:55:48 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-016
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.35	0.031	0.10		mg/L	1	1/2/2014 10:48:22 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-017
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.88	0.45	1.0	J	mg/L	20	1/2/2014 12:10:07 PM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-018
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.88	0.031	0.10		mg/L	1	1/2/2014 10:57:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457226**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457227**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312C57-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457244**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.94	0.050	0.5000	0.4257	102	75	125			

Sample ID	**1312C57-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457245**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.96	0.050	0.5000	0.4257	107	75	125	2.55	20	

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457261**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457262**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.5	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C57 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 2:59:39 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? YES
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: Added 5 mL HNO_3 to 005 for acceptable pH. Added 1 mL HNO_3 to 007 and 009 for acceptable pH. MG 12/30/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton / Tormey
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1312657	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	Out of Walnut Filters	plastic-1	HNO3	001	X	
12/30/13	6:20	Liquid	Out of Walnut Filters	plastic-1	NEAT	002		X
12/30/13	5:55	Liquid	W-20	plastic-1	HNO3	003	X	
12/30/13	5:55	Liquid	W-20	plastic-1	NEAT	004		X
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	HNO3	005	X	
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	NEAT	006		X
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	HNO3	007	X	
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	NEAT	008		X
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	HNO3	009	X	
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	NEAT	010		X
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	HNO3	011	X	
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	NEAT	012		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widmer	Michelle Garcia	12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Aaron Strange / Kevin Newton / Byron Ironmonger

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312057	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	T-805	plastic 1	HNO3	013	X	
12/30/13	6:00	Liquid	T-805	plastic-1	NEAT	014		X
12/30/13	6:00	Liquid	DAF	plastic-1	HNO3	015	X	
12/30/13	6:00	Liquid	DAF	plastic-1	NEAT	016		X
12/30/13	6:00	Liquid	Tank 836	plastic 1	HNO3	017	X	
12/30/13	6:00	Liquid	Tank 836	plastic 1	NEAT	018		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman	Michelle Garcia	12/30/13	1430
		Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401126

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401126**
Date Reported: **1/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/7/2014 5:38:31 PM	11110
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Barium	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Cadmium	ND	0.0020		mg/L	1	1/8/2014 2:57:35 PM	11119
Chromium	ND	0.0060		mg/L	1	1/8/2014 2:57:35 PM	11119
Lead	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119
Selenium	0.30	0.050		mg/L	1	1/8/2014 2:57:35 PM	11119
Silver	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/7/2014 6:26:10 PM	11114
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Barium	0.26	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Cadmium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Chromium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Lead	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Selenium	0.23	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Silver	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11110**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459784**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11110**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459785**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID	**1401126-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459787**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0044	0.00020	0.005000	0	87.7	75	125			

Sample ID	**1401126-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459788**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.9	75	125	2.46	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11114**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459793**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11114**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459794**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.8	80	120			
Barium	0.47	0.10	0.5000	0	93.9	80	120			
Cadmium	0.49	0.10	0.5000	0	99.0	80	120			
Chromium	0.48	0.10	0.5000	0	95.6	80	120			
Lead	0.47	0.10	0.5000	0	95.0	80	120			
Selenium	0.49	0.10	0.5000	0	97.4	80	120			
Silver	ND	0.10	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.8	80	120			
Barium	0.47	0.020	0.5000	0	93.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	99.0	80	120			
Chromium	0.48	0.0060	0.5000	0	95.6	80	120			
Lead	0.47	0.0050	0.5000	0	95.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.4	80	120			
Silver	0.099	0.0050	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401126 RcptNo: 1

Received by/date: MG 01/06/14

Logged By: Michelle Garcia 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: Michelle Garcia 1/6/2014 2:19:46 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401126	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
1/6/14	10:00	Anthony Widmer	[illegible]	1/06/14 1410	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401138

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401138**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the total selenium analysis for the following samples:
T-805 (FLDC)
836 TK
D-250 Flu Gas Scrubber

The above samples had elevated recoveries for the internal standards.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.22	0.50		mg/L	10	1/8/2014 3:01:31 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	6.0	0.31	1.0		mg/L	10	1/8/2014 3:11:03 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 (FLDC)
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-003 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.2	0.45	1.0		mg/L	20	1/8/2014 3:13:39 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-004 **Matrix:** AQUEOUS

Client Sample ID: T-805 (FLDC) TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.17	0.031	0.10		mg/L	1	1/8/2014 3:15:59 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-005 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.27	0.022	0.050		mg/L	1	1/8/2014 3:17:08 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-006 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.20	0.031	0.10		mg/L	1	1/8/2014 3:22:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-007 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.0	0.45	1.0		mg/L	20	1/8/2014 3:25:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-008 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.56	0.031	0.10		mg/L	1	1/8/2014 3:24:24 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-009
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.34	0.022	0.050		mg/L	1	1/8/2014 3:27:55 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-010 **Matrix:** AQUEOUS

Client Sample ID: Out of DAF TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.18	0.031	0.10		mg/L	1	1/8/2014 3:29:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-011
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	4.5	0.11	0.25		mg/L	5	1/8/2014 3:43:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-012
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.3	0.15	0.50		mg/L	5	1/8/2014 3:45:19 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-013
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	ND	0.45	1.0		mg/L	20	1/8/2014 3:46:32 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-014
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.19	0.031	0.10		mg/L	1	1/8/2014 3:48:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-015 **Matrix:** AQUEOUS

Client Sample ID: D 130 Outlet Desalter
Collection Date: 1/6/2014 6:20:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.0	0.11	0.25		mg/L	5	1/8/2014 3:54:46 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D 130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:20:00 AM
Lab ID: 1401138-016
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.2	0.15	0.50		mg/L	5	1/8/2014 4:05:54 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-017
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.4	0.22	0.50		mg/L	10	1/8/2014 4:07:16 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 364 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-018
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.8	0.31	1.0		mg/L	10	1/8/2014 4:08:40 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459944**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459945**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401138 RcptNo: 1

Received by/date:

Logged By: **Michelle Garcia** 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 1/6/2014 3:32:30 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☐	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
	Added 5 mL HNO3 to 013 for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 8 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? yes
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MK

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 10°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	5:55	Liquid	W-20	plastic-1	HNO3	-001	X	
1/6/14	5:55	Liquid	W-20	plastic-1	NEAT	-002		X
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	HNO3	-003	X	
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	NEAT	-004		X
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	HNO3	-005	X	
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	NEAT	-006		X
1/6/14	6:00	Liquid	836 TK	plastic-1	HNO3	-007	X	
1/6/14	6:00	Liquid	836 TK	plastic-1	NEAT	-008		X
1/6/14	6:00	Liquid	Out of DAF	plastic-1	HNO3	-009	X	
1/6/14	6:00	Liquid	Out of DAF	plastic-1	NEAT	-010		X
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	HNO3	-011	X	
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/6/14	10:00	Anthony Widmen			
				01/06/14	1410

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	10:20	Liquid	D250 Flu Gas Scrubber	plastic	HNO3	-013	X	
1/6/14	10:00	Liquid	D250 Flu Gas Scrubber	plastic	NEAT	-014		X
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	HNO3	-015	X	
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	NEAT	-016		X
1/6/14	5:50	Liquid	634 outlet	plastic	HNO3	-017	X	
1/6/14	5:50	Liquid	634 outlet	plastic	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date Time
1/6/14	10:00			01/06/14 1410
Date:	Time:	Relinquished by:	Received by:	Date Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 21, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401508

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401508**
Date Reported: **1/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **TES**	
Mercury	ND	0.00020		mg/L	1	1/18/2014 11:49:50 AM	11287
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.036	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Barium	0.029	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Cadmium	ND	0.0020		mg/L	1	1/15/2014 3:44:35 PM	11233
Chromium	ND	0.0060		mg/L	1	1/15/2014 3:44:35 PM	11233
Lead	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233
Selenium	0.35	0.050		mg/L	1	1/15/2014 3:44:35 PM	11233
Silver	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-002 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **TES**	
Mercury	ND	0.020		mg/L	1	1/18/2014 12:51:48 PM	11288
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Barium	0.10	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Cadmium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Chromium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Lead	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Selenium	0.31	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Silver	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11287**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465495**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11287**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465496**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11288**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466007**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11288**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466008**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463359** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.10	0.5000	0	103	80	120			
Barium	0.46	0.10	0.5000	0	92.9	80	120			
Cadmium	0.49	0.10	0.5000	0	98.5	80	120			
Chromium	0.46	0.10	0.5000	0	92.5	80	120			
Lead	0.49	0.10	0.5000	0	98.7	80	120			
Selenium	0.51	0.10	0.5000	0	101	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1401508-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463365**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0.03565	106	75	125			
Barium	0.48	0.020	0.5000	0.02901	90.5	75	125			
Cadmium	0.50	0.0020	0.5000	0	100	75	125			
Chromium	0.46	0.0060	0.5000	0	91.5	75	125			
Lead	0.49	0.0050	0.5000	0	98.9	75	125			
Selenium	0.86	0.050	0.5000	0.3543	100	75	125			
Silver	0.10	0.0050	0.1000	0	102	75	125			

Sample ID	**1401508-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463366**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.56	0.020	0.5000	0.03565	104	75	125	1.85	20	
Barium	0.49	0.020	0.5000	0.02901	92.6	75	125	2.15	20	
Cadmium	0.50	0.0020	0.5000	0	100	75	125	0.0540	20	
Chromium	0.46	0.0060	0.5000	0	91.4	75	125	0.105	20	
Lead	0.49	0.0050	0.5000	0	97.9	75	125	1.02	20	
Selenium	0.85	0.050	0.5000	0.3543	99.8	75	125	0.336	20	
Silver	0.10	0.0050	0.1000	0	104	75	125	2.05	20	

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463376**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463377**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.5	80	120			
Chromium	0.46	0.0060	0.5000	0	92.5	80	120			
Lead	0.49	0.0050	0.5000	0	98.7	80	120			
Selenium	0.51	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401508 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:22:11 PM

Reviewed By: IO 01/13/2014 IO 01/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401508	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/13/14	6:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/13/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/13/14	12:00	Anthony Widman		01/13/14	14:10
		Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401507

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401507**
Date: **1/20/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Remarks regarding Total selenium for sample "TK 836":
Sample "TK 836" is being reported with an elevated internal standard.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.1	1.1	2.5	J	mg/L	50	1/15/2014 3:57:59 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-002
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.34	0.031	0.10		mg/L	1	1/15/2014 3:50:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401507-003 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/13/2014 6:00:00 AM
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.37	0.022	0.050		mg/L	1	1/15/2014 3:55:08 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-004
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.35	0.031	0.10		mg/L	1	1/15/2014 4:03:26 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-005
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.45	1.0		mg/L	20	1/15/2014 4:12:16 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-006
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.0	0.15	0.50		mg/L	5	1/15/2014 4:14:38 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-007
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.11	0.25		mg/L	5	1/15/2014 4:15:44 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-008
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.5	0.15	0.50		mg/L	5	1/15/2014 4:26:49 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-009
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.41	0.022	0.050		mg/L	1	1/15/2014 4:18:17 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-010 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.33	0.031	0.10		mg/L	1	1/15/2014 4:28:24 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-011
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.3	0.22	0.50		mg/L	10	1/15/2014 4:34:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-012
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.7	0.31	1.0		mg/L	10	1/15/2014 4:36:21 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-013
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	18	11	25	J	mg/L	500	1/15/2014 4:45:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-014
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	18	1.5	5.0		mg/L	50	1/15/2014 4:51:22 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-015
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.22	0.50		mg/L	10	1/15/2014 4:52:41 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-016 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.4	0.31	1.0		mg/L	10	1/15/2014 4:54:07 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-017
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.7	0.11	0.25		mg/L	5	1/15/2014 5:02:37 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet DesalterTCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-018
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	3.0	0.15	0.50		mg/L	5	1/15/2014 5:04:00 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463358**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463359**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.51	0.10	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463376**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401507 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:09:26 PM

Reviewed By: IO 01/13/2014

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No~~ ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

01/13/14

of preserved bottles checked for pH: 9 (<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: -013 FOR METALS ANALYSIS: ADDED 2mL HNO_3 TO -013A AND 1mL HNO_3 TO -017A FOR ACCEPTABLE PH. 01/13/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	HNO3	-001	X	
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	NEAT	-002		X
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	HNO3	-003	X	
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	NEAT	-004		X
1/13/14	6:00	Liquid	TK 830	plastic-1	HNO3	-005	X	
1/13/14	6:00	Liquid	TK 830	plastic-1	NEAT	-006		X
1/13/14	6:30	Liquid	D-130 after Desalter	plastic-1	HNO3	-007	X	
1/13/14	6:30	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-008		X
1/13/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/13/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/13/14	6:15	Liquid	W-20	plastic-1	HNO3	-011	X	
1/13/14	6:15	Liquid	W-20	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/13/14	10:00	Anthony Widman		01/13/14	1410
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-013	X	
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-014		X
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	HNO3	-015	X	
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	NEAT	-016		X
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	HNO3	-017	X	
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
1/13/14	10:00	Anthony Widman		01/13/14	12:10	Expedited turn-around and results sent to Mike Holder
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 24, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401813

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401813**
Date Reported: **1/24/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **ELS**	
Mercury	ND	0.00020		mg/L	1	1/23/2014 8:39:48 AM	11339
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.030	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Barium	0.026	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Cadmium	ND	0.0020		mg/L	1	1/23/2014 11:17:28 AM	11353
Chromium	ND	0.0060		mg/L	1	1/23/2014 11:17:28 AM	11353
Lead	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353
Selenium	0.51	0.050		mg/L	1	1/23/2014 11:17:28 AM	11353
Silver	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-002 **Matrix:** AQUEOUS **Received Date:** 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **ELS**	
Mercury	ND	0.020		mg/L	1	1/24/2014 7:50:29 AM	11362
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Barium	0.12	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Cadmium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Chromium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Lead	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Selenium	0.51	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Silver	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11339**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468302**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11339**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468303**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11362**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**				
Client ID:	**PBW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469084**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11362**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**LCSW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469085**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Sample ID	**1401813-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469089**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.3	75	125			

Sample ID	**1401813-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469090**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.10	0.5000	0	92.5	80	120			
Barium	0.46	0.10	0.5000	0	91.8	80	120			
Cadmium	0.47	0.10	0.5000	0	93.1	80	120			
Chromium	0.45	0.10	0.5000	0	90.8	80	120			
Lead	0.45	0.10	0.5000	0	90.9	80	120			
Selenium	0.45	0.10	0.5000	0	90.2	80	120			
Silver	ND	0.10	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468523**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468524**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	92.5	80	120			
Barium	0.46	0.020	0.5000	0	91.8	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.1	80	120			
Chromium	0.45	0.0060	0.5000	0	90.8	80	120			
Lead	0.45	0.0050	0.5000	0	90.9	80	120			
Selenium	0.45	0.050	0.5000	0	90.2	80	120			
Silver	0.095	0.0050	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401813 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:46:48 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401813	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widman	Ashley Gallegos	01/20	1507

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 28, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401811

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/20/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 24th, 2014.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401811**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.9	0.11	0.25		mg/L	5	1/23/2014 11:54:04 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-002
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	3.0	0.15	0.50		mg/L	5	1/23/2014 11:55:14 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-003
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.11	0.25		mg/L	5	1/23/2014 12:00:39 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-004
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.15	0.50		mg/L	5	1/23/2014 12:05:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-005
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.6	0.45	1.0		mg/L	20	1/23/2014 12:07:55 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-006
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.71	0.031	0.10		mg/L	1	1/23/2014 11:32:45 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-007
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.54	0.022	0.050		mg/L	1	1/23/2014 11:33:52 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-008
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:35:03 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-009
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.75	0.045	0.10		mg/L	2	1/23/2014 12:09:23 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-010
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.57	0.031	0.10		mg/L	1	1/23/2014 11:38:32 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-011
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.0	0.22	0.50		mg/L	10	1/23/2014 12:10:31 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-012
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:41:18 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-013
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.8	0.11	0.25		mg/L	5	1/23/2014 12:14:24 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-014
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.5	0.31	1.0		mg/L	10	1/23/2014 12:15:36 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-015
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	ND	4.5	10		mg/L	200	1/23/2014 12:26:20 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-016
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.098	0.031	0.10	J	mg/L	1	1/23/2014 11:50:30 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-017
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.9	0.22	0.50		mg/L	10	1/23/2014 12:27:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-018
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.2	0.31	1.0		mg/L	10	1/23/2014 12:28:41 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**
28-Jan-14

Client: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.10	0.5000	0	90.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468523**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11353**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468524**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	90.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401811 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:34:52 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☑
9. Was preservative added to bottles? Yes ☑ No ☑ NA ☐

- metals analysis: Added 1mL HNO_3 to -003A, 2mL HNO_3 to -015A for acceptable pH.

10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: 9 (<2 or >12 unless noted) 01/21/14
Adjusted? YES
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	HNO3	-001	X	
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	NEAT	-002		X
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	HNO3	-003	X	
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-004		X
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	HNO3	-005	X	
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	NEAT	-006		X
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	HNO3	-007	X	
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	NEAT	-008		X
1/20/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/20/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/20/14	6:00	Liquid	out of FLOC	plastic-1	HNO3	-011	X	
1/20/14	6:00	Liquid	out of FLOC	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	HNO3	-013	X	
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	NEAT	-014		X
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-015	X	
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	NEAT	-016		X
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	HNO3	-017	X	
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	NEAT	-018		X

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks: Expedited turn-around and results sent to Mike Holder
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507	
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A62

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401A62**
Date Reported: **1/31/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-001
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.00020		mg/L	1	1/30/2014 12:31:11 PM	11463
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.037	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Barium	0.026	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Cadmium	ND	0.0020		mg/L	1	1/30/2014 6:46:11 AM	11461
Chromium	ND	0.0060		mg/L	1	1/30/2014 6:46:11 AM	11461
Lead	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461
Selenium	0.52	0.050		mg/L	1	1/30/2014 12:43:22 PM	11461
Silver	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-002 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **DBD**	
Mercury	ND	0.020		mg/L	1	1/30/2014 10:50:53 AM	11464
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Barium	0.15	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Cadmium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Chromium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Lead	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Selenium	0.49	0.10		mg/L	1	1/30/2014 12:44:37 PM	11461
Silver	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11463**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473049**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11463**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473050**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11464**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473005**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11464**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473006**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472329**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472330**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.10	0.5000	0	86.2	80	120			
Barium	0.42	0.10	0.5000	0	84.4	80	120			
Cadmium	0.43	0.10	0.5000	0	85.1	80	120			E
Chromium	0.42	0.10	0.5000	0	84.5	80	120			E
Lead	0.42	0.10	0.5000	0	84.1	80	120			E
Silver	ND	0.10	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472418**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Silver	ND	0.0050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472419**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.020	0.5000	0	86.2	80	120			
Barium	0.42	0.020	0.5000	0	84.4	80	120			
Cadmium	0.43	0.0020	0.5000	0	85.1	80	120			
Chromium	0.42	0.0060	0.5000	0	84.5	80	120			
Lead	0.42	0.0050	0.5000	0	84.1	80	120			
Silver	0.087	0.0050	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A62 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:37:54 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A02	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/27/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	01/27/14	14:50

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A61

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-001 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.0	0.11	0.25		mg/L	5	1/30/2014 11:50:25 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-002
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	2.0	0.15	0.50		mg/L	5	1/30/2014 11:51:40 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-003 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.8	0.11	0.25		mg/L	5	1/30/2014 12:04:46 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-004
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.4	0.15	0.50		mg/L	5	1/30/2014 12:05:59 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-005 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.2	0.11	0.25		mg/L	5	1/30/2014 12:07:11 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-006 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.2	0.15	0.50		mg/L	5	1/30/2014 12:08:26 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-007
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	17	4.5	10		mg/L	200	1/30/2014 12:11:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-008
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	10	0.31	1.0		mg/L	10	1/30/2014 12:12:47 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-009
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.55	0.022	0.050		mg/L	1	1/30/2014 12:18:04 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-010 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.58	0.062	0.20		mg/L	2	1/30/2014 12:26:49 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-011 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.22	0.50		mg/L	10	1/30/2014 3:36:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-012 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.43	0.031	0.10		mg/L	1	1/30/2014 12:22:38 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401A61-013 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/27/2014 6:20:00 AM
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.51	0.022	0.050		mg/L	1	1/30/2014 12:25:32 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-014
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.51	0.031	0.10		mg/L	1	1/30/2014 12:30:56 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-015
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.9	1.1	2.5	J	mg/L	50	1/30/2014 12:38:25 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-016
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.15	0.031	0.10		mg/L	1	1/30/2014 12:39:40 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-017
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.11	0.25		mg/L	5	1/30/2014 12:40:55 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-018
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.3	0.15	0.50		mg/L	5	1/30/2014 12:42:08 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Sample ID	**1401A61-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472814**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.5	0.50	0.5000	2.006	93.8	75	125			

Sample ID	**1401A61-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472815**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.6	0.50	0.5000	2.006	121	75	125	5.32	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.023	0.050								J

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A61 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:22:04 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? Yes
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: For -001, 2mL HNO3 was added for acceptable pH. Added 11mL HNO3 to -007 for acceptable pH. Added 4mL HNO3 to -003 for acceptable pH. mg 01/27/14

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ **Rush** **Next Day**

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A21	Total Selenium 6010	TCLP Selenium 1311/6010
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
1/27/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
1/27/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
1/27/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
1/27/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	14:50

Date	Time	Relinquished by	Received by	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401141	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	HNO3	-001013	X	
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	NEAT	-002014		X
1/27/14	6:15	liquid	Out of T-801	Plastic-1	HNO3	-003015	X	
1/27/14	6:15	liquid	Out of T-801	Plastic-1	NEAT	-004016		X
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	HNO3	-005017	X	
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	NEAT	-006018		X

01/27/14

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	1450

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402075

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402075**
Date Reported: **2/7/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-001 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.0010		mg/L	5	2/5/2014 3:52:21 PM	11565
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.086	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Barium	0.027	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Cadmium	ND	0.0020		mg/L	1	2/5/2014 12:48:42 PM	11564
Chromium	ND	0.0060		mg/L	1	2/5/2014 12:48:42 PM	11564
Lead	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564
Selenium	0.64	0.050		mg/L	1	2/5/2014 12:48:42 PM	11564
Silver	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-002 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/5/2014 4:37:16 PM	11566
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Barium	0.11	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Cadmium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Chromium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Lead	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Selenium	0.56	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Silver	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11565**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476431**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11565**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476432**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1402075-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476437**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0060	0.0010	0.005000	0	120	75	125			

Sample ID	**1402075-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476438**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.0010	0.005000	0	113	75	125	6.40	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11566**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476453**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11566**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476454**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476361**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11564**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476362**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	89.2	80	120			
Barium	ND	100	0.5000	0	89.6	80	120			
Cadmium	ND	1.0	0.5000	0	93.2	80	120			
Chromium	ND	5.0	0.5000	0	90.1	80	120			
Lead	ND	5.0	0.5000	0	87.8	80	120			
Selenium	ND	1.0	0.5000	0	91.0	80	120			
Silver	ND	5.0	0.1000	0	96.3	80	120			

Sample ID	**1402075-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476365**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04825	93.4	75	125			
Barium	0.57	0.10	0.5000	0.1089	91.2	75	125			
Cadmium	0.46	0.10	0.5000	0	92.4	75	125			
Chromium	0.44	0.10	0.5000	0	87.8	75	125			
Lead	0.42	0.10	0.5000	0	83.8	75	125			
Silver	ND	0.10	0.1000	0	97.6	75	125			

Sample ID	**1402075-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476366**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0.04825	85.1	75	125	8.45	20	
Barium	0.52	0.10	0.5000	0.1089	81.6	75	125	8.90	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402075-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**	RunNo:	**16546**
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.43	0.10	0.5000	0	85.3	75	125	8.08	20	
Chromium	0.40	0.10	0.5000	0	81.0	75	125	8.05	20	
Lead	0.39	0.10	0.5000	0	78.1	75	125	7.10	20	
Silver	ND	0.10	0.1000	0	88.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0	89.2	80	120			
Barium	0.45	0.020	0.5000	0	89.6	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.2	80	120			
Chromium	0.45	0.0060	0.5000	0	90.1	80	120			
Lead	0.44	0.0050	0.5000	0	87.8	80	120			
Selenium	0.45	0.050	0.5000	0	91.0	80	120			
Silver	0.096	0.0050	0.1000	0	96.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402075 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:08:22 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/3/14	13:15	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/3/14	~~6:00~~ 13:15	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/3/14	14:30	Jerry Sosa	Michelle Gilbert	02/04/14	0900
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402076

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-001
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.19	0.022	0.050		mg/L	1	2/5/2014 1:06:27 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-002
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.16	0.031	0.10		mg/L	1	2/5/2014 1:08:10 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-003
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.23	0.022	0.050		mg/L	1	2/5/2014 1:09:27 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-004
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.22	0.031	0.10		mg/L	1	2/5/2014 1:10:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-005
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.0	0.22	0.50		mg/L	10	2/5/2014 1:40:48 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-006
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.1	0.31	1.0		mg/L	10	2/5/2014 1:39:34 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-007
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	16	2.2	5.0		mg/L	100	2/5/2014 1:44:43 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-008
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	17	0.62	2.0		mg/L	20	2/5/2014 1:45:59 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-009
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.60	0.022	0.050		mg/L	1	2/5/2014 1:17:07 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-010
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:22:20 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-011
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.22	0.50		mg/L	10	2/5/2014 1:48:26 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-012
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.63	0.031	0.10		mg/L	1	2/5/2014 1:25:15 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-013
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.59	0.022	0.050		mg/L	1	2/5/2014 1:26:28 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-014
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:27:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-836
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-015
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	1.1	2.5	J	mg/L	50	2/5/2014 2:24:11 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-016
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:30:41 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-017
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.4	0.22	0.50		mg/L	10	2/5/2014 2:21:44 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-018
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.2	0.31	1.0		mg/L	10	2/5/2014 2:22:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402076**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476361**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476362**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	1.0	0.5000	0	91.0	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402076**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	91.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402076 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:17:39 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
	See Section 17.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9

(<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks: For metals analysis: Added 5mL HNO_3 to -007A, 3mL HNO_3 to -001A, & -003A for acceptable pH. MG 02/04/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standar ☑ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder
☐ Standard ☐ Level 4 (Full Validation)	Sampler: Kevin Newton
☐ Other _____	On Ice: ☑ Yes ☐ No
☐ EDD (Type) _____	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
2/3/14	13:15	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
2/3/14	13:15	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
2/3/14	13:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
2/3/14	13:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
2/3/14	13:15	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
2/3/14	13:15	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
2/3/14	13:15	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
2/3/14	13:15	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
2/3/14	13:15	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
2/3/14	13:15	liquid	Out of DAF	Plastic-1	NEAT	-010		X
2/3/14	13:15	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
2/3/14	13:15	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
2/3/14	14:30	Jerry Sosa			
				02/04/14	0900

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.6

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1402075	Total Selenium 6010	TCLP Selenium 1311/6010
2/3/14	13:15	liquid	Out of Walnut Filters	Plastic-1	HNO3	-013	X	
2/3/14	13:15	liquid	Out of Walnut Filters	Plastic-1	NEAT	-014		X
2/3/14	13:15	liquid	Out of T-836	Plastic-1	HNO3	-015	X	
2/3/14	13:15	liquid	Out of T-836	Plastic-1	NEAT	-016		X
2/3/14	13:15	liquid	W-634 Outlet	Plastic-1	HNO3	-017	X	
2/3/14	13:15	liquid	W-634 Outlet	Plastic-1	NEAT	-018		X

Date	Time	Relinquished by	Received by	Date	Time
2/3/14	14:30	Jerry Sosa			
				02/04/14	0900

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402324

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402324**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-001 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/11/2014 4:25:23 PM	11676
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.035	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Barium	0.023	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Cadmium	ND	0.0020		mg/L	1	2/13/2014 9:07:30 AM	11692
Chromium	ND	0.0060		mg/L	1	2/13/2014 9:07:30 AM	11692
Lead	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692
Selenium	0.26	0.050		mg/L	1	2/13/2014 12:16:38 PM	11692
Silver	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-002 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/12/2014 3:43:01 PM	11695
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Barium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Cadmium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Chromium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Lead	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Selenium	0.20	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Silver	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11676**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480486**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11676**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480487**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11695**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480751**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11695**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480752**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	**1402324-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480754**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.3	75	125			

Sample ID	**1402324-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480755**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11692**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481463** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11692**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481464** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.3	80	120			
Barium	ND	100	0.5000	0	89.0	80	120			
Cadmium	ND	1.0	0.5000	0	91.7	80	120			
Chromium	ND	5.0	0.5000	0	89.0	80	120			
Lead	ND	5.0	0.5000	0	87.9	80	120			
Selenium	ND	1.0	0.5000	0	83.9	80	120			
Silver	ND	5.0	0.1000	0	93.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481425**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0.03462	84.5	75	125			
Barium	0.42	0.020	0.5000	0.02307	79.3	75	125			
Cadmium	0.41	0.0020	0.5000	0	82.8	75	125			
Chromium	0.40	0.0060	0.5000	0	79.8	75	125			
Lead	0.39	0.0050	0.5000	0	77.1	75	125			
Silver	0.084	0.0050	0.1000	0	83.7	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481426**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0.03462	82.2	75	125	2.59	20	
Barium	0.41	0.020	0.5000	0.02307	78.3	75	125	1.20	20	
Cadmium	0.41	0.0020	0.5000	0	82.0	75	125	1.01	20	
Chromium	0.39	0.0060	0.5000	0	78.5	75	125	1.76	20	
Lead	0.38	0.0050	0.5000	0	76.2	75	125	1.15	20	
Silver	0.083	0.0050	0.1000	0	82.8	75	125	1.08	20	

Sample ID	**MB-11692**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481498**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.3	80	120			
Barium	0.44	0.020	0.5000	0	89.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	91.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.44	0.0060	0.5000	0	89.0	80	120			
Lead	0.44	0.0050	0.5000	0	87.9	80	120			
Selenium	0.42	0.050	0.5000	0	83.9	80	120			
Silver	0.094	0.0050	0.1000	0	93.9	80	120			

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481526**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.67	0.050	0.5000	0.2584	83.1	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481527**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.65	0.050	0.5000	0.2584	77.9	75	125	3.92	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402324 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: **Ashley Gallegos** 2/10/2014 1:57:00 PM

Completed By: **Ashley Gallegos** 2/10/2014 2:18:28 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403324	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa		02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402326

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1402326**
Date: **2/13/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the Total and TCLP Se Sample "D-250 Flu Gas Scrubber"
Both the total and TCLP samples are being reported with elevated internal standard recoveries. This data is estimated.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-001
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.45	0.014	0.050		mg/L	1	2/13/2014 9:21:18 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-002
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.38	0.031	0.10		mg/L	1	2/13/2014 9:22:34 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-003
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.25	0.014	0.050		mg/L	1	2/13/2014 9:23:50 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-004
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.25	0.031	0.10		mg/L	1	2/13/2014 9:25:03 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-005 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.14	0.50		mg/L	10	2/13/2014 10:48:07 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-006 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	2/13/2014 10:35:08 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-007
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.048	0.014	0.050	J	mg/L	1	2/13/2014 9:28:46 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-008 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.14	0.031	1.0	J	mg/L	1	2/13/2014 9:30:09 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-009 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.26	0.014	0.050		mg/L	1	2/13/2014 9:31:24 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-010 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.28	0.031	0.10		mg/L	1	2/13/2014 9:32:40 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-011
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.58	0.14	0.50		mg/L	10	2/13/2014 10:51:49 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-012
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.28	0.031	0.10		mg/L	1	2/13/2014 9:39:00 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-013 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.24	0.014	0.050		mg/L	1	2/13/2014 9:40:14 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-014
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.27	0.031	0.10		mg/L	1	2/13/2014 9:41:29 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of T-836
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-015 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.36	0.14	0.50	J	mg/L	10	2/13/2014 10:53:03 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of T-836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-016 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	2/13/2014 9:43:59 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-017
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.3	0.14	0.50		mg/L	10	2/13/2014 10:56:52 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-018 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	2/13/2014 10:58:10 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402326**

14-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11691**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11691**	RunNo:	**16728**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481418**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11691**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11691**	RunNo:	**16728**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481419**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	1.0	0.5000	0	84.2	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402326**

14-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402325-002AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**BatchQC**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481430**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.70	0.050	0.5000	0.3129	77.2	75	125			

Sample ID	**1402325-002AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**BatchQC**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481431**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.79	0.050	0.5000	0.3129	95.1	75	125	12.0	20	

Sample ID	**MB-11691**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481492**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11691**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481493**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	0.050	0.5000	0	84.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402326 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: Ashley Gallegos 2/10/2014 1:57:00 PM

Completed By: Ashley Gallegos 2/10/2014 2:24:52 PM

Reviewed By: KMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No ☑~~	NA ☐
-007A = FOR METALS ANALYSIS: ADDED 3mL HNO3 FOR ACCEPTABLE pH. 02/10/14			
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9

(<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☐ **Rush** **Next Day**
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403326	Total Selenium 6010	TCLP Selenium 1311/6010
2/10/14	6:00	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
2/10/14	6:00	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
2/10/14	6:00	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
2/10/14	6:00	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
2/10/14	6:00	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
2/10/14	6:00	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
2/10/14	6:00	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
2/10/14	6:00	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
2/10/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
2/10/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
2/10/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
2/10/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date: 2/10/14	Time: 10:00	Relinquished by: Jerry Sosa	Received by:	Date 02/10/14	Time 1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403203	Total Selenium 6010	TCLP Selenium 1311/6010
2/10/14	6:00	liquid	Out of Walnut Filters	Plastic-1	HNO3	-013	X	
2/10/14	6:00	liquid	Out of Walnut Filters	Plastic-1	NEAT	-014		X
2/10/14	6:00	liquid	Out of T-836	Plastic-1	HNO3	-015	X	
2/10/14	6:00	liquid	Out of T-836	Plastic-1	NEAT	-016		X
2/10/14	6:00	liquid	W-634 Outlet	Plastic-1	HNO3	-017	X	
2/10/14	6:00	liquid	W-634 Outlet	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by: Jerry Sosa	Received by:	Date	Time
2/10/14	10:00			02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: CERT Unit OrderNo.: 1402325

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402325**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: CERT Unit
Lab ID: 1402325-001 **Matrix:** AQUEOUS

Client Sample ID: D-7111 CERT Inlet
Collection Date: 2/10/2014 8:00:00 AM
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	5.2	0.50		mg/L	10	2/13/2014 10:32:37 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: CERT Unit
Lab ID: 1402325-002 **Matrix:** AQUEOUS

Client Sample ID: D-7111 CERT Outlet
Collection Date: 2/10/2014 8:00:00 AM
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.31	0.050		mg/L	1	2/13/2014 9:13:45 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402325**

13-Feb-14

Client: Navajo Refining Company

Project: CERT Unit

Sample ID **1402325-002AMS** SampType: **MS** TestCode: **EPA 6010B: Total Metals**

Client ID: **D-7111 CERT Outlet** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481430** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.70	0.050	0.5000	0.3129	77.2	75	125			

Sample ID **1402325-002AMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **D-7111 CERT Outlet** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481431** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.79	0.050	0.5000	0.3129	95.1	75	125	12.0	20	

Sample ID **MB-11691** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481492** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID **LCS-11691** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	0.050	0.5000	0	84.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402325 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: Ashley Gallegos 2/10/2014 1:57:00 PM

Completed By: Ashley Gallegos 2/10/2014 2:21:24 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 02 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:
CERT Unit
~~Wastewater Effluent Monitoring~~

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1402325	Total Selenium 6010
2/10/14	8:00	liquid	D-7111 CERT Inlet	Plastic-1	HNO3	-001	X
2/10/14	8:00	liquid	D-7113 CERT Outlet	Plastic-1	HNO3	-002	X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				02/10/14	1357

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402624

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402624**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-001 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/18/2014 4:49:02 PM	11776
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.038	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Barium	0.060	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Cadmium	ND	0.0020		mg/L	1	2/19/2014 8:09:08 AM	11796
Chromium	ND	0.0060		mg/L	1	2/19/2014 8:09:08 AM	11796
Lead	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796
Selenium	0.20	0.050		mg/L	1	2/19/2014 8:09:08 AM	11796
Silver	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6) T
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-002
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/18/2014 5:40:58 PM	11777
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Barium	0.16	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Cadmium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Chromium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Lead	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Selenium	0.20	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Silver	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11776**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484820**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11776**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	103	80	120			

Sample ID	**1402624-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484823**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	99.0	75	125			

Sample ID	**1402624-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484824**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	75	125	4.26	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11777**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484236**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11777**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484237**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.6	80	120			
Barium	0.48	0.10	0.5000	0	96.0	80	120			
Cadmium	0.48	0.10	0.5000	0	96.7	80	120			
Chromium	0.48	0.10	0.5000	0	95.9	80	120			
Lead	0.46	0.10	0.5000	0	92.4	80	120			
Selenium	0.46	0.10	0.5000	0	92.6	80	120			
Silver	ND	0.10	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.6	80	120			
Barium	0.48	0.020	0.5000	0	96.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.7	80	120			
Chromium	0.48	0.0060	0.5000	0	95.9	80	120			
Lead	0.46	0.0050	0.5000	0	92.4	80	120			
Selenium	0.46	0.050	0.5000	0	92.6	80	120			
Silver	0.098	0.0050	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402624 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:41:07 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 0.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402624	Analysis Request: (1) Total RCRA 8 Metals	Analysis Request: (2) TCLP RCRA 8 Metals
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
2/17/14	10:00	Jerry Sosa			(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time 02/17/14 1445	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402626

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402626**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/17/2014 8:00:00 AM
Lab ID: 1402626-001
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.2	0.25		mg/L	5	2/19/2014 8:30:36 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/17/2014 8:00:00 AM
Lab ID: 1402626-002 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.2	0.50		mg/L	5	2/19/2014 8:31:53 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402626**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.10	0.5000	0	92.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402626**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.050	0.5000	0	92.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402626 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:46:18 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 6.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402621	Total Selenium 6010	TCLP Selenium 1311/6010
2/17/14	0800	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
2/17/14	0800	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Analysis Request

Date	Time	Relinquished by	Received by	Date	Time
2/17/14	10:00	Jerry Sosa			
				02/17/14	1445

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 25, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402904

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402904**
Date Reported: **2/25/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/24/2014 8:20:00 AM
Lab ID: 1402904-001
Matrix: AQUEOUS
Received Date: 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **TES**	
Selenium	0.38	0.050		mg/L	1	2/25/2014 9:18:14 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/24/2014 8:20:00 AM
Lab ID: 1402904-002 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **TES**	
Selenium	0.35	0.10		mg/L	1	2/25/2014 9:22:31 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402904**

25-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487507**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487508**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402904**

25-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487531**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487532**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402904 RcptNo: 1

Received by/date: 02/24/14

Logged By: **Ashley Gallegos** 2/24/2014 2:30:00 PM

Completed By: **Ashley Gallegos** 2/24/2014 3:09:53 PM

Reviewed By: mg 02/24/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted? N/A
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402904	Total Selenium 6010	TCLP Selenium 1311/6010
2/24/14	0820	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
2/24/14	0820	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/24/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	02/24/14	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 26, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402903

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402903**
Date Reported: **2/26/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells (Location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/24/2014 6:00:00 AM
Lab ID: 1402903-001 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/25/2014 5:02:40 PM	11888
EPA 6010B: TOTAL METALS						Analyst: **TES**	
Arsenic	0.030	0.020		mg/L	1	2/25/2014 9:15:39 AM	11873
Barium	0.046	0.020		mg/L	1	2/25/2014 9:15:39 AM	11873
Cadmium	ND	0.0020		mg/L	1	2/25/2014 9:15:39 AM	11873
Chromium	ND	0.0060		mg/L	1	2/25/2014 9:15:39 AM	11873
Lead	ND	0.0050		mg/L	1	2/25/2014 9:15:39 AM	11873
Selenium	0.27	0.050		mg/L	1	2/25/2014 9:15:39 AM	11873
Silver	ND	0.0050		mg/L	1	2/25/2014 9:15:39 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells (Location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/24/2014 6:00:00 AM
Lab ID: 1402903-002 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/25/2014 3:57:17 PM	11889
EPA METHOD 6010B: TCLP METALS						Analyst: **TES**	
Arsenic	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Barium	0.12	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Cadmium	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Chromium	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Lead	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Selenium	0.28	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Silver	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11888**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487839**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11888**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487840**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Sample ID	**1402903-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487842**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.3	75	125			

Sample ID	**1402903-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487843**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.2	75	125	0.938	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11889**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487813**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020									

Sample ID	**LCS-11889**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487814**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	100	80	120				

Sample ID	**1402903-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	88.8	75	125				

Sample ID	**1402903-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487822**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487507** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487508** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.2	80	120			
Barium	0.47	0.10	0.5000	0	93.4	80	120			
Cadmium	0.47	0.10	0.5000	0	94.3	80	120			
Chromium	0.47	0.10	0.5000	0	93.3	80	120			
Lead	0.45	0.10	0.5000	0	89.6	80	120			
Selenium	0.44	0.10	0.5000	0	87.1	80	120			
Silver	ND	0.10	0.1000	0	94.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.2	80	120			
Barium	0.47	0.020	0.5000	0	93.4	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.3	80	120			
Chromium	0.47	0.0060	0.5000	0	93.3	80	120			
Lead	0.45	0.0050	0.5000	0	89.6	80	120			
Selenium	0.44	0.050	0.5000	0	87.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402903 RcptNo: 1

Received by/date: 02/24/14

Logged By: **Ashley Gallegos** 2/24/2014 2:30:00 PM

Completed By: **Ashley Gallegos** 2/24/2014 3:06:54 PM

Reviewed By: 02/24/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? No

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 0.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402703	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
2/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
2/24/14	10:00	Jerry Sosa			
				02/24/14	1430
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 04, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1403030

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/3/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403030**
Date Reported: **3/4/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 3/3/2014 8:00:00 AM
Lab ID: 1403030-001 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.31	0.050		mg/L	1	3/4/2014 9:47:40 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 3/3/2014 8:00:00 AM
Lab ID: 1403030-002 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.24	0.10		mg/L	1	3/4/2014 9:48:52 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403030**

04-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491142**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491143**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.10	0.5000	0	93.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403030**

04-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491177**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491178**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	93.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403030 RcptNo: 1

Received by/date: MG 03/03/14

Logged By: **Michelle Garcia** 3/3/2014 2:05:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 3/3/2014 2:37:20 PM Michelle Garcia

Reviewed By: 03/03/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? No

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☐ **Rush** **Next Day**
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Bobby C
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403030	Total Selenium 6010	TCLP Selenium 1311/6010
3/3/14	0800	liquid	W-7 Effluent	Plastic-1	HNO3	001	X	
3/3/14	0800	liquid	W-7 Effluent	Plastic-1	NEAT	002		X

Date: 3/3/14	Time: 10:00	Relinquished by: Jerry Sosa	Received by:	Date	Time
Date:	Time:	Relinquished by:	Received by:	03/03/14 Date	1405 Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 05, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403032

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/3/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403032**
Date Reported: **3/5/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-001
Matrix: AQUEOUS
Received Date: 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	3/5/2014 12:09:14 PM	12001
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Barium	0.038	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Cadmium	ND	0.0020		mg/L	1	3/4/2014 11:35:37 AM	11992
Chromium	ND	0.0060		mg/L	1	3/4/2014 11:35:37 AM	11992
Lead	ND	0.0050		mg/L	1	3/4/2014 9:50:07 AM	11992
Selenium	0.12	0.050		mg/L	1	3/4/2014 9:50:07 AM	11992
Silver	ND	0.0050		mg/L	1	3/4/2014 11:35:37 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-002 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	3/5/2014 12:46:13 PM	12002
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Barium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Cadmium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Chromium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Lead	ND	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Selenium	0.14	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Silver	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12001**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492024**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12001**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492025**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0055	0.00020	0.005000	0	110	80	120			

Sample ID	**1403032-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492027**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.5	75	125			

Sample ID	**1403032-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492028**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	75	125	0.954	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12002**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492054**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12002**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492055**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491142**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.10								
Selenium	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491143**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.10	0.5000	0	93.1	80	120			
Selenium	0.47	0.10	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491379**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491380**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.9	80	120			
Barium	0.49	0.10	0.5000	0	98.9	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.50	0.10	0.5000	0	99.3	80	120			
Silver	0.10	0.10	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491177**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								
Selenium	ND	0.050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491178**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491383**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.9	80	120			
Barium	0.49	0.020	0.5000	0	98.9	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403032 RcptNo: 1

Received by/date: MG 03/03/14

Logged By: Michelle Garcia 3/3/2014 2:05:00 PM Michelle Garcia

Completed By: Michelle Garcia 3/3/2014 2:47:25 PM Michelle Garcia

Reviewed By: 03/03/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? NO

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403032	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/3/14	10:00	Jerry Sosa		03/03/14	1405
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: SeRT (DAF Floc. Effluent) OrderNo.: 1403332

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 4 sample(s) on 3/10/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued March 11, 2014.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403332**
Date Reported: **3/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: SeRT (DAF Floc. Effluent)
Lab ID: 1403332-001 **Matrix:** AQUEOUS

Client Sample ID: DAF Floc. Effluent (Location #5
Collection Date: 3/10/2014 6:00:00 AM
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.16	0.14	0.50	J	mg/L	10	3/11/2014 9:04:44 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF Floc. Effluent (Location #5
Project: SeRT (DAF Floc. Effluent)
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403332-002 **Matrix:** AQUEOUS **Received Date:** 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.044	0.031	0.10	J	mg/L	1	3/11/2014 8:48:33 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: SeRT (DAF Floc. Effluent)
Lab ID: 1403332-003 **Matrix:** AQUEOUS

Client Sample ID: DAF Out Of
Collection Date: 3/10/2014 6:00:00 AM
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.067	0.014	0.050		mg/L	1	3/11/2014 8:49:48 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: SeRT (DAF Floc. Effluent)
Lab ID: 1403332-004 **Matrix:** AQUEOUS

Client Sample ID: DAF Out Of
Collection Date: 3/10/2014 6:00:00 AM
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.048	0.031	0.10	J	mg/L	1	3/11/2014 8:51:02 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403332**

13-Mar-14

Client: Navajo Refining Company

Project: SeRT (DAF Floc. Effluent)

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495339**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495340**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	0.10	0.5000	0	96.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403332**

13-Mar-14

Client: Navajo Refining Company

Project: SeRT (DAF Floc. Effluent)

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495464**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495465**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	0.050	0.5000	0	96.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403332 RcptNo: 1

Received by/date: 03/10/14

Logged By: **Lindsay Mangin** 3/10/2014 2:15:00 PM

Completed By: **Lindsay Mangin** 3/10/2014 2:38:29 PM

Reviewed By: 03/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 2 (<2 or >12 unless noted)

Adjusted? 02

Checked by: MY

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standard ☒ Rush_ ASAP
	Project Name: SeRT (DAF Floc. Effluent)
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)	
Accreditation: ☐ NELAP ☐ Other_____	Sampler: Bobby C
☐ EDD (Type) _____	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403332	Total Se by EPA Method 6010B	Selenite/Thiosulfate/Thiocyanate	TSS by SM 2540D	TOC by EPA Method 9060	EPA Method 1664 O&G	Total Phenols EPA Method 9067	TCLP Selenium 1311/6010	pH						
03/10/14	0000	Liquid	DAF Floc. Effluent (location #5)	1-500ml HDPE	HNO3	-001	X													
03/10/14	0600	Liquid	DAF Floc. Effluent (location #5)	1-500ml HDPE	Neat	-002							X							
03/10/14	0600	Liquid	DAF ~~Effluent~~ OUT OF		HNO3	-003	X													
03/10/14	0600	Liquid	DAF ~~Effluent~~ OUT OF		NEAT	-004							X							

Date:	Time:	Relinquished by:	Received by:	Date	Time
~~3/6/14~~ 03/10/14	0000	Jerry Sosa		03/10/14	1215
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Send results to Mike Holder and Aaron Strange

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytica

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403331

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403331**
Date Reported: **3/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403331-001
Matrix: AQUEOUS
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	ND	0.000087	0.00020		mg/L	1	3/12/2014 12:17:10 PM	12132
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.019	0.0076	0.020	J	mg/L	1	3/11/2014 8:44:50 AM	12109
Barium	0.037	0.0016	0.020		mg/L	1	3/11/2014 8:44:50 AM	12109
Cadmium	ND	0.0012	0.0020		mg/L	1	3/11/2014 8:44:50 AM	12109
Chromium	ND	0.0019	0.0060		mg/L	1	3/11/2014 8:44:50 AM	12109
Lead	ND	0.0047	0.0050		mg/L	1	3/11/2014 8:44:50 AM	12109
Selenium	0.067	0.014	0.050		mg/L	1	3/11/2014 8:44:50 AM	12109
Silver	ND	0.0013	0.0050		mg/L	1	3/11/2014 8:44:50 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403331-002
Matrix: AQUEOUS
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/12/2014 2:31:23 PM	12135
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.021	0.015	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Barium	0.071	0.0024	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Cadmium	ND	0.0014	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Chromium	ND	0.0012	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Lead	ND	0.0059	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Selenium	0.046	0.031	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Silver	ND	0.0051	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12132**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496782**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12132**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496783**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

Sample ID	**1403331-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496785**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.6	75	125			

Sample ID	**1403331-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496786**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	90.4	75	125	0.953	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12135**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12135**	RunNo:	**17252**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496858**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12135**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12135**	RunNo:	**17252**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496859**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	99.6	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495339** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495340** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.2	80	120			
Barium	0.50	0.10	0.5000	0	99.6	80	120			
Cadmium	0.50	0.10	0.5000	0	101	80	120			
Chromium	0.49	0.10	0.5000	0	98.0	80	120			
Lead	0.48	0.10	0.5000	0	96.1	80	120			
Selenium	0.48	0.10	0.5000	0	96.0	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495464**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495465**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.2	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Chromium	0.49	0.0060	0.5000	0	98.0	80	120			
Lead	0.48	0.0050	0.5000	0	96.1	80	120			
Selenium	0.48	0.050	0.5000	0	96.0	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403331 RcptNo: 1

Received by/date: 03/10/14

Logged By: **Lindsay Mangin** 3/10/2014 2:15:00 PM

Completed By: **Lindsay Mangin** 3/10/2014 2:31:37 PM

Reviewed By: 03/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes			

Chain-of-Custody Record

Client: Nav[illegible]efining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa ☐ Rush next Day

Project Name:

Wastewater Effluent Monitoring/SeRT

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402331	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
03/10/14	600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
03/10/14	600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
~~2/24/14~~ 03/10/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	03/10/14	1215

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 21, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring (Mondays) OrderNo.: 1403704

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1403704**
Date Reported: **3/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring (Mondays)
Lab Order: 1403704

Lab ID: 1403704-001 **Collection Date:** 3/17/2014 8:15:00 AM
Client Sample ID: W-7 Effluent **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.50	0.050		mg/L	1	3/19/2014 8:54:35 AM	12226

Lab ID: 1403704-002 **Collection Date:** 3/17/2014 8:15:00 AM
Client Sample ID: W-7 Effluent **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.26	0.10		mg/L	1	3/19/2014 8:55:50 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403704**

21-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring (Mondays)

Sample ID	**LCS-12226**	SampType: **LCS**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501609**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.10	0.5000	0	97.2	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**			TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501612**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403704**

21-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring (Mondays)

Sample ID	**1403702-003BMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**BatchQC**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501624**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.64	0.050	0.5000	0.1439	99.2	75	125			

Sample ID	**1403702-003BMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**BatchQC**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501625**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.72	0.050	0.5000	0.1439	115	75	125	11.6	20	

Sample ID	**LCS-12226**	SampType: **LCS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501645**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.2	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID: **12226**			RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**			SeqNo: **501646**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.020	0.050								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
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Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403704 RcptNo: 1

Received by/date: 03/17/14

Logged By: **Lindsay Mangin** 3/17/2014 1:30:00 PM

Completed By: **Lindsay Mangin** 3/17/2014 2:08:28 PM

Reviewed By: KMS 3/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☐ **Rush** **Next Day**

Project Name:

WW Effluent Monitoring (Mondays)

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1403704	Total Selenium 6010	TCLP Selenium 1311/6010
3/17/14	0915	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
3/17/14	0915	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/17/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				3/17/14	1330

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT Monday OrderNo.: 1403705

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403705**
Date Reported: **3/20/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT M
Collection Date: 3/17/2014 6:00:00 AM
Lab ID: 1403705-001 **Matrix:** AQUEOUS **Received Date:** 3/17/2014 1:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	ND	0.000087	0.00020		mg/L	1	3/18/2014 2:49:20 PM	12230
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.028	0.0076	0.020		mg/L	1	3/19/2014 10:02:13 AM	12226
Barium	0.043	0.0016	0.020		mg/L	1	3/19/2014 8:35:01 AM	12226
Cadmium	ND	0.0012	0.0020		mg/L	1	3/19/2014 8:35:01 AM	12226
Chromium	ND	0.0019	0.0060		mg/L	1	3/19/2014 8:35:01 AM	12226
Lead	ND	0.0047	0.0050		mg/L	1	3/19/2014 8:35:01 AM	12226
Selenium	0.081	0.014	0.050		mg/L	1	3/19/2014 8:35:01 AM	12226
Silver	ND	0.0013	0.0050		mg/L	1	3/19/2014 8:35:01 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT M
Collection Date: 3/17/2014 6:00:00 AM
Lab ID: 1403705-002
Matrix: AQUEOUS
Received Date: 3/17/2014 1:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/19/2014 2:39:23 PM	12256
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.029	0.015	0.10	J	mg/L	1	3/19/2014 10:03:27 AM	12226
Barium	0.078	0.0024	0.10	J	mg/L	1	3/19/2014 8:36:15 AM	12226
Cadmium	ND	0.0014	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Chromium	ND	0.0012	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Lead	ND	0.0059	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Selenium	0.052	0.031	0.10	J	mg/L	1	3/19/2014 8:36:15 AM	12226
Silver	ND	0.0051	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**MB-12230**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501079**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12230**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501080**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.6	80	120			

Sample ID	**1403705-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501082**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	86.3	75	125			

Sample ID	**1403705-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501083**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	86.8	75	125	0.554	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**MB-12256**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12256**	RunNo:	**17422**					
Prep Date:	**3/19/2014**	Analysis Date:	**3/19/2014**	SeqNo:	**501893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12256**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12256**	RunNo:	**17422**					
Prep Date:	**3/19/2014**	Analysis Date:	**3/19/2014**	SeqNo:	**501894**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.020	0.005000	0	103	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501609**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.10	0.5000	0	104	80	120			
Cadmium	0.52	0.10	0.5000	0	103	80	120			
Chromium	0.51	0.10	0.5000	0	102	80	120			
Lead	0.50	0.10	0.5000	0	99.7	80	120			
Selenium	0.49	0.10	0.5000	0	97.2	80	120			
Silver	0.10	0.10	0.1000	0	104	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501612**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17416**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501654**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17416**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501655**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0	103	80	120			

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17415**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501645**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.020	0.5000	0	104	80	120			
Cadmium	0.52	0.0020	0.5000	0	103	80	120			
Chromium	0.51	0.0060	0.5000	0	102	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.49	0.050	0.5000	0	97.2	80	120			
Silver	0.10	0.0050	0.1000	0	104	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17415**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501646**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	0.020	0.050								J
Silver	ND	0.0050								

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17416**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501671**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17416**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501672**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403705 RcptNo: 1

Received by/date: 03/17/14

Logged By: **Lindsay Mangin** 3/17/2014 1:30:00 PM

Completed By: **Lindsay Mangin** 3/17/2014 2:11:40 PM

Reviewed By: 3/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standa ☐ **Rush** **Next Day**
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	WW Effluent Monitoring/SeRT (Mondays)
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Mike Holder
	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 2.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403705	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
3/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/17/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	03/17/14	1330

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment B:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28
3/3/2014	T-801 Effluent to Wells	Hall	0.14	-	-	0.14
3/10/2014	T-836 Effluent to Wells	Hall	0.05	-	-	0.05
3/13/2014	T-836 Effluent to Wells	Hall	0.08	-	-	0.08
3/17/2014	T-801 Effluent to Wells	Hall	0.05	-	-	0.05

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through March 20, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#5. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60					<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75				0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60					<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56				0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40					<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24				0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-					<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-				0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20				9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86				12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93				12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98				11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10					10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96				9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20					14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99				11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99					14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87				10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30					14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08				14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-				-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-				-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-				-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-				-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-				-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-				-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-				-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-				-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-				-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07				-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00				10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-				9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-				0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-				7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-				12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-				11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-				7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-				17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-				3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-				15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-				0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-				17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-				18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-				0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-				0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-				0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-				10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-				9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-				17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-				15.00	15.00	0.19	0.29	-	-	-	0.6	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-				0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.3	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	6.90	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	0.28	-	-	-	-	-	-	-	-	-	-	1402904 1402903
2/26/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
2/27/2014	Hall Environmental	-	-	-	-	-	-	6.20	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.24	0.24	5.60	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.14	-	-	-	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	-	0.52	-	-	-	-	-	-	-	-	-	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.70	-	0.23	-	-	-	-	-	-	-	-	-	-	-	0.044	0.048	-	0.046	-	-	-	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall Environmental	-	-	-	-	-	-	5.10	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558
3/13/2014	Hall Environmental	-	-	-	-	0.87	0.87	5.30	-	0.16	-	-	-	-	-	-	-	-	-	-	-	0.085	0.099	-	0.079	-	-	-	-	-	-	-	-	-	1403561 1403562 1403559 1403563
3/17/2014	Hall Environmental	-	-	-	-	0.26	0.26	4.80	-	0.19	-	-	-	-	-	-	-	-	-	-	-	0.088	0.076	-	0.052	-	-	-	-	-	-	-	-	-	1403702 1403703 1403704 1403705
3/19/2014	Hall Environmental	-	-	-	-	-	-	4.30	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-	-	--	4.80	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through March 20, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50				0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69			0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62				0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71			0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58				0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56			0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-				0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-			0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13			5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32			8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27			9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08			6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22				3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22			5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10				5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15			8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39				1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36			4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21				3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20			5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-			-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-			-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-			-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-			-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-			-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-			-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-			-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-			-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-			-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90			-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39			7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-			7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-			0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-			9.9	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-			11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-			9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-			6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-			14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-			3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-			7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-			<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-			16.0	16.0	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-			18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-			<5	<5	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-			<4.5	<4.5	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-			<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-			17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.1	3.2	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	7.00	1.50	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	0.27	-	-	-	-	-	-	1402902 1402903 1402904
2/26/2014	Hall Environmental	-	-	-	-	-	-	6.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A79
2/27/2014	Hall Environmental	-	-	-	-	-	-	5.80	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402A78
3/3/2014	Hall Environmental	-	-	-	-	0.31	0.31	5.60	0.49	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	0.12	-	-	-	-	-	-	1403030 1403032
3/5/2014	Hall Environmental	-	-	-	-	-	-	5.70	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403250
3/6/2014	Hall Environmental	-	-	-	-	-	-	5.40	0.44	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-	-	-	-	-	1403248 1403249
3/10/2014	Hall Environmental	-	-	-	-	-	-	5.30	0.19	-	-	-	-	-	-	-	-	-	-	-	0.16	0.067	-	0.067	-	-	-	-	-	-	1403331 1403332 1403333
3/12/2014	Hall	-	-	-	-	-	-	5.20	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403558

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
	Environmental																														
																															1403561
																															1403562
	Hall																														1403559
3/13/2014	Environmental	-	-	-	-	0.84	0.84	5.00	0.14	-	-	-	-	-	-	-	-	-	-	-	0.17	0.095	-	0.091	-	-	-	-	-	-	1403563
																															1403702
																															1403703
	Hall																														1403704
3/17/2014	Environmental	-	-	-	-	0.50	0.50	4.40	0.14	-	-	-	-	-	-	-	-	-	-	-	<0.28	0.096	-	0.081	-	-	-	-	-	-	1403705
3/19/2014	Hall Environmental	-	-	-	-			3.90	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403872
3/20/2014	Hall Environmental	-	-	-	-			4.40	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1403870

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Friday, March 28, 2014 9:53 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 3/24/14 Effluent Se Results
Attachments: Rpt_1403966_Final_v1.pdf

Scott/Carl – attached are the effluent selenium results for March 24, 2014.

Thanks,
Mike

For 3/24/14:

Total Effluent Se = 0.12 mg/L

TCLP Effluent Se = 0.15 mg/L

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 27, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT (Mondays) OrderNo.: 1403966

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location # 6)
Project: Wastewater Effluent Monitoring/SeRT (
Collection Date: 3/24/2014 6:00:00 AM
Lab ID: 1403966-001 **Matrix:** AQUEOUS **Received Date:** 3/24/2014 1:47:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	0.00042	0.000087	0.00020		mg/L	1	3/24/2014 5:58:53 PM	12328
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.032	0.0076	0.020		mg/L	1	3/25/2014 9:11:06 AM	12339
Barium	0.073	0.0016	0.020		mg/L	1	3/25/2014 9:11:06 AM	12339
Cadmium	ND	0.0012	0.0020		mg/L	1	3/25/2014 9:11:06 AM	12339
Chromium	0.0070	0.0019	0.0060		mg/L	1	3/25/2014 9:11:06 AM	12339
Lead	0.0066	0.0047	0.0050		mg/L	1	3/25/2014 9:11:06 AM	12339
Selenium	0.12	0.014	0.050		mg/L	1	3/25/2014 9:11:06 AM	12339
Silver	ND	0.0013	0.0050		mg/L	1	3/25/2014 9:11:06 AM	12339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT (
Collection Date: 3/24/2014 6:00:00 AM
Lab ID: 1403966-002 **Matrix:** AQUEOUS **Received Date:** 3/24/2014 1:47:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/25/2014 5:34:38 PM	12358
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.016	0.015	0.10	J	mg/L	1	3/25/2014 9:12:26 AM	12339
Barium	0.080	0.0024	0.10	J	mg/L	1	3/25/2014 9:12:26 AM	12339
Cadmium	ND	0.0014	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Chromium	ND	0.0012	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Lead	ND	0.0059	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Selenium	0.15	0.031	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339
Silver	ND	0.0051	0.10		mg/L	1	3/25/2014 9:12:26 AM	12339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12328**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12328**	RunNo:	**17527**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/24/2014**	SeqNo:	**505323**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12328**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12328**	RunNo:	**17527**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/24/2014**	SeqNo:	**505324**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12358**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12358**	RunNo:	**17559**					
Prep Date:	**3/25/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505757**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12358**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12358**	RunNo:	**17559**					
Prep Date:	**3/25/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505758**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.020	0.005000	0	103	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12339**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**12339**	RunNo:	**17546**
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505482** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-12339**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**12339**	RunNo:	**17546**
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0	104	80	120			
Barium	0.50	0.10	0.5000	0	99.2	80	120			
Cadmium	0.50	0.10	0.5000	0	101	80	120			
Chromium	0.49	0.10	0.5000	0	98.8	80	120			
Lead	0.50	0.10	0.5000	0	100	80	120			
Selenium	0.50	0.10	0.5000	0	99.6	80	120			
Silver	0.11	0.10	0.1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403966**

27-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT (Monday

Sample ID	**MB-12339**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12339**	RunNo:	**17546**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505593**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	0.017	0.050								J
Silver	ND	0.0050								

Sample ID	**LCS-12339**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12339**	RunNo:	**17546**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/25/2014**	SeqNo:	**505594**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	104	80	120			
Barium	0.50	0.020	0.5000	0	99.2	80	120			
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Chromium	0.49	0.0060	0.5000	0	98.8	80	120			
Lead	0.50	0.0050	0.5000	0	100	80	120			
Selenium	0.50	0.050	0.5000	0	99.6	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403966 RcptNo: 1

Received by/date: AG 03/24/14

Logged By: **Lindsay Mangin** 3/24/2014 1:47:00 PM

Completed By: **Lindsay Mangin** 3/24/2014 1:51:45 PM

Reviewed By: CS 03/24/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MJ

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: WW Effluent Monitoring/SeRT (Mondays)
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.5

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403966	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
3/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
3/24/14	10:00	Jerry Sosa			
				03/24/14	1347
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Agenda for March 26, 2014 Meeting
Navajo Refining Company, L.L.C. and NMED (10:00) and OCD (2:00)

1. Introductions and pending staff changes for Navajo
2. Selenium Reduction - Consent Order and Current Discharge Performance
    a. Background – revisit selenium source discussion
    b. Technologies Reviewed by HollyFrontier for Selenium Removal
    c. Navajo's Choice of Selenium Removal Technology
        i. ICP
        ii. SeRT - Demonstration Unit
        iii. Project Timeline
    d. Selenium Discharge Limits
        i. Project Performance Unknown
        ii. Monthly Average Limits
        iii. Mass Based Limits
        iv. Sample Frequency
3. Amendment to Exhibit A to Consent Order (OCD)
4. Local Limits Development (NMED)
5. POTW – NPDES Permit discharge limits (NMED)
6. Overall Water Management Projects
    a. Phase 1: Stormwater Management
    b. Phase 2:
        i. Water Conservation
        ii. Discontinue RO Reject Land Application (OCD)
        iii. Selenium Reduction
    c. Phase 3: TDS Reduction
    d. Phase 4: Completion of Recovery Well Upgrades
7. Injection Well Discussion
    a. Required for all water management strategies
    b. Possible hazardous well permitting

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, March 20, 2014 8:03 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 3/17/14 Effluent Se Results
Attachments: Rpt_1403705_Final_v1.pdf

Scott/Carl – attached are the effluent selenium results for March 17, 2014.

Thanks,
Mike

For 3/17/14:

Total Effluent Se = 0.081 mg/L

TCLP Effluent Se = 0.052 mg/L

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT Monday OrderNo.: 1403705

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403705**
Date Reported: **3/20/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT M
Collection Date: 3/17/2014 6:00:00 AM
Lab ID: 1403705-001 **Matrix:** AQUEOUS **Received Date:** 3/17/2014 1:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	ND	0.000087	0.00020		mg/L	1	3/18/2014 2:49:20 PM	12230
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.028	0.0076	0.020		mg/L	1	3/19/2014 10:02:13 AM	12226
Barium	0.043	0.0016	0.020		mg/L	1	3/19/2014 8:35:01 AM	12226
Cadmium	ND	0.0012	0.0020		mg/L	1	3/19/2014 8:35:01 AM	12226
Chromium	ND	0.0019	0.0060		mg/L	1	3/19/2014 8:35:01 AM	12226
Lead	ND	0.0047	0.0050		mg/L	1	3/19/2014 8:35:01 AM	12226
Selenium	0.081	0.014	0.050		mg/L	1	3/19/2014 8:35:01 AM	12226
Silver	ND	0.0013	0.0050		mg/L	1	3/19/2014 8:35:01 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT M
Collection Date: 3/17/2014 6:00:00 AM
Lab ID: 1403705-002
Matrix: AQUEOUS
Received Date: 3/17/2014 1:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/19/2014 2:39:23 PM	12256
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.029	0.015	0.10	J	mg/L	1	3/19/2014 10:03:27 AM	12226
Barium	0.078	0.0024	0.10	J	mg/L	1	3/19/2014 8:36:15 AM	12226
Cadmium	ND	0.0014	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Chromium	ND	0.0012	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Lead	ND	0.0059	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226
Selenium	0.052	0.031	0.10	J	mg/L	1	3/19/2014 8:36:15 AM	12226
Silver	ND	0.0051	0.10		mg/L	1	3/19/2014 8:36:15 AM	12226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**MB-12230**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501079**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12230**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501080**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.6	80	120			

Sample ID	**1403705-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501082**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	86.3	75	125			

Sample ID	**1403705-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12230**	RunNo:	**17399**					
Prep Date:	**3/18/2014**	Analysis Date:	**3/18/2014**	SeqNo:	**501083**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	86.8	75	125	0.554	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**MB-12256**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12256**	RunNo:	**17422**					
Prep Date:	**3/19/2014**	Analysis Date:	**3/19/2014**	SeqNo:	**501893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12256**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12256**	RunNo:	**17422**					
Prep Date:	**3/19/2014**	Analysis Date:	**3/19/2014**	SeqNo:	**501894**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.020	0.005000	0	103	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501609**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.10	0.5000	0	104	80	120			
Cadmium	0.52	0.10	0.5000	0	103	80	120			
Chromium	0.51	0.10	0.5000	0	102	80	120			
Lead	0.50	0.10	0.5000	0	99.7	80	120			
Selenium	0.49	0.10	0.5000	0	97.2	80	120			
Silver	0.10	0.10	0.1000	0	104	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17415**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501612**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17416**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501654**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17416**					
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501655**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403705**

20-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT Monday

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17415**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501645**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.020	0.5000	0	104	80	120			
Cadmium	0.52	0.0020	0.5000	0	103	80	120			
Chromium	0.51	0.0060	0.5000	0	102	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.49	0.050	0.5000	0	97.2	80	120			
Silver	0.10	0.0050	0.1000	0	104	80	120			

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17415**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501646**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	0.020	0.050								J
Silver	ND	0.0050								

Sample ID	**MB-12226**	SampType: **MBLK**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**PBW**	Batch ID: **12226**		RunNo: **17416**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501671**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID	**LCS-12226**	SampType: **LCS**		TestCode: **EPA 6010B: Total Metals**						
Client ID:	**LCSW**	Batch ID: **12226**		RunNo: **17416**						
Prep Date:	**3/18/2014**	Analysis Date: **3/19/2014**		SeqNo: **501672**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403705 RcptNo: 1

Received by/date: 03/17/14

Logged By: **Lindsay Mangin** 3/17/2014 1:30:00 PM

Completed By: **Lindsay Mangin** 3/17/2014 2:11:40 PM

Reviewed By: 3/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standa ☐ **Rush** **Next Day**
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	WW Effluent Monitoring/SeRT (Mondays)
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Mike Holder
	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 2.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403705	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
3/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/17/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	03/17/14	1330

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Saturday, March 15, 2014 6:46 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 3/10/14 Effluent Se Results
Attachments: Rpt_1403331_Final_v1.pdf

Scott/Carl – attached are the effluent selenium results for March 10, 2014.

Thanks,
Mike

For 3/3/14:

Total Effluent Se = 0.067 mg/L

TCLP Effluent Se = 0.046 mg/L

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403331

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403331**
Date Reported: **3/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403331-001
Matrix: AQUEOUS
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY							Analyst: **JML**	
Mercury	ND	0.000087	0.00020		mg/L	1	3/12/2014 12:17:10 PM	12132
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Arsenic	0.019	0.0076	0.020	J	mg/L	1	3/11/2014 8:44:50 AM	12109
Barium	0.037	0.0016	0.020		mg/L	1	3/11/2014 8:44:50 AM	12109
Cadmium	ND	0.0012	0.0020		mg/L	1	3/11/2014 8:44:50 AM	12109
Chromium	ND	0.0019	0.0060		mg/L	1	3/11/2014 8:44:50 AM	12109
Lead	ND	0.0047	0.0050		mg/L	1	3/11/2014 8:44:50 AM	12109
Selenium	0.067	0.014	0.050		mg/L	1	3/11/2014 8:44:50 AM	12109
Silver	ND	0.0013	0.0050		mg/L	1	3/11/2014 8:44:50 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/10/2014 6:00:00 AM
Lab ID: 1403331-002
Matrix: AQUEOUS
Received Date: 3/10/2014 2:15:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
MERCURY, TCLP							Analyst: **JML**	
Mercury	ND	0.00075	0.020		mg/L	1	3/12/2014 2:31:23 PM	12135
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Arsenic	0.021	0.015	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Barium	0.071	0.0024	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Cadmium	ND	0.0014	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Chromium	ND	0.0012	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Lead	ND	0.0059	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109
Selenium	0.046	0.031	0.10	J	mg/L	1	3/11/2014 8:46:05 AM	12109
Silver	ND	0.0051	0.10		mg/L	1	3/11/2014 8:46:05 AM	12109

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12132**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496782**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12132**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496783**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

Sample ID	**1403331-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496785**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.6	75	125			

Sample ID	**1403331-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12132**	RunNo:	**17250**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496786**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	90.4	75	125	0.953	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12135**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12135**	RunNo:	**17252**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496858**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12135**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12135**	RunNo:	**17252**					
Prep Date:	**3/11/2014**	Analysis Date:	**3/12/2014**	SeqNo:	**496859**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	99.6	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495339** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495340** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.2	80	120			
Barium	0.50	0.10	0.5000	0	99.6	80	120			
Cadmium	0.50	0.10	0.5000	0	101	80	120			
Chromium	0.49	0.10	0.5000	0	98.0	80	120			
Lead	0.48	0.10	0.5000	0	96.1	80	120			
Selenium	0.48	0.10	0.5000	0	96.0	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403331**

13-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12109**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495464**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-12109**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**12109**	RunNo:	**17216**					
Prep Date:	**3/10/2014**	Analysis Date:	**3/11/2014**	SeqNo:	**495465**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.2	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Chromium	0.49	0.0060	0.5000	0	98.0	80	120			
Lead	0.48	0.0050	0.5000	0	96.1	80	120			
Selenium	0.48	0.050	0.5000	0	96.0	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403331 RcptNo: 1

Received by/date: 03/10/14

Logged By: **Lindsay Mangin** 3/10/2014 2:15:00 PM

Completed By: **Lindsay Mangin** 3/10/2014 2:31:37 PM

Reviewed By: 03/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes			

Chain-of-Custody Record

Client: Nav[illegible]efining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standa ☐ Rush next Day

Project Name:

Wastewater Effluent Monitoring/SeRT

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402331	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
03/10/14	600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
03/10/14	600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
~~2/24/14~~ 03/10/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	03/10/14	1215

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Wednesday, March 05, 2014 7:16 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 3/3/14 Effluent Se Results
Attachments: Rpt_1403032_Final_v1.pdf

Scott/Carl – attached are the monthly effluent selenium results for March 2014.

Thanks,
Mike

For 3/3/14:

Total Effluent Se = 0.12 mg/L

TCLP Effluent Se = 0.14 mg/L

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 05, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403032

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/3/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403032**
Date Reported: **3/5/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-001
Matrix: AQUEOUS
Received Date: 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	3/5/2014 12:09:14 PM	12001
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Barium	0.038	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Cadmium	ND	0.0020		mg/L	1	3/4/2014 11:35:37 AM	11992
Chromium	ND	0.0060		mg/L	1	3/4/2014 11:35:37 AM	11992
Lead	ND	0.0050		mg/L	1	3/4/2014 9:50:07 AM	11992
Selenium	0.12	0.050		mg/L	1	3/4/2014 9:50:07 AM	11992
Silver	ND	0.0050		mg/L	1	3/4/2014 11:35:37 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-002 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	3/5/2014 12:46:13 PM	12002
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Barium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Cadmium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Chromium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Lead	ND	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Selenium	0.14	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Silver	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12001**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492024**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12001**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492025**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0055	0.00020	0.005000	0	110	80	120			

Sample ID	**1403032-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492027**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.5	75	125			

Sample ID	**1403032-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492028**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	75	125	0.954	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12002**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492054**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12002**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492055**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491142**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.10								
Selenium	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491143**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.10	0.5000	0	93.1	80	120			
Selenium	0.47	0.10	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491379**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491380**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.9	80	120			
Barium	0.49	0.10	0.5000	0	98.9	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.50	0.10	0.5000	0	99.3	80	120			
Silver	0.10	0.10	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491177**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								
Selenium	ND	0.050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491178**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491383**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.9	80	120			
Barium	0.49	0.020	0.5000	0	98.9	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403032 RcptNo: 1

Received by/date: MG 03/03/14

Logged By: Michelle Garcia 3/3/2014 2:05:00 PM Michelle Garcia

Completed By: Michelle Garcia 3/3/2014 2:47:25 PM Michelle Garcia

Reviewed By: 03/03/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? NO

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403032	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/3/14	10:00	Jerry Sosa		03/03/14	1405
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Wednesday, March 05, 2014 7:16 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 3/3/14 Effluent Se Results
Attachments: Rpt_1403032_Final_v1.pdf

Scott/Carl – attached are the monthly effluent selenium results for March 2014.

Thanks,
Mike

For 3/3/14:

Total Effluent Se = 0.12 mg/L

TCLP Effluent Se = 0.14 mg/L

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 05, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1403032

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/3/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403032**
Date Reported: **3/5/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-001
Matrix: AQUEOUS
Received Date: 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	3/5/2014 12:09:14 PM	12001
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Barium	0.038	0.020		mg/L	1	3/4/2014 11:35:37 AM	11992
Cadmium	ND	0.0020		mg/L	1	3/4/2014 11:35:37 AM	11992
Chromium	ND	0.0060		mg/L	1	3/4/2014 11:35:37 AM	11992
Lead	ND	0.0050		mg/L	1	3/4/2014 9:50:07 AM	11992
Selenium	0.12	0.050		mg/L	1	3/4/2014 9:50:07 AM	11992
Silver	ND	0.0050		mg/L	1	3/4/2014 11:35:37 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 3/3/2014 6:00:00 AM
Lab ID: 1403032-002 **Matrix:** AQUEOUS **Received Date:** 3/3/2014 2:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	3/5/2014 12:46:13 PM	12002
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Barium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Cadmium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Chromium	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992
Lead	ND	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Selenium	0.14	0.10		mg/L	1	3/4/2014 9:51:21 AM	11992
Silver	ND	0.10		mg/L	1	3/4/2014 11:36:50 AM	11992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12001**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492024**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12001**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492025**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0055	0.00020	0.005000	0	110	80	120			

Sample ID	**1403032-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492027**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.5	75	125			

Sample ID	**1403032-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**12001**	RunNo:	**17110**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492028**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	75	125	0.954	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-12002**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492054**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-12002**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**12002**	RunNo:	**17112**					
Prep Date:	**3/4/2014**	Analysis Date:	**3/5/2014**	SeqNo:	**492055**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491142**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.10								
Selenium	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491143**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.10	0.5000	0	93.1	80	120			
Selenium	0.47	0.10	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491379**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491380**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.9	80	120			
Barium	0.49	0.10	0.5000	0	98.9	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.50	0.10	0.5000	0	99.3	80	120			
Silver	0.10	0.10	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403032**

05-Mar-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491177**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								
Selenium	ND	0.050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17078**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491178**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	93.3	80	120			

Sample ID	**MB-11992**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491383**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID	**LCS-11992**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11992**	RunNo:	**17088**					
Prep Date:	**3/3/2014**	Analysis Date:	**3/4/2014**	SeqNo:	**491384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.9	80	120			
Barium	0.49	0.020	0.5000	0	98.9	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403032 RcptNo: 1

Received by/date: MG 03/03/14

Logged By: Michelle Garcia 3/3/2014 2:05:00 PM Michelle Garcia

Completed By: Michelle Garcia 3/3/2014 2:47:25 PM Michelle Garcia

Reviewed By: 03/03/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? NO

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 3.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403032	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
3/3/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/3/14	10:00	Jerry Sosa		03/03/14	1405
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

March 3, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7006 0100 0003 6610 0217

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
February 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the February 2014 monthly progress report, detailing the actions taken during the preceding calendar month of January 2014, and due on the first business day of the following month (i.e., March 3, 2014). This report also includes the final analytical results as of February 24, 2014, and the actions taken through approximately February 27, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the

Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.
- The January 2014 progress report was submitted on February 3, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the potential design and installation of a 200 gpm SeRT® unit or the modification of the existing, 100 gpm trial SeRT® unit. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 30, 2014

- Refinery resumed normal production rate.

February 1, 2014

- Started 100 gpm trial SeRT® Process.
- Completed sample collection for Iron Co-Precipitation trial and converted Iron Co-Precipitation trial to continuous, full-scale operation. The trial results are summarized in Table 2 below and show an average total selenium removal efficiency of 73%.

Table 2: Selenium Measurements Collected During the Iron Co=Precipitation Trial (mg/L)

		T-805 Eff.		DAF Eff.		Walnut Filter Eff.		Tank 809 Eff.		Removal Efficiency
DATE	Laboratory	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	Total Se	TCLP Se	on Total Se
12/27/2013	Hall Environmental	1.1	0.30	0.38	0.30	0.37	0.31	0.38	0.34	66%
12/30/2013	Hall Environmental	1.6	0.37	0.63	0.35	0.43	0.34	-	-	73%
1/6/2014	Hall Environmental	1.2	0.17	0.34	0.18	0.27	0.20	-	-	78%
1/9/2014	Hall Environmental	1.8	0.14	0.42	0.21	0.43	0.25	-	-	76%
1/13/2014	Hall Environmental	2.1	0.34	0.41	0.33	0.37	0.35	-	-	82%
1/16/2014	Hall Environmental	1.6	0.18	0.25	0.22	0.20	0.20	-	-	88%
1/20/2014	Hall Environmental	1.0	0.55	0.75	0.57	0.54	0.55	-	-	46%
1/23/2014	Hall Environmental	1.4	0.18	0.24	0.19	0.21	0.20	-	-	85%
1/27/2014	Hall Environmental	1.2	0.43	0.55	0.58	0.51	0.51	-	-	58%
1/30/2014	Hall Environmental	1.0	0.26	0.30	0.27	0.23	0.29	-	-	77%

February 13, 2014

- Completed process engineering of full capacity permanent SeRT® Process.

Navajo has developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. This schedule is provided below.

1. Iron Co-precipitation via ferric chloride injection:
    a. Based on SeRT® process results, Navajo will consider discontinuing ferric chloride injection

2. SeRT® Process – 100 gpm trial unit:
    a. February 28, 2014 (estimated): Achieve stable operation and confirmed selenium reduction from the 100 gpm trial SeRT® Process

3. SeRT® Process: Depending on the results of the above SeRT® trial, potential installation of a full capacity permanent unit or the modification of the existing, 100 gpm trial SeRT® unit:
    a. January 31, 2015 (estimated) - Startup Goal.

Navajo will submit shortly a proposed schedule of projected milestones and deadlines for purposes of amending Exhibit A to the Order, as set forth in Paragraph 14 of that Exhibit.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 3. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through February 24, 2014). As of the sample collected on February 24, 2014, Navajo has achieved eleven consecutive weeks of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 3. The laboratory reports for the samples collected in December through February 24, 2014, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 3: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49
2/3/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.56	0.56
2/10/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/17/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.20	0.20
2/24/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.28	0.28

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

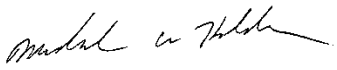
A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October, November, December, and January through February 24, 2014.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the February 24, 2014 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,



Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-001 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/4/2013 6:54:13 PM	10631
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.051	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Barium	0.032	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Cadmium	ND	0.0020		mg/L	1	12/3/2013 3:05:00 PM	10606
Chromium	ND	0.0060		mg/L	1	12/3/2013 3:05:00 PM	10606
Lead	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606
Selenium	0.77	0.050		mg/L	1	12/3/2013 3:05:00 PM	10606
Silver	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10631**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439377**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10631**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439378**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**PBW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438128** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10606**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**LCSW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.50	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-002
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY, TCLP						Analyst: **JML**
Mercury	ND	0.020		mg/L	1	12/4/2013 7:36:06 PM
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**
Arsenic	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Barium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Cadmium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Chromium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Lead	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Selenium	0.88	0.10		mg/L	1	12/4/2013 11:20:03 AM
Silver	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10632**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10632**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439385**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

Sample ID	**1312047-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439387**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.7	75	125			

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439388**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10620**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439004** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10620**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	105	80	120			
Barium	ND	100	0.5000	0	94.2	80	120			
Cadmium	ND	1.0	0.5000	0	104	80	120			
Chromium	ND	5.0	0.5000	0	95.6	80	120			
Lead	ND	5.0	0.5000	0	95.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	108	80	120			

Sample ID **1312047-002AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.10	0.5000	0.04824	101	75	125			
Barium	0.52	0.10	0.5000	0.07379	89.8	75	125			
Cadmium	0.50	0.10	0.5000	0	100	75	125			
Chromium	0.45	0.10	0.5000	0	90.8	75	125			
Lead	0.45	0.10	0.5000	0	90.1	75	125			
Silver	0.10	0.10	0.1000	0	103	75	125			

Sample ID **1312047-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04824	95.1	75	125	5.40	20	
Barium	0.50	0.10	0.5000	0.07379	84.8	75	125	4.83	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10620**	RunNo:	**15224**
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.10	0.5000	0	95.2	75	125	5.31	20	
Chromium	0.43	0.10	0.5000	0	86.1	75	125	5.28	20	
Lead	0.43	0.10	0.5000	0	85.3	75	125	5.47	20	
Silver	ND	0.10	0.1000	0	98.1	75	125	200	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312046

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312046**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-001
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.37	0.050		mg/L	1	12/3/2013 2:11:58 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-002 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.48	0.10		mg/L	1	12/4/2013 10:54:34 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-003 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	7.5	1.0		mg/L	20	12/3/2013 2:25:28 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-004 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	9.4	1.0		mg/L	10	12/4/2013 11:27:09 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-005 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 2:36:48 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-006 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.9	0.50		mg/L	5	12/4/2013 11:29:30 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-007 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.82	0.25		mg/L	5	12/3/2013 2:53:49 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-008 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.76	0.10		mg/L	1	12/4/2013 11:01:39 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-009
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.63	0.050		mg/L	1	12/3/2013 2:56:31 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-010 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.83	0.10		mg/L	1	12/4/2013 11:04:02 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-011
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 3:02:04 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-012 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.8	0.50		mg/L	5	12/4/2013 11:31:53 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10620**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439004**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10620**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439005**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**PBW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438128**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10606**	SampType: **LCS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**LCSW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438129**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0	101	80	120			

Sample ID	**1312046-005AMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438177**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.6	0.25	0.5000	3.188	90.1	75	125			

Sample ID	**1312046-005AMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438178**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.7	0.25	0.5000	3.188	94.2	75	125	0.565	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312046 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:42:42 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required)	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)? (Not required)	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

Added 2mL HNO_3 to 003A for acceptable pH. 12/02/13

of preserved bottles checked for pH: 6 (<2 or >12 unless noted)

Adjusted? yes

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Change~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312045	Total Selenium 2008 6010	TCLP Selenium 1311/6010
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	HNO3	-001	X	
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	NEAT	-002		X
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	HNO3	-003	X	
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	NEAT	-004		X
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	HNO3	-005	X	
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	NEAT	-006		X
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	HNO3	-007	X	
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	NEAT	-008		X
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	HNO3	-009	X	
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	NEAT	-010		X
12/2/13	6:30	Liquid	W-20	Plastic-1	HNO3	-011	X	
12/2/13	6:30	Liquid	W-20	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	Anthony Widman			
				12/02/13	1443

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312316

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312316**
Date: **12/11/2013**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

All samples, excluding Hg, digested using EPA Method 3010.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-001
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/10/2013 4:25:22 PM	10723
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.031	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Barium	0.022	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Cadmium	ND	0.0020		mg/L	1	12/11/2013 10:15:00 AM	10734
Chromium	ND	0.0060		mg/L	1	12/11/2013 10:15:00 AM	10734
Lead	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734
Selenium	0.37	0.050		mg/L	1	12/11/2013 10:15:00 AM	10734
Silver	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/10/2013 4:59:51 PM	10731
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Barium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Cadmium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Chromium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Lead	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Selenium	0.38	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Silver	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10723**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443477**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10723**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443478**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.8	80	120			

Sample ID	**1312297-001GMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443481**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	75	125			

Sample ID	**1312297-001GMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443482**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.3	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10731**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443489**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10731**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443490**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Sample ID	**1312287-001AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	75	125			

Sample ID	**1312287-001AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.5	80	120			
Barium	ND	100	0.5000	0	87.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.6	80	120			
Chromium	ND	5.0	0.5000	0	88.8	80	120			
Lead	ND	5.0	0.5000	0	88.1	80	120			
Selenium	ND	1.0	0.5000	0	88.2	80	120			
Silver	ND	5.0	0.1000	0	97.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.5	80	120			
Barium	0.44	0.020	0.5000	0	87.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.6	80	120			
Chromium	0.44	0.0060	0.5000	0	88.8	80	120			
Lead	0.44	0.0050	0.5000	0	88.1	80	120			
Selenium	0.44	0.050	0.5000	0	88.2	80	120			
Silver	0.098	0.0050	0.1000	0	97.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: **1312316** RcptNo: 1

Received by/date: MG 12/09/13

Logged By: **Michelle Garcia** 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/9/2013 2:30:49 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ✔	
9. Was preservative added to bottles?	Yes ✔	No ☐	NA ☐
	Added 1 mL HNO3 to 001A for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? YES
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 6°

HEAL No. 1312316

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	Total Selenium 200.8	TCLP Selenium 1311/6010	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	HNO3			X	
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	Neat				X

Date	Time	Relinquished by	Received by	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312315

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312315**
Date Reported: **12/11/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312315-001 **Matrix:** AQUEOUS

Client Sample ID: D-250 Flu Gas Scrubber
Collection Date: 12/9/2013 6:00:00 AM
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.9	1.0		mg/L	20	12/11/2013 10:45:44 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	7.4	1.0		mg/L	20	12/11/2013 10:48:06 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-003
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.5	0.25		mg/L	5	12/11/2013 10:50:27 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-004
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/11/2013 10:52:48 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-005 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 10:59:18 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-006
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 11:01:40 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-007
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:04:03 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-008
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:06:25 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-009
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:11:11 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-010
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:13:35 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-011
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.38	0.050		mg/L	1	12/11/2013 10:10:17 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-012
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.28	0.050		mg/L	1	12/11/2013 10:12:38 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312315 RcptNo: 1

Received by/date: MG 12/09/13

Logged By: Michelle Garcia 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/9/2013 2:31:56 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑ not required	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ Not required	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ☑	
9. Was preservative added to bottles?	Yes ☑	No	NA
10. VOA vials have zero headspace?	Yes ☐	No ☐	See Remarks No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No	Adjusted? Yes
14. Is it clear what analyses were requested?	Yes ☑	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standard ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312315	Total Selenium 6010	TCLP Selenium 1311/6010
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	HNO3	-001	X	
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	Neat	-002		X
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	HNO3	-003	X	
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	Neat	-004		X
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	HNO3	-005	X	
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	Neat	-006		X
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	HNO3	-007	X	
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	Neat	-008		X
12/9/13	6:00	Liquid	W-634	Plastic-1	HNO3	-009	X	
12/9/13	6:00	Liquid	W-634	Plastic-1	Neat	-010		X
12-9-13	0600	Liquid	T-830	Plastic-1	HNO3	-011	X	
12-9-13	0600	Liquid	T-830	Plastic-1	Neat	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 20, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312687

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312687**
Date Reported: **12/20/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **IDC**	
Mercury	ND	0.00020		mg/L	1	12/20/2013 1:52:17 PM	10902
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.042	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Barium	0.024	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Cadmium	ND	0.0020		mg/L	1	12/18/2013 3:08:18 PM	10852
Chromium	ND	0.0060		mg/L	1	12/18/2013 3:08:18 PM	10852
Lead	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852
Selenium	0.43	0.050		mg/L	1	12/18/2013 3:08:18 PM	10852
Silver	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **IDC**	
Mercury	ND	0.020		mg/L	1	12/20/2013 1:11:22 PM	10901
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Barium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Cadmium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Chromium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Lead	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Selenium	0.35	0.050		mg/L	1	12/18/2013 3:10:42 PM	10852
Silver	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10902**	SampType:	**mblk**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451283**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10902**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451284**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10901**	SampType:	**mblk**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451196**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10901**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451197**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448892**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10852**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	94.9	80	120			
Barium	ND	100	0.5000	0	92.0	80	120			
Cadmium	ND	1.0	0.5000	0	95.7	80	120			
Chromium	ND	5.0	0.5000	0	92.9	80	120			
Lead	ND	5.0	0.5000	0	90.4	80	120			
Selenium	ND	1.0	0.5000	0	91.3	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312687 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 4:03:17 PM Michelle Garcia

Reviewed By: MNS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: \
(<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312487	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	HNO3	001	X	
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
12/16/13	10:30	Anthony Widman		12/16/13	1500	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date	Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 19, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312686

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312686**
Date Reported: **12/19/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.4	5.0		mg/L	100	12/18/2013 1:14:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	11	1.0		mg/L	20	12/18/2013 1:24:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-003 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 1:29:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-004 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.4	0.25		mg/L	5	12/18/2013 1:43:46 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-005
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.37	0.050		mg/L	1	12/18/2013 1:46:09 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-006
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.23	0.050		mg/L	1	12/18/2013 1:48:30 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-007
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.5	0.25		mg/L	5	12/18/2013 1:53:22 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-008 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/18/2013 2:22:57 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-009
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.8	0.25		mg/L	5	12/18/2013 2:27:43 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-010 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/18/2013 2:32:14 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-011 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 3:01:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-012
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.6	0.25		mg/L	5	12/18/2013 3:05:54 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312686**

19-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448892**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0								

Sample ID	**LCS-10852**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448893**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0	0.5000	0	91.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312686 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 3:58:04 PM Michelle Garcia

Reviewed By: KMS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☑ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required) Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? (Not required) Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☐ No ☑
9. Was preservative added to bottles? Yes ☑ No ☐ NA ☐

FOR METALS ANALYSIS: ADDED 1mL HNO3 TO 001A, 2mL HNO3 TO 007A, AND 2 mL HNO3 TO 009A FOR ACCEPTABLE pH

10. VOA vials have zero headspace? See Remarks Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? ~~_____~~ NO
Checked by: _____

12/16

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks: JA 12/16/13

~~Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.~~

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: ~~Kara Germaine~~ Kelvin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 4.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312686	Total Selenium 6010/6020	TCLP Selenium 1311/6010
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	HNO3	001	X	
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	NEAT	002		X
12/16/13	6:10	Liquid	W-20	Plastic-1	HNO3	003	X	
12/16/13	6:10	Liquid	W20	Plastic-1	NEAT	004		X
12/16/13	7:20	Liquid	Tank 830	Plastic-1	HNO3	005	X	
12/16/13	7:20	Liquid	Tank 830	Plastic-1	NEAT	006		X
12/16/13	5:55	Liquid	D2101 outlet	Plastic-1	HNO3	007	X	
12/16/13	5:55	Liquid	D2101 Outlet	Plastic-1	NEAT	008		X
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	HNO3	009	X	
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	NEAT	010		X
12/16/13	6:25	Liquid	W-634	Plastic-1	HNO3	011	X	
12/16/13	6:25	Liquid	W-634	Plastic-1	NEAT	012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/16/13	10:00	Anthony Widman		12/16/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B14

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B14**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-001
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/27/2013 1:46:49 PM	11002
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.040	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Barium	0.042	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Cadmium	ND	0.0020		mg/L	1	12/30/2013 3:55:17 PM	11005
Chromium	0.0070	0.0060		mg/L	1	12/30/2013 3:55:17 PM	11005
Lead	ND	0.0050		mg/L	1	12/27/2013 10:13:49 AM	11005
Selenium	0.27	0.050		mg/L	1	12/27/2013 10:13:49 AM	11005
Silver	ND	0.0050		mg/L	1	12/30/2013 3:55:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/27/2013 3:02:36 PM	11004
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Barium	0.12	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Cadmium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Chromium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Lead	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Selenium	0.27	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Silver	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11002**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455051**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11002**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455052**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11004**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455102**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11004**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455103**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.4	80	120			
Barium	ND	100	0.5000	0	92.9	80	120			
Cadmium	ND	1.0	0.5000	0	98.7	80	120			
Chromium	ND	5.0	0.5000	0	93.2	80	120			
Lead	ND	5.0	0.5000	0	93.1	80	120			
Selenium	ND	1.0	0.5000	0	94.4	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	93.4	80	120			
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.7	80	120			
Chromium	0.47	0.0060	0.5000	0	93.2	80	120			
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B14 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:44:48 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312814	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	HNO3	-001	X	
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	12:00	Anthony Widman		12/23/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B16

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 14 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B16**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-001 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.6	0.25		mg/L	5	12/30/2013 3:57:41 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	4.8	0.50		mg/L	5	12/30/2013 4:00:05 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-003
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	14	10		mg/L	200	12/30/2013 4:12:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-004 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	17	2.0		mg/L	20	12/30/2013 4:14:33 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-005 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.4	0.25		mg/L	5	12/30/2013 4:16:56 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-006 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.0	0.50		mg/L	5	12/30/2013 4:19:20 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-007
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	0.41	0.050		mg/L	1	12/30/2013 4:21:46 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-008
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.32	0.10		mg/L	1	12/30/2013 4:24:09 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-009 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.1	1.0		mg/L	20	12/30/2013 4:26:34 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-010 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.10	0.10		mg/L	1	12/30/2013 4:29:01 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-011 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	2.1	0.25		mg/L	5	12/30/2013 4:36:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-012
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.3	0.50		mg/L	5	12/30/2013 4:38:32 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-013 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.8	0.25		mg/L	5	12/30/2013 4:40:55 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-014 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	5.0	1.0		mg/L	10	12/30/2013 4:43:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455301**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455302**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	94.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456705**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456706**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	94.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B16 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:50:54 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑ SEE REMARKS	NA ☐ 12/23/13
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 4 (<2 or >12 unless noted)

Adjusted? 16

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: FOR METALS ANALYSIS: ADDED 4mL HNO_3 TO -003A & -005A AND 2mL TO -007A & -011A FOR ACCEPTABLE pH 12/23/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312316	Total Selenium 6010	TCLP Selenium 1311/6010
12/23/13	6:00	Liquid	WW20	plastic 1	HNO3	-001	X	
12/23/13	6:00	Liquid	WW20	plastic 1	NEAT	-002		X
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	HNO3	-003	X	
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	NEAT	-004		X
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	HNO3	-005	X	
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	NEAT	-006		X
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	HNO3	-007	X	
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	NEAT	-008		X
12/23/13	6:28	Liquid	836 Discharge	plastic 1	HNO3	-009	X	
12/23/13	6:28	Liquid	836 Discharge	plastic 1	NEAT	-010		X
12/23/13	6:40	Liquid	D2101 - Desalter	plastic 1	HNO3	-011	X	
12/23/13	6:40	Liquid	D2101 Desalter	plastic 1	NEAT	-012		X

Date: 12/23/13	Time: 10:00	Relinquished by: Anthony Widmer	Received by:	Date: 12/23/13	Time: 1500
Date:	Time:	Relinquished by:	Received by:	Date:	Time:

Remarks: Expedited turn-around and results sent to Mike Holder

Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312R16	Total Selenium 2 (6010)	TCLP Selenium 1311/6010
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	HNO3	-05	X	
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	NEAT	-06		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	10:00	Anthony Widman			
Date:	Time:	Relinquished by:	Received by:	12/23/13	1500

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 10, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C58

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312C58**
Date Reported: **1/10/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/1/2014 12:58:17 PM	11042
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.045	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Barium	0.032	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Cadmium	ND	0.0020		mg/L	1	1/2/2014 10:53:15 AM	11044
Chromium	ND	0.0060		mg/L	1	1/2/2014 10:53:15 AM	11044
Lead	ND	0.0050		mg/L	1	1/2/2014 10:53:15 AM	11044
Selenium	0.33	0.050		mg/L	1	1/2/2014 10:53:15 AM	11044
Silver	ND	0.0050	B	mg/L	1	1/2/2014 10:53:15 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/1/2014 1:41:46 PM	11043
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Barium	0.16	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Cadmium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Chromium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Lead	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Selenium	0.33	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Silver	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11042**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457324**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11042**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457325**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1312C58-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457327**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.7	75	125			

Sample ID	**1312C58-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457328**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.2	75	125	1.68	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11043**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457333**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11043**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457334**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Sample ID	**1312C58-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457336**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.9	75	125			

Sample ID	**1312C58-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457337**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.5	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457226** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457227** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.1	80	120			
Barium	0.47	0.10	0.5000	0	94.8	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.48	0.10	0.5000	0	95.5	80	120			
Lead	0.48	0.10	0.5000	0	95.8	80	120			
Selenium	0.49	0.10	0.5000	0	97.5	80	120			
Silver	0.12	0.10	0.1000	0	116	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	0.027	0.0050								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.1	80	120			
Barium	0.47	0.020	0.5000	0	94.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.48	0.0060	0.5000	0	95.5	80	120			
Lead	0.48	0.0050	0.5000	0	95.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.12	0.0050	0.1000	0	116	80	120			B

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C58 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 3:03:51 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: ____ (<2 or >12 unless noted)

Adjusted? ____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project Name: Wastewater Effluent Monitoring
Phone #: 575-748-3311	Project #:
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kelsey Newton / Byron Tommy
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312C58	Total Selenium 200.8	TCLP Selenium 1311/6010	① Total RCRA 8 metals	② TCLP RCRA 8 metals
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	HNO3	-001			X	
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	NEAT	-002				X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman			
				12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010 [redacted] AW
② TCLP Method 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C57

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312C57**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regrading total selenium for samples "D-250 Flu Gas Scrubber" and "Tank 836". The internal standard was elevated for these samples.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.43	0.022	0.050		mg/L	1	1/2/2014 8:55:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.34	0.031	0.10		mg/L	1	1/2/2014 9:10:18 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-003
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.9	0.22	0.50		mg/L	10	1/2/2014 11:41:40 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-004
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	1/2/2014 11:44:02 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-005 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	7.3	4.5	10	J	mg/L	200	1/2/2014 11:08:34 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-006 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	15	0.62	2.0		mg/L	20	1/2/2014 11:10:57 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-007
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	2.3	0.11	0.25		mg/L	5	1/2/2014 11:13:19 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-008 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	2.6	0.15	0.50		mg/L	5	1/2/2014 11:15:41 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-009
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.97	0.022	0.050		mg/L	1	1/2/2014 9:27:14 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-010 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	1.8	0.15	0.50		mg/L	5	1/2/2014 11:18:04 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-011
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.9	0.11	0.25		mg/L	5	1/2/2014 11:20:25 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-012 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.9	0.15	0.50		mg/L	5	1/2/2014 11:25:03 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-013
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.6	1.1	2.5	J	mg/L	50	1/2/2014 11:46:26 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-014
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	1/2/2014 10:43:38 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-015
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.63	0.11	0.25		mg/L	5	1/2/2014 11:55:48 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-016
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.35	0.031	0.10		mg/L	1	1/2/2014 10:48:22 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-017
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.88	0.45	1.0	J	mg/L	20	1/2/2014 12:10:07 PM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-018
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.88	0.031	0.10		mg/L	1	1/2/2014 10:57:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457226**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457227**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312C57-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457244**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.94	0.050	0.5000	0.4257	102	75	125			

Sample ID	**1312C57-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457245**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.96	0.050	0.5000	0.4257	107	75	125	2.55	20	

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457261**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457262**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.5	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C57 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 2:59:39 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? YES
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: Added 5 mL HNO_3 to 005 for acceptable pH. Added 1 mL HNO_3 to 007 and 009 for acceptable pH. MG 12/30/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton / Tormey
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1312657	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	Out of Walnut Filters	plastic-1	HNO3	001	X	
12/30/13	6:20	Liquid	Out of Walnut Filters	plastic-1	NEAT	002		X
12/30/13	5:55	Liquid	W-20	plastic-1	HNO3	003	X	
12/30/13	5:55	Liquid	W-20	plastic-1	NEAT	004		X
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	HNO3	005	X	
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	NEAT	006		X
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	HNO3	007	X	
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	NEAT	008		X
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	HNO3	009	X	
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	NEAT	010		X
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	HNO3	011	X	
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	NEAT	012		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widmer	Michelle Garcia	12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Aaron Strange / Kevin Newton / Byron Ironmonger

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312057	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	T-805	plastic 1	HNO3	013	X	
12/30/13	6:00	Liquid	T-805	plastic-1	NEAT	014		X
12/30/13	6:00	Liquid	DAF	plastic-1	HNO3	015	X	
12/30/13	6:00	Liquid	DAF	plastic-1	NEAT	016		X
12/30/13	6:00	Liquid	Tank 836	plastic 1	HNO3	017	X	
12/30/13	6:00	Liquid	Tank 836	plastic 1	NEAT	018		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman	Michelle Garcia	12/30/13	1430
		Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401126

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401126**
Date Reported: **1/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/7/2014 5:38:31 PM	11110
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Barium	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Cadmium	ND	0.0020		mg/L	1	1/8/2014 2:57:35 PM	11119
Chromium	ND	0.0060		mg/L	1	1/8/2014 2:57:35 PM	11119
Lead	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119
Selenium	0.30	0.050		mg/L	1	1/8/2014 2:57:35 PM	11119
Silver	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/7/2014 6:26:10 PM	11114
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Barium	0.26	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Cadmium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Chromium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Lead	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Selenium	0.23	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Silver	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11110**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459784**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11110**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459785**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID	**1401126-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459787**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0044	0.00020	0.005000	0	87.7	75	125			

Sample ID	**1401126-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459788**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.9	75	125	2.46	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11114**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459793**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11114**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459794**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.8	80	120			
Barium	0.47	0.10	0.5000	0	93.9	80	120			
Cadmium	0.49	0.10	0.5000	0	99.0	80	120			
Chromium	0.48	0.10	0.5000	0	95.6	80	120			
Lead	0.47	0.10	0.5000	0	95.0	80	120			
Selenium	0.49	0.10	0.5000	0	97.4	80	120			
Silver	ND	0.10	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.8	80	120			
Barium	0.47	0.020	0.5000	0	93.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	99.0	80	120			
Chromium	0.48	0.0060	0.5000	0	95.6	80	120			
Lead	0.47	0.0050	0.5000	0	95.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.4	80	120			
Silver	0.099	0.0050	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401126 RcptNo: 1

Received by/date: MG 01/06/14

Logged By: Michelle Garcia 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: Michelle Garcia 1/6/2014 2:19:46 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401126	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
1/6/14	10:00	Anthony Widmer	[illegible]	1/06/14 1410	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401138

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401138**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the total selenium analysis for the following samples:
T-805 (FLDC)
836 TK
D-250 Flu Gas Scrubber

The above samples had elevated recoveries for the internal standards.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.22	0.50		mg/L	10	1/8/2014 3:01:31 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	6.0	0.31	1.0		mg/L	10	1/8/2014 3:11:03 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 (FLDC)
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-003 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.2	0.45	1.0		mg/L	20	1/8/2014 3:13:39 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-004 **Matrix:** AQUEOUS

Client Sample ID: T-805 (FLDC) TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.17	0.031	0.10		mg/L	1	1/8/2014 3:15:59 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-005 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.27	0.022	0.050		mg/L	1	1/8/2014 3:17:08 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-006 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.20	0.031	0.10		mg/L	1	1/8/2014 3:22:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-007 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.0	0.45	1.0		mg/L	20	1/8/2014 3:25:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-008 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.56	0.031	0.10		mg/L	1	1/8/2014 3:24:24 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-009
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.34	0.022	0.050		mg/L	1	1/8/2014 3:27:55 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-010 **Matrix:** AQUEOUS

Client Sample ID: Out of DAF TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.18	0.031	0.10		mg/L	1	1/8/2014 3:29:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-011
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	4.5	0.11	0.25		mg/L	5	1/8/2014 3:43:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-012
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.3	0.15	0.50		mg/L	5	1/8/2014 3:45:19 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-013
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	ND	0.45	1.0		mg/L	20	1/8/2014 3:46:32 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-014
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.19	0.031	0.10		mg/L	1	1/8/2014 3:48:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-015 **Matrix:** AQUEOUS

Client Sample ID: D 130 Outlet Desalter
Collection Date: 1/6/2014 6:20:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.0	0.11	0.25		mg/L	5	1/8/2014 3:54:46 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D 130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:20:00 AM
Lab ID: 1401138-016
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.2	0.15	0.50		mg/L	5	1/8/2014 4:05:54 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-017
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.4	0.22	0.50		mg/L	10	1/8/2014 4:07:16 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 364 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-018
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.8	0.31	1.0		mg/L	10	1/8/2014 4:08:40 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459944**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459945**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401138 RcptNo: 1

Received by/date:

Logged By: **Michelle Garcia** 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 1/6/2014 3:32:30 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☐	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
	Added 5 mL HNO3 to 013 for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 8 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? yes
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MK

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 10°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	5:55	Liquid	W-20	plastic-1	HNO3	-001	X	
1/6/14	5:55	Liquid	W-20	plastic-1	NEAT	-002		X
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	HNO3	-003	X	
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	NEAT	-004		X
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	HNO3	-005	X	
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	NEAT	-006		X
1/6/14	6:00	Liquid	836 TK	plastic-1	HNO3	-007	X	
1/6/14	6:00	Liquid	836 TK	plastic-1	NEAT	-008		X
1/6/14	6:00	Liquid	Out of DAF	plastic-1	HNO3	-009	X	
1/6/14	6:00	Liquid	Out of DAF	plastic-1	NEAT	-010		X
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	HNO3	-011	X	
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/6/14	10:00	Anthony Widmen			
				01/06/14	1410

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	10:20	Liquid	D250 Flu Gas Scrubber	plastic	HNO3	-013	X	
1/6/14	10:00	Liquid	D250 Flu Gas Scrubber	plastic	NEAT	-014		X
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	HNO3	-015	X	
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	NEAT	-016		X
1/6/14	5:50	Liquid	634 outlet	plastic	HNO3	-017	X	
1/6/14	5:50	Liquid	634 outlet	plastic	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date Time
1/6/14	10:00			01/06/14 1410
Date:	Time:	Relinquished by:	Received by:	Date Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 21, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401508

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401508**
Date Reported: **1/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **TES**	
Mercury	ND	0.00020		mg/L	1	1/18/2014 11:49:50 AM	11287
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.036	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Barium	0.029	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Cadmium	ND	0.0020		mg/L	1	1/15/2014 3:44:35 PM	11233
Chromium	ND	0.0060		mg/L	1	1/15/2014 3:44:35 PM	11233
Lead	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233
Selenium	0.35	0.050		mg/L	1	1/15/2014 3:44:35 PM	11233
Silver	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-002 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **TES**	
Mercury	ND	0.020		mg/L	1	1/18/2014 12:51:48 PM	11288
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Barium	0.10	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Cadmium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Chromium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Lead	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Selenium	0.31	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Silver	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11287**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465495**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11287**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465496**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11288**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466007**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11288**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466008**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463359** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.10	0.5000	0	103	80	120			
Barium	0.46	0.10	0.5000	0	92.9	80	120			
Cadmium	0.49	0.10	0.5000	0	98.5	80	120			
Chromium	0.46	0.10	0.5000	0	92.5	80	120			
Lead	0.49	0.10	0.5000	0	98.7	80	120			
Selenium	0.51	0.10	0.5000	0	101	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1401508-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463365**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0.03565	106	75	125			
Barium	0.48	0.020	0.5000	0.02901	90.5	75	125			
Cadmium	0.50	0.0020	0.5000	0	100	75	125			
Chromium	0.46	0.0060	0.5000	0	91.5	75	125			
Lead	0.49	0.0050	0.5000	0	98.9	75	125			
Selenium	0.86	0.050	0.5000	0.3543	100	75	125			
Silver	0.10	0.0050	0.1000	0	102	75	125			

Sample ID	**1401508-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463366**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.56	0.020	0.5000	0.03565	104	75	125	1.85	20	
Barium	0.49	0.020	0.5000	0.02901	92.6	75	125	2.15	20	
Cadmium	0.50	0.0020	0.5000	0	100	75	125	0.0540	20	
Chromium	0.46	0.0060	0.5000	0	91.4	75	125	0.105	20	
Lead	0.49	0.0050	0.5000	0	97.9	75	125	1.02	20	
Selenium	0.85	0.050	0.5000	0.3543	99.8	75	125	0.336	20	
Silver	0.10	0.0050	0.1000	0	104	75	125	2.05	20	

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463376**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463377**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.5	80	120			
Chromium	0.46	0.0060	0.5000	0	92.5	80	120			
Lead	0.49	0.0050	0.5000	0	98.7	80	120			
Selenium	0.51	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401508 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:22:11 PM

Reviewed By: IO 01/13/2014 IO 01/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401508	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/13/14	6:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/13/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/13/14	12:00	Anthony Widman		01/13/14	14:10
		Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401507

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401507**
Date: **1/20/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Remarks regarding Total selenium for sample "TK 836":
Sample "TK 836" is being reported with an elevated internal standard.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.1	1.1	2.5	J	mg/L	50	1/15/2014 3:57:59 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-002
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.34	0.031	0.10		mg/L	1	1/15/2014 3:50:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401507-003 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/13/2014 6:00:00 AM
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.37	0.022	0.050		mg/L	1	1/15/2014 3:55:08 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-004
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.35	0.031	0.10		mg/L	1	1/15/2014 4:03:26 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-005
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.45	1.0		mg/L	20	1/15/2014 4:12:16 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-006
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.0	0.15	0.50		mg/L	5	1/15/2014 4:14:38 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-007
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.11	0.25		mg/L	5	1/15/2014 4:15:44 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-008
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.5	0.15	0.50		mg/L	5	1/15/2014 4:26:49 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-009
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.41	0.022	0.050		mg/L	1	1/15/2014 4:18:17 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-010 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.33	0.031	0.10		mg/L	1	1/15/2014 4:28:24 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-011
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.3	0.22	0.50		mg/L	10	1/15/2014 4:34:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-012
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.7	0.31	1.0		mg/L	10	1/15/2014 4:36:21 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-013
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	18	11	25	J	mg/L	500	1/15/2014 4:45:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-014
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	18	1.5	5.0		mg/L	50	1/15/2014 4:51:22 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-015
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.22	0.50		mg/L	10	1/15/2014 4:52:41 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-016 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.4	0.31	1.0		mg/L	10	1/15/2014 4:54:07 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-017
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.7	0.11	0.25		mg/L	5	1/15/2014 5:02:37 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet DesalterTCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-018
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	3.0	0.15	0.50		mg/L	5	1/15/2014 5:04:00 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463358**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463359**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.51	0.10	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463376**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401507 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:09:26 PM

Reviewed By: IO 01/13/2014

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No~~ ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

01/13/14

of preserved bottles checked for pH: 9 (<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: -013 FOR METALS ANALYSIS: ADDED 2mL HNO_3 TO -013A AND 1mL HNO_3 TO -017A FOR ACCEPTABLE PH. 01/13/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	HNO3	-001	X	
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	NEAT	-002		X
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	HNO3	-003	X	
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	NEAT	-004		X
1/13/14	6:00	Liquid	TK 830	plastic-1	HNO3	-005	X	
1/13/14	6:00	Liquid	TK 830	plastic-1	NEAT	-006		X
1/13/14	6:30	Liquid	D-130 after Desalter	plastic-1	HNO3	-007	X	
1/13/14	6:30	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-008		X
1/13/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/13/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/13/14	6:15	Liquid	W-20	plastic-1	HNO3	-011	X	
1/13/14	6:15	Liquid	W-20	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/13/14	10:00	Anthony Widman		01/13/14	1410
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-013	X	
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-014		X
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	HNO3	-015	X	
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	NEAT	-016		X
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	HNO3	-017	X	
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
1/13/14	10:00	Anthony Widman		01/13/14	12:10	Expedited turn-around and results sent to Mike Holder
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 24, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401813

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401813**
Date Reported: **1/24/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **ELS**	
Mercury	ND	0.00020		mg/L	1	1/23/2014 8:39:48 AM	11339
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.030	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Barium	0.026	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Cadmium	ND	0.0020		mg/L	1	1/23/2014 11:17:28 AM	11353
Chromium	ND	0.0060		mg/L	1	1/23/2014 11:17:28 AM	11353
Lead	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353
Selenium	0.51	0.050		mg/L	1	1/23/2014 11:17:28 AM	11353
Silver	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-002 **Matrix:** AQUEOUS **Received Date:** 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **ELS**	
Mercury	ND	0.020		mg/L	1	1/24/2014 7:50:29 AM	11362
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Barium	0.12	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Cadmium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Chromium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Lead	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Selenium	0.51	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Silver	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11339**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468302**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11339**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468303**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11362**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**				
Client ID:	**PBW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469084**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11362**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**LCSW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469085**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Sample ID	**1401813-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469089**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.3	75	125			

Sample ID	**1401813-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469090**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.10	0.5000	0	92.5	80	120			
Barium	0.46	0.10	0.5000	0	91.8	80	120			
Cadmium	0.47	0.10	0.5000	0	93.1	80	120			
Chromium	0.45	0.10	0.5000	0	90.8	80	120			
Lead	0.45	0.10	0.5000	0	90.9	80	120			
Selenium	0.45	0.10	0.5000	0	90.2	80	120			
Silver	ND	0.10	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468523**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468524**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	92.5	80	120			
Barium	0.46	0.020	0.5000	0	91.8	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.1	80	120			
Chromium	0.45	0.0060	0.5000	0	90.8	80	120			
Lead	0.45	0.0050	0.5000	0	90.9	80	120			
Selenium	0.45	0.050	0.5000	0	90.2	80	120			
Silver	0.095	0.0050	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401813 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:46:48 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401813	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widman	Ashley Gallegos	01/20	1507

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 28, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401811

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/20/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 24th, 2014.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401811**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.9	0.11	0.25		mg/L	5	1/23/2014 11:54:04 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-002
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	3.0	0.15	0.50		mg/L	5	1/23/2014 11:55:14 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-003
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.11	0.25		mg/L	5	1/23/2014 12:00:39 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-004
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.15	0.50		mg/L	5	1/23/2014 12:05:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-005
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.6	0.45	1.0		mg/L	20	1/23/2014 12:07:55 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-006
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.71	0.031	0.10		mg/L	1	1/23/2014 11:32:45 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-007
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.54	0.022	0.050		mg/L	1	1/23/2014 11:33:52 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-008
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:35:03 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-009
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.75	0.045	0.10		mg/L	2	1/23/2014 12:09:23 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-010
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.57	0.031	0.10		mg/L	1	1/23/2014 11:38:32 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-011
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.0	0.22	0.50		mg/L	10	1/23/2014 12:10:31 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-012
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:41:18 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-013
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.8	0.11	0.25		mg/L	5	1/23/2014 12:14:24 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-014
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.5	0.31	1.0		mg/L	10	1/23/2014 12:15:36 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-015
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	ND	4.5	10		mg/L	200	1/23/2014 12:26:20 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-016
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.098	0.031	0.10	J	mg/L	1	1/23/2014 11:50:30 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-017
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.9	0.22	0.50		mg/L	10	1/23/2014 12:27:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-018
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.2	0.31	1.0		mg/L	10	1/23/2014 12:28:41 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**
28-Jan-14

Client: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.10	0.5000	0	90.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468523**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11353**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468524**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	90.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401811 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:34:52 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☑
9. Was preservative added to bottles? Yes ☑ No ☑ NA ☐

- metals analysis: Added 1mL HNO_3 to -003A, 2mL HNO_3 to -015A for acceptable pH.

10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: 9 (<2 or >12 unless noted) 01/21/14
Adjusted? YES
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	HNO3	-001	X	
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	NEAT	-002		X
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	HNO3	-003	X	
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-004		X
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	HNO3	-005	X	
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	NEAT	-006		X
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	HNO3	-007	X	
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	NEAT	-008		X
1/20/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/20/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/20/14	6:00	Liquid	out of FLOC	plastic-1	HNO3	-011	X	
1/20/14	6:00	Liquid	out of FLOC	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	HNO3	-013	X	
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	NEAT	-014		X
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-015	X	
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	NEAT	-016		X
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	HNO3	-017	X	
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	NEAT	-018		X

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks: Expedited turn-around and results sent to Mike Holder
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507	
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A62

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401A62**
Date Reported: **1/31/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-001
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.00020		mg/L	1	1/30/2014 12:31:11 PM	11463
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.037	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Barium	0.026	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Cadmium	ND	0.0020		mg/L	1	1/30/2014 6:46:11 AM	11461
Chromium	ND	0.0060		mg/L	1	1/30/2014 6:46:11 AM	11461
Lead	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461
Selenium	0.52	0.050		mg/L	1	1/30/2014 12:43:22 PM	11461
Silver	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-002 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **DBD**	
Mercury	ND	0.020		mg/L	1	1/30/2014 10:50:53 AM	11464
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Barium	0.15	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Cadmium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Chromium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Lead	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Selenium	0.49	0.10		mg/L	1	1/30/2014 12:44:37 PM	11461
Silver	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11463**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473049**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11463**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473050**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11464**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473005**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11464**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473006**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472329**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472330**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.10	0.5000	0	86.2	80	120			
Barium	0.42	0.10	0.5000	0	84.4	80	120			
Cadmium	0.43	0.10	0.5000	0	85.1	80	120			E
Chromium	0.42	0.10	0.5000	0	84.5	80	120			E
Lead	0.42	0.10	0.5000	0	84.1	80	120			E
Silver	ND	0.10	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472418**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Silver	ND	0.0050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472419**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.020	0.5000	0	86.2	80	120			
Barium	0.42	0.020	0.5000	0	84.4	80	120			
Cadmium	0.43	0.0020	0.5000	0	85.1	80	120			
Chromium	0.42	0.0060	0.5000	0	84.5	80	120			
Lead	0.42	0.0050	0.5000	0	84.1	80	120			
Silver	0.087	0.0050	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A62 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:37:54 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A02	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/27/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	01/27/14	14:50

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A61

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-001 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.0	0.11	0.25		mg/L	5	1/30/2014 11:50:25 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-002
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	2.0	0.15	0.50		mg/L	5	1/30/2014 11:51:40 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-003 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.8	0.11	0.25		mg/L	5	1/30/2014 12:04:46 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-004
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.4	0.15	0.50		mg/L	5	1/30/2014 12:05:59 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-005 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.2	0.11	0.25		mg/L	5	1/30/2014 12:07:11 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-006 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.2	0.15	0.50		mg/L	5	1/30/2014 12:08:26 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-007
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	17	4.5	10		mg/L	200	1/30/2014 12:11:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-008
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	10	0.31	1.0		mg/L	10	1/30/2014 12:12:47 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-009
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.55	0.022	0.050		mg/L	1	1/30/2014 12:18:04 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-010 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.58	0.062	0.20		mg/L	2	1/30/2014 12:26:49 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-011 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.22	0.50		mg/L	10	1/30/2014 3:36:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-012 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.43	0.031	0.10		mg/L	1	1/30/2014 12:22:38 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401A61-013 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/27/2014 6:20:00 AM
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.51	0.022	0.050		mg/L	1	1/30/2014 12:25:32 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-014
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.51	0.031	0.10		mg/L	1	1/30/2014 12:30:56 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-015
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.9	1.1	2.5	J	mg/L	50	1/30/2014 12:38:25 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-016
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.15	0.031	0.10		mg/L	1	1/30/2014 12:39:40 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-017
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.11	0.25		mg/L	5	1/30/2014 12:40:55 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-018
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.3	0.15	0.50		mg/L	5	1/30/2014 12:42:08 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Sample ID	**1401A61-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472814**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.5	0.50	0.5000	2.006	93.8	75	125			

Sample ID	**1401A61-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472815**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.6	0.50	0.5000	2.006	121	75	125	5.32	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.023	0.050								J

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A61 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:22:04 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? Yes
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: For -001, 2mL HNO3 was added for acceptable pH. Added 11mL HNO3 to -007 for acceptable pH. Added 4mL HNO3 to -003 for acceptable pH. mg 01/27/14

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ **Rush** **Next Day**

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A21	Total Selenium 6010	TCLP Selenium 1311/6010
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
1/27/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
1/27/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
1/27/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
1/27/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	14:50

Date	Time	Relinquished by	Received by	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401141	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	HNO3	-001013	X	
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	NEAT	-002014		X
1/27/14	6:15	liquid	Out of T-801	Plastic-1	HNO3	-003015	X	
1/27/14	6:15	liquid	Out of T-801	Plastic-1	NEAT	-004016		X
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	HNO3	-005017	X	
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	NEAT	-006018		X

01/27/14

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	1450

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402075

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402075**
Date Reported: **2/7/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-001 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.0010		mg/L	5	2/5/2014 3:52:21 PM	11565
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.086	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Barium	0.027	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Cadmium	ND	0.0020		mg/L	1	2/5/2014 12:48:42 PM	11564
Chromium	ND	0.0060		mg/L	1	2/5/2014 12:48:42 PM	11564
Lead	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564
Selenium	0.64	0.050		mg/L	1	2/5/2014 12:48:42 PM	11564
Silver	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-002 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/5/2014 4:37:16 PM	11566
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Barium	0.11	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Cadmium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Chromium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Lead	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Selenium	0.56	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Silver	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11565**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476431**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11565**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476432**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1402075-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476437**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0060	0.0010	0.005000	0	120	75	125			

Sample ID	**1402075-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476438**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.0010	0.005000	0	113	75	125	6.40	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11566**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476453**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11566**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476454**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476361**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11564**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476362**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	89.2	80	120			
Barium	ND	100	0.5000	0	89.6	80	120			
Cadmium	ND	1.0	0.5000	0	93.2	80	120			
Chromium	ND	5.0	0.5000	0	90.1	80	120			
Lead	ND	5.0	0.5000	0	87.8	80	120			
Selenium	ND	1.0	0.5000	0	91.0	80	120			
Silver	ND	5.0	0.1000	0	96.3	80	120			

Sample ID	**1402075-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476365**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04825	93.4	75	125			
Barium	0.57	0.10	0.5000	0.1089	91.2	75	125			
Cadmium	0.46	0.10	0.5000	0	92.4	75	125			
Chromium	0.44	0.10	0.5000	0	87.8	75	125			
Lead	0.42	0.10	0.5000	0	83.8	75	125			
Silver	ND	0.10	0.1000	0	97.6	75	125			

Sample ID	**1402075-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476366**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0.04825	85.1	75	125	8.45	20	
Barium	0.52	0.10	0.5000	0.1089	81.6	75	125	8.90	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402075-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**	RunNo:	**16546**
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.43	0.10	0.5000	0	85.3	75	125	8.08	20	
Chromium	0.40	0.10	0.5000	0	81.0	75	125	8.05	20	
Lead	0.39	0.10	0.5000	0	78.1	75	125	7.10	20	
Silver	ND	0.10	0.1000	0	88.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0	89.2	80	120			
Barium	0.45	0.020	0.5000	0	89.6	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.2	80	120			
Chromium	0.45	0.0060	0.5000	0	90.1	80	120			
Lead	0.44	0.0050	0.5000	0	87.8	80	120			
Selenium	0.45	0.050	0.5000	0	91.0	80	120			
Silver	0.096	0.0050	0.1000	0	96.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402075 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:08:22 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/3/14	13:15	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/3/14	~~6:00~~ 13:15	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/3/14	14:30	Jerry Sosa	Michelle Gilbert	02/04/14	0900
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402076

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-001
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.19	0.022	0.050		mg/L	1	2/5/2014 1:06:27 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-002
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.16	0.031	0.10		mg/L	1	2/5/2014 1:08:10 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-003
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.23	0.022	0.050		mg/L	1	2/5/2014 1:09:27 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-004
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.22	0.031	0.10		mg/L	1	2/5/2014 1:10:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-005
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.0	0.22	0.50		mg/L	10	2/5/2014 1:40:48 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-006
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.1	0.31	1.0		mg/L	10	2/5/2014 1:39:34 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-007
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	16	2.2	5.0		mg/L	100	2/5/2014 1:44:43 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-008
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	17	0.62	2.0		mg/L	20	2/5/2014 1:45:59 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-009
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.60	0.022	0.050		mg/L	1	2/5/2014 1:17:07 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-010
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:22:20 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-011
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.22	0.50		mg/L	10	2/5/2014 1:48:26 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-012
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.63	0.031	0.10		mg/L	1	2/5/2014 1:25:15 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-013
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.59	0.022	0.050		mg/L	1	2/5/2014 1:26:28 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-014
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:27:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-836
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-015
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	1.1	2.5	J	mg/L	50	2/5/2014 2:24:11 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-016
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.66	0.031	0.10		mg/L	1	2/5/2014 1:30:41 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-017
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.4	0.22	0.50		mg/L	10	2/5/2014 2:21:44 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402076-018
Matrix: AQUEOUS
Received Date: 2/4/2014 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.2	0.31	1.0		mg/L	10	2/5/2014 2:22:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402076**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476361**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476362**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	1.0	0.5000	0	91.0	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402076**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	91.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402076 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:17:39 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
	See Section 17.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9

(<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks: For metals analysis: Added 5mL HNO_3 to -007A, 3mL HNO_3 to -001A, & -003A for acceptable pH. MG 02/04/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standar ☑ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	Mike Holder
☐ Standard ☐ Level 4 (Full Validation)	Sampler: Kevin Newton
☐ Other _____	On Ice: ☑ Yes ☐ No
☐ EDD (Type) _____	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
2/3/14	13:15	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
2/3/14	13:15	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
2/3/14	13:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
2/3/14	13:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
2/3/14	13:15	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
2/3/14	13:15	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
2/3/14	13:15	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
2/3/14	13:15	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
2/3/14	13:15	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
2/3/14	13:15	liquid	Out of DAF	Plastic-1	NEAT	-010		X
2/3/14	13:15	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
2/3/14	13:15	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
2/3/14	14:30	Jerry Sosa			
				02/04/14	0900

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.6

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1402075	Total Selenium 6010	TCLP Selenium 1311/6010
2/3/14	13:15	liquid	Out of Walnut Filters	Plastic-1	HNO3	-013	X	
2/3/14	13:15	liquid	Out of Walnut Filters	Plastic-1	NEAT	-014		X
2/3/14	13:15	liquid	Out of T-836	Plastic-1	HNO3	-015	X	
2/3/14	13:15	liquid	Out of T-836	Plastic-1	NEAT	-016		X
2/3/14	13:15	liquid	W-634 Outlet	Plastic-1	HNO3	-017	X	
2/3/14	13:15	liquid	W-634 Outlet	Plastic-1	NEAT	-018		X

Date	Time	Relinquished by	Received by	Date	Time
2/3/14	14:30	Jerry Sosa			
				02/04/14	0900

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402324

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402324**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-001 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/11/2014 4:25:23 PM	11676
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.035	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Barium	0.023	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Cadmium	ND	0.0020		mg/L	1	2/13/2014 9:07:30 AM	11692
Chromium	ND	0.0060		mg/L	1	2/13/2014 9:07:30 AM	11692
Lead	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692
Selenium	0.26	0.050		mg/L	1	2/13/2014 12:16:38 PM	11692
Silver	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-002 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/12/2014 3:43:01 PM	11695
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Barium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Cadmium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Chromium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Lead	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Selenium	0.20	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Silver	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11676**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480486**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11676**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480487**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11695**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480751**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11695**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480752**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	**1402324-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480754**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.3	75	125			

Sample ID	**1402324-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480755**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11692**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481463** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11692**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481464** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.3	80	120			
Barium	ND	100	0.5000	0	89.0	80	120			
Cadmium	ND	1.0	0.5000	0	91.7	80	120			
Chromium	ND	5.0	0.5000	0	89.0	80	120			
Lead	ND	5.0	0.5000	0	87.9	80	120			
Selenium	ND	1.0	0.5000	0	83.9	80	120			
Silver	ND	5.0	0.1000	0	93.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481425**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0.03462	84.5	75	125			
Barium	0.42	0.020	0.5000	0.02307	79.3	75	125			
Cadmium	0.41	0.0020	0.5000	0	82.8	75	125			
Chromium	0.40	0.0060	0.5000	0	79.8	75	125			
Lead	0.39	0.0050	0.5000	0	77.1	75	125			
Silver	0.084	0.0050	0.1000	0	83.7	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481426**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0.03462	82.2	75	125	2.59	20	
Barium	0.41	0.020	0.5000	0.02307	78.3	75	125	1.20	20	
Cadmium	0.41	0.0020	0.5000	0	82.0	75	125	1.01	20	
Chromium	0.39	0.0060	0.5000	0	78.5	75	125	1.76	20	
Lead	0.38	0.0050	0.5000	0	76.2	75	125	1.15	20	
Silver	0.083	0.0050	0.1000	0	82.8	75	125	1.08	20	

Sample ID	**MB-11692**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481498**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.3	80	120			
Barium	0.44	0.020	0.5000	0	89.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	91.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.44	0.0060	0.5000	0	89.0	80	120			
Lead	0.44	0.0050	0.5000	0	87.9	80	120			
Selenium	0.42	0.050	0.5000	0	83.9	80	120			
Silver	0.094	0.0050	0.1000	0	93.9	80	120			

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481526**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.67	0.050	0.5000	0.2584	83.1	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481527**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.65	0.050	0.5000	0.2584	77.9	75	125	3.92	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402324 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: **Ashley Gallegos** 2/10/2014 1:57:00 PM

Completed By: **Ashley Gallegos** 2/10/2014 2:18:28 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403324	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa		02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402326

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1402326**
Date: **2/13/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the Total and TCLP Se Sample "D-250 Flu Gas Scrubber"
Both the total and TCLP samples are being reported with elevated internal standard recoveries. This data is estimated.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-001
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.45	0.014	0.050		mg/L	1	2/13/2014 9:21:18 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-002
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.38	0.031	0.10		mg/L	1	2/13/2014 9:22:34 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-003
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.25	0.014	0.050		mg/L	1	2/13/2014 9:23:50 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-004
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.25	0.031	0.10		mg/L	1	2/13/2014 9:25:03 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-005 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.14	0.50		mg/L	10	2/13/2014 10:48:07 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-006 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	2/13/2014 10:35:08 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-007
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.048	0.014	0.050	J	mg/L	1	2/13/2014 9:28:46 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-008 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.14	0.031	1.0	J	mg/L	1	2/13/2014 9:30:09 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-009 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.26	0.014	0.050		mg/L	1	2/13/2014 9:31:24 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-010 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.28	0.031	0.10		mg/L	1	2/13/2014 9:32:40 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-011
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.58	0.14	0.50		mg/L	10	2/13/2014 10:51:49 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-012
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.28	0.031	0.10		mg/L	1	2/13/2014 9:39:00 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-013 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.24	0.014	0.050		mg/L	1	2/13/2014 9:40:14 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-014
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.27	0.031	0.10		mg/L	1	2/13/2014 9:41:29 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of T-836
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-015 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.36	0.14	0.50	J	mg/L	10	2/13/2014 10:53:03 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of T-836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-016 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	2/13/2014 9:43:59 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-017
Matrix: AQUEOUS
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.3	0.14	0.50		mg/L	10	2/13/2014 10:56:52 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402326-018 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	2/13/2014 10:58:10 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402326**

14-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11691**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11691**	RunNo:	**16728**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481418**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11691**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11691**	RunNo:	**16728**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481419**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	1.0	0.5000	0	84.2	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402326**

14-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402325-002AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**BatchQC**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481430**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.70	0.050	0.5000	0.3129	77.2	75	125			

Sample ID	**1402325-002AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**BatchQC**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481431**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.79	0.050	0.5000	0.3129	95.1	75	125	12.0	20	

Sample ID	**MB-11691**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481492**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11691**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11691**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481493**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	0.050	0.5000	0	84.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402326 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: Ashley Gallegos 2/10/2014 1:57:00 PM

Completed By: Ashley Gallegos 2/10/2014 2:24:52 PM

Reviewed By: KMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No ☑~~	NA ☐
-007A = FOR METALS ANALYSIS: ADDED 3mL HNO3 FOR ACCEPTABLE pH. 02/10/14			
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9

(<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☐ **Rush** **Next Day**
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403326	Total Selenium 6010	TCLP Selenium 1311/6010
2/10/14	6:00	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
2/10/14	6:00	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
2/10/14	6:00	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
2/10/14	6:00	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
2/10/14	6:00	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
2/10/14	6:00	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
2/10/14	6:00	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
2/10/14	6:00	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
2/10/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
2/10/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
2/10/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
2/10/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date: 2/10/14	Time: 10:00	Relinquished by: Jerry Sosa	Received by:	Date 02/10/14	Time 1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403203	Total Selenium 6010	TCLP Selenium 1311/6010
2/10/14	6:00	liquid	Out of Walnut Filters	Plastic-1	HNO3	-013	X	
2/10/14	6:00	liquid	Out of Walnut Filters	Plastic-1	NEAT	-014		X
2/10/14	6:00	liquid	Out of T-836	Plastic-1	HNO3	-015	X	
2/10/14	6:00	liquid	Out of T-836	Plastic-1	NEAT	-016		X
2/10/14	6:00	liquid	W-634 Outlet	Plastic-1	HNO3	-017	X	
2/10/14	6:00	liquid	W-634 Outlet	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by: Jerry Sosa	Received by:	Date	Time
2/10/14	10:00			02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: CERT Unit OrderNo.: 1402325

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402325**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: CERT Unit
Lab ID: 1402325-001 **Matrix:** AQUEOUS

Client Sample ID: D-7111 CERT Inlet
Collection Date: 2/10/2014 8:00:00 AM
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	5.2	0.50		mg/L	10	2/13/2014 10:32:37 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: CERT Unit
Lab ID: 1402325-002 **Matrix:** AQUEOUS

Client Sample ID: D-7111 CERT Outlet
Collection Date: 2/10/2014 8:00:00 AM
Received Date: 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.31	0.050		mg/L	1	2/13/2014 9:13:45 AM	11691

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402325**

13-Feb-14

Client: Navajo Refining Company

Project: CERT Unit

Sample ID **1402325-002AMS** SampType: **MS** TestCode: **EPA 6010B: Total Metals**

Client ID: **D-7111 CERT Outlet** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481430** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.70	0.050	0.5000	0.3129	77.2	75	125			

Sample ID **1402325-002AMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **D-7111 CERT Outlet** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481431** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.79	0.050	0.5000	0.3129	95.1	75	125	12.0	20	

Sample ID **MB-11691** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481492** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID **LCS-11691** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **11691** RunNo: **16728**

Prep Date: **2/12/2014** Analysis Date: **2/13/2014** SeqNo: **481493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.42	0.050	0.5000	0	84.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402325 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: Ashley Gallegos 2/10/2014 1:57:00 PM

Completed By: Ashley Gallegos 2/10/2014 2:21:24 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 02 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:
CERT Unit
~~Wastewater Effluent Monitoring~~

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1402325	Total Selenium 6010
2/10/14	8:00	liquid	D-7111 CERT Inlet	Plastic-1	HNO3	-001	X
2/10/14	8:00	liquid	D-7113 CERT Outlet	Plastic-1	HNO3	-002	X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				02/10/14	1357

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402624

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402624**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-001 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/18/2014 4:49:02 PM	11776
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.038	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Barium	0.060	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Cadmium	ND	0.0020		mg/L	1	2/19/2014 8:09:08 AM	11796
Chromium	ND	0.0060		mg/L	1	2/19/2014 8:09:08 AM	11796
Lead	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796
Selenium	0.20	0.050		mg/L	1	2/19/2014 8:09:08 AM	11796
Silver	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6) T
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-002
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/18/2014 5:40:58 PM	11777
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Barium	0.16	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Cadmium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Chromium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Lead	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Selenium	0.20	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Silver	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11776**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484820**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11776**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	103	80	120			

Sample ID	**1402624-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484823**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	99.0	75	125			

Sample ID	**1402624-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484824**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	75	125	4.26	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11777**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484236**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11777**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484237**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.6	80	120			
Barium	0.48	0.10	0.5000	0	96.0	80	120			
Cadmium	0.48	0.10	0.5000	0	96.7	80	120			
Chromium	0.48	0.10	0.5000	0	95.9	80	120			
Lead	0.46	0.10	0.5000	0	92.4	80	120			
Selenium	0.46	0.10	0.5000	0	92.6	80	120			
Silver	ND	0.10	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.6	80	120			
Barium	0.48	0.020	0.5000	0	96.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.7	80	120			
Chromium	0.48	0.0060	0.5000	0	95.9	80	120			
Lead	0.46	0.0050	0.5000	0	92.4	80	120			
Selenium	0.46	0.050	0.5000	0	92.6	80	120			
Silver	0.098	0.0050	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402624 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:41:07 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 0.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402624	Analysis Request: (1) Total RCRA 8 Metals	Analysis Request: (2) TCLP RCRA 8 Metals
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
2/17/14	10:00	Jerry Sosa			(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time 02/17/14 1445	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402626

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402626**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/17/2014 8:00:00 AM
Lab ID: 1402626-001
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.2	0.25		mg/L	5	2/19/2014 8:30:36 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/17/2014 8:00:00 AM
Lab ID: 1402626-002 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.2	0.50		mg/L	5	2/19/2014 8:31:53 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402626**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.10	0.5000	0	92.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402626**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**					
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.050	0.5000	0	92.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402626 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:46:18 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 6.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402621	Total Selenium 6010	TCLP Selenium 1311/6010
2/17/14	0800	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
2/17/14	0800	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Analysis Request

Date	Time	Relinquished by	Received by	Date	Time
2/17/14	10:00	Jerry Sosa			
				02/17/14	1445

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 25, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402904

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402904**
Date Reported: **2/25/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/24/2014 8:20:00 AM
Lab ID: 1402904-001
Matrix: AQUEOUS
Received Date: 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **TES**	
Selenium	0.38	0.050		mg/L	1	2/25/2014 9:18:14 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-7 Effluent
Project: Wastewater Effluent Monitoring
Collection Date: 2/24/2014 8:20:00 AM
Lab ID: 1402904-002 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **TES**	
Selenium	0.35	0.10		mg/L	1	2/25/2014 9:22:31 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402904**

25-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487507**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487508**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402904**

25-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487531**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**					
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487532**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402904 RcptNo: 1

Received by/date: 02/24/14

Logged By: **Ashley Gallegos** 2/24/2014 2:30:00 PM

Completed By: **Ashley Gallegos** 2/24/2014 3:09:53 PM

Reviewed By: mg 02/24/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted? N/A
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Bobby C

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402904	Total Selenium 6010	TCLP Selenium 1311/6010
2/24/14	0820	liquid	W-7 Effluent	Plastic-1	HNO3	-001	X	
2/24/14	0820	liquid	W-7 Effluent	Plastic-1	NEAT	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/24/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	02/24/14	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 26, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402903

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402903**
Date Reported: **2/26/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells (Location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/24/2014 6:00:00 AM
Lab ID: 1402903-001 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/25/2014 5:02:40 PM	11888
EPA 6010B: TOTAL METALS						Analyst: **TES**	
Arsenic	0.030	0.020		mg/L	1	2/25/2014 9:15:39 AM	11873
Barium	0.046	0.020		mg/L	1	2/25/2014 9:15:39 AM	11873
Cadmium	ND	0.0020		mg/L	1	2/25/2014 9:15:39 AM	11873
Chromium	ND	0.0060		mg/L	1	2/25/2014 9:15:39 AM	11873
Lead	ND	0.0050		mg/L	1	2/25/2014 9:15:39 AM	11873
Selenium	0.27	0.050		mg/L	1	2/25/2014 9:15:39 AM	11873
Silver	ND	0.0050		mg/L	1	2/25/2014 9:15:39 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells (Location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/24/2014 6:00:00 AM
Lab ID: 1402903-002 **Matrix:** AQUEOUS **Received Date:** 2/24/2014 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/25/2014 3:57:17 PM	11889
EPA METHOD 6010B: TCLP METALS						Analyst: **TES**	
Arsenic	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Barium	0.12	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Cadmium	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Chromium	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Lead	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Selenium	0.28	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873
Silver	ND	0.10		mg/L	1	2/25/2014 9:17:00 AM	11873

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11888**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487839**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11888**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487840**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Sample ID	**1402903-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487842**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.3	75	125			

Sample ID	**1402903-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11888**	RunNo:	**16948**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487843**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.2	75	125	0.938	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11889**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487813**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020									

Sample ID	**LCS-11889**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487814**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	100	80	120				

Sample ID	**1402903-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	88.8	75	125				

Sample ID	**1402903-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent To Wells (L**	Batch ID:	**11889**		RunNo:	**16947**					
Prep Date:	**2/25/2014**	Analysis Date:	**2/25/2014**		SeqNo:	**487822**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487507** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487508** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.2	80	120			
Barium	0.47	0.10	0.5000	0	93.4	80	120			
Cadmium	0.47	0.10	0.5000	0	94.3	80	120			
Chromium	0.47	0.10	0.5000	0	93.3	80	120			
Lead	0.45	0.10	0.5000	0	89.6	80	120			
Selenium	0.44	0.10	0.5000	0	87.1	80	120			
Silver	ND	0.10	0.1000	0	94.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402903**

26-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11873**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11873**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11873**	RunNo:	**16937**
Prep Date:	**2/24/2014**	Analysis Date:	**2/25/2014**	SeqNo:	**487532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.2	80	120			
Barium	0.47	0.020	0.5000	0	93.4	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.3	80	120			
Chromium	0.47	0.0060	0.5000	0	93.3	80	120			
Lead	0.45	0.0050	0.5000	0	89.6	80	120			
Selenium	0.44	0.050	0.5000	0	87.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402903 RcptNo: 1

Received by/date: 02/24/14

Logged By: **Ashley Gallegos** 2/24/2014 2:30:00 PM

Completed By: **Ashley Gallegos** 2/24/2014 3:06:54 PM

Reviewed By: 02/24/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? No

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standa ☐ Rush Next Day
	Project Name: Wastewater Effluent Monitoring/SeRT
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 0.4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402703	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	-001	X	
2/24/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	-002		X

Date	Time	Relinquished by	Received by	Date	Time
2/24/14	10:00	Jerry Sosa			
				02/24/14	1430
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment B:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/16/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/20/2014	T-836 Effluent to Wells	Hall	0.51	-	-	0.51
1/23/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/27/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49
1/30/2014	T-836 Effluent to wells	Hall	0.27	-	-	0.27
2/3/2014	T-836 Effluent to wells	Hall	0.56	-	-	0.56
2/6/2014	T-836 Effluent to wells	Hall	0.40	-	-	0.40
2/10/2014	T-836 Effluent to wells	Hall	0.20	-	-	0.20
2/17/2014	T-801 Effluent to wells	Hall	0.20	-	-	0.20
2/24/2014	T-801 Effluent to wells	Hall	0.28	-	-	0.28

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through February 17, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60					<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75				0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60					<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56				0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40					<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24				0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-					<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-				0.10	0.10	-	-	<0.05 0 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20				9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86				12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93				12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98				11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10					10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96				9.42	9.71	-	-	<0.20 2 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20					14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99				11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99					14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87				10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30					14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08				14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-				-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-				-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-				-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-				-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-				-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-				-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-				-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-				-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-				-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07				-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00				10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-				9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-				0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-				7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.80	3.80	-	-				12.00	12.00	0.41	1.10	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.60	4.60	4.40	4.40	-	-				11.00	11.00	1.60	3.10	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.20	4.20	4.10	4.10	-	-				7.90	7.90	1.60	1.90	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5.00	5.00	4.80	4.80	-	-				17.00	17.00	2.00	2.30	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-				3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	OAF Eff.	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-				15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-				0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-				17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-				18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-				0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-				0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-				0.09	0.09	1.70	2.40	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-				10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.30	4.30	4.50	4.50	-	-				9.40	9.40	2.20	2.80	-	-	-	-	-	0.47	0.47	0.26	0.27	0.29	0.27	-	-	-	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.20	5.20	5.10	5.10	-	-				17.00	17.00	0.22	0.16	-	-	-	-	-	0.66	0.66	0.63	0.66	0.66	0.56	-	-	-	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	6.30	6.30	6.20	6.20	-	-				15.00	15.00	0.19	0.29	-	-	-	0.6	0.60	-	-	0.49	0.45	0.43	0.40	-	-	-	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.70	5.70	5.70	5.70	-	-				0.14	0.14	0.25	0.38	-	-	-	-	-	0.37	-	0.28	0.28	0.27	0.20	-	-	-	-	-	-	-	-	-	1402326 1402324
2/13/2014	Hall Environmental	-	-	-	-	0.58	0.58	6.50	6.70	0.83	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	8.3	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	-	-	-	1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.5	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.35	0.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	-	-	-	-	-	-	-	-	1402904 1402903

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through February 17, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	
10/20/2013	Hall Environmental	4.10		-		1.50				0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69			0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62				0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71			0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58				0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56			0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-				0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-			0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13			5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32			8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27			9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08			6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22				3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22			5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10				5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15			8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39				1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36			4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21				3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20			5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-			-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-			-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-			-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-			-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-			-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-			-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-			-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/16/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-			-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-			-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90			-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39			7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-			7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-			0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-			9.9	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.70	3.70	3.40	3.40	-	-			11.00	11.00	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.20	4.20	4.20	4.20	-	-			9.40	9.40	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.90	3.90	3.90	3.90	-	-			6.40	6.40	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.80	4.80	4.60	4.60	-	-			14.00	14.00	1.40	2.10	-	-	-	-	-	1.10	1.10	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.80	5.80	5.70	5.70	-	-			3.00	3.00	2.60	3.00	-	-	-	1.30	1.30	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		SeRT Feed	SeRT Eff.	Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
12/27/2013	Hall Environmental	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.90	5.90	-	-			7.30	7.30	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-			<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.00	1.00	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.60	5.60	5.60	5.60	-	-			16.0	16.0	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-			18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.10	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/16/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-			<5	<5	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/20/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-			<4.5	<4.5	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/23/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-			<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/27/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-			17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62
1/30/2014	Hall Environmental	4.20	4.20	4.30	4.30	-	-	-	-	9.50	9.50	2.1	3.2	-	-	-	-	-	0.81	0.81	0.98	0.30	0.23	0.27	-	-	-	-	-	-	1401C00 1401C01
2/3/2014	Hall Environmental	5.40	5.40	5.00	5.00	-	-	-	-	16.00	16.00	0.23	0.19	-	-	-		-	1.20	1.20	1.10	0.60	0.59	0.64	-	-	-	-	-	-	1402076 1402075
2/6/2014	Hall Environmental	5.70	5.70	5.90	5.90	-	-	-	-	16.00	16.00	0.18	0.28	-	-	-	1.00	1.00	-	-	1.30	0.45	0.42	0.42	-	-	-	-	-	-	1402232 1402233
2/10/2014	Hall Environmental	5.30	5.30	5.70	5.70	-	-	5.20	0.31	0.048	0.048	0.25	0.45	-	-	-	-	-	0.36	0.36	0.58	0.26	0.24	0.26	-	-	-	-	-	-	1402326 1402324 1402325
2/12/2014	Hall Environmental	-	-	-	-	-	-	6.50	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402490
2/13/2014	Hall Environmental	-	-	-	-	0.55	0.55	6.00	0.81	-	-	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	-	-	-	1402512 1402513
2/17/2014	Hall Environmental	-	-	-	-	1.20	1.20	6.60	1.20	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	0.20	-	-	-	-	-	-	1402613 1402624 1402626
2/19/2014	Hall Environmental	-	-	-	-	-	-	7.20	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402814
2/20/2014	Hall Environmental	-	-	-	-	-	-	7.00	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1402815
2/24/2014	Hall Environmental	-	-	-	-	0.38	0.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	-	-	-	-	-	1402904 1402903

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Wednesday, February 26, 2014 3:24 PM
To: Chavez, Carl J, EMNRD; Holder, Mike; Dawson, Scott, EMNRD
Subject: RE: Effluent Results 2/17/14

They have but we continue to sample weekly on our own for a while longer as we test out the SeRT until – just want to make sure everything is working right – so far so good!!

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, February 26, 2014 3:20 PM
To: Holder, Mike; Dawson, Scott, EMNRD
Subject: RE: Effluent Results 2/17/14

Mike:

Yes, you are correct. Thank you for sending OCD the NMED weekly submittal. I presume NMED has not allowed a monthly sample schedule yet?

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
O: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Web: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

---

From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Wednesday, February 26, 2014 3:15 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Effluent Results 2/17/14

Scott/Carl – attached are the effluent results from 2/17/14 – couldn't find that I had sent these:

Total = 0.20 mg/L

TCLP = 0.20 mg/L

Thanks!
Mike
CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring/SeRT OrderNo.: 1402624

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/17/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402624**
Date Reported: **2/19/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6)
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-001 **Matrix:** AQUEOUS **Received Date:** 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/18/2014 4:49:02 PM	11776
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.038	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Barium	0.060	0.020		mg/L	1	2/19/2014 8:09:08 AM	11796
Cadmium	ND	0.0020		mg/L	1	2/19/2014 8:09:08 AM	11796
Chromium	ND	0.0060		mg/L	1	2/19/2014 8:09:08 AM	11796
Lead	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796
Selenium	0.20	0.050		mg/L	1	2/19/2014 8:09:08 AM	11796
Silver	ND	0.0050		mg/L	1	2/19/2014 8:09:08 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells (location #6) T
Project: Wastewater Effluent Monitoring/SeRT
Collection Date: 2/17/2014 6:00:00 AM
Lab ID: 1402624-002
Matrix: AQUEOUS
Received Date: 2/17/2014 2:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/18/2014 5:40:58 PM	11777
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Barium	0.16	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Cadmium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Chromium	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Lead	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Selenium	0.20	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796
Silver	ND	0.10		mg/L	1	2/19/2014 8:14:12 AM	11796

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11776**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484820**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11776**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484821**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	103	80	120			

Sample ID	**1402624-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484823**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	99.0	75	125			

Sample ID	**1402624-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells (lo**	Batch ID:	**11776**	RunNo:	**16814**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484824**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	75	125	4.26	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11777**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484236**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11777**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11777**	RunNo:	**16815**					
Prep Date:	**2/17/2014**	Analysis Date:	**2/18/2014**	SeqNo:	**484237**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484494** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0	94.6	80	120			
Barium	0.48	0.10	0.5000	0	96.0	80	120			
Cadmium	0.48	0.10	0.5000	0	96.7	80	120			
Chromium	0.48	0.10	0.5000	0	95.9	80	120			
Lead	0.46	0.10	0.5000	0	92.4	80	120			
Selenium	0.46	0.10	0.5000	0	92.6	80	120			
Silver	ND	0.10	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402624**

19-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring/SeRT

Sample ID	**MB-11796**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11796**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11796**	RunNo:	**16825**
Prep Date:	**2/18/2014**	Analysis Date:	**2/19/2014**	SeqNo:	**484532** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.6	80	120			
Barium	0.48	0.020	0.5000	0	96.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.7	80	120			
Chromium	0.48	0.0060	0.5000	0	95.9	80	120			
Lead	0.46	0.0050	0.5000	0	92.4	80	120			
Selenium	0.46	0.050	0.5000	0	92.6	80	120			
Silver	0.098	0.0050	0.1000	0	97.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402624 RcptNo: 1

Received by/date: MG 02/17/14

Logged By: **Michelle Garcia** 2/17/2014 2:45:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 2/17/2014 3:41:07 PM Michelle Garcia

Reviewed By: 02/17/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.8	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn Around Time:

☐ Standa ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring/SeRT

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 0.8

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402624	Analysis Request: (1) Total RCRA 8 Metals	Analysis Request: (2) TCLP RCRA 8 Metals
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	HNO3	001	X	
2/17/14	0600	Liquid	Effluent to Wells (location #6)	1 Plastic	Neat	002		X

Relinquished by	Date	Time	Received by	Date	Time
Jerry Sosa	2/17/14	10:00			
				02/17/14	1445

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Friday, February 14, 2014 5:00 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Effluent Results 2/10/14
Attachments: Rpt_1402324_Final_v1.pdf

Scott/Carl – attached are the effluent results from 2/10/14:

Total = 0.26 mg/L

TCLP = 0.20 mg/L

Thanks!
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 13, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402324

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/10/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402324**
Date Reported: **2/13/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-001 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	2/11/2014 4:25:23 PM	11676
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.035	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Barium	0.023	0.020		mg/L	1	2/13/2014 9:07:30 AM	11692
Cadmium	ND	0.0020		mg/L	1	2/13/2014 9:07:30 AM	11692
Chromium	ND	0.0060		mg/L	1	2/13/2014 9:07:30 AM	11692
Lead	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692
Selenium	0.26	0.050		mg/L	1	2/13/2014 12:16:38 PM	11692
Silver	ND	0.0050		mg/L	1	2/13/2014 9:07:30 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/10/2014 6:00:00 AM
Lab ID: 1402324-002 **Matrix:** AQUEOUS **Received Date:** 2/10/2014 1:57:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/12/2014 3:43:01 PM	11695
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Barium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Cadmium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Chromium	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Lead	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Selenium	0.20	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692
Silver	ND	0.10		mg/L	1	2/13/2014 9:11:13 AM	11692

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11676**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480486**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11676**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11676**	RunNo:	**16691**					
Prep Date:	**2/11/2014**	Analysis Date:	**2/11/2014**	SeqNo:	**480487**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11695**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480751**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11695**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480752**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	**1402324-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480754**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.3	75	125			

Sample ID	**1402324-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11695**	RunNo:	**16703**					
Prep Date:	**2/12/2014**	Analysis Date:	**2/12/2014**	SeqNo:	**480755**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11692**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481463** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11692**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11692**	RunNo:	**16728**
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**	SeqNo:	**481464** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.3	80	120			
Barium	ND	100	0.5000	0	89.0	80	120			
Cadmium	ND	1.0	0.5000	0	91.7	80	120			
Chromium	ND	5.0	0.5000	0	89.0	80	120			
Lead	ND	5.0	0.5000	0	87.9	80	120			
Selenium	ND	1.0	0.5000	0	83.9	80	120			
Silver	ND	5.0	0.1000	0	93.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481425**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0.03462	84.5	75	125			
Barium	0.42	0.020	0.5000	0.02307	79.3	75	125			
Cadmium	0.41	0.0020	0.5000	0	82.8	75	125			
Chromium	0.40	0.0060	0.5000	0	79.8	75	125			
Lead	0.39	0.0050	0.5000	0	77.1	75	125			
Silver	0.084	0.0050	0.1000	0	83.7	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481426**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0.03462	82.2	75	125	2.59	20	
Barium	0.41	0.020	0.5000	0.02307	78.3	75	125	1.20	20	
Cadmium	0.41	0.0020	0.5000	0	82.0	75	125	1.01	20	
Chromium	0.39	0.0060	0.5000	0	78.5	75	125	1.76	20	
Lead	0.38	0.0050	0.5000	0	76.2	75	125	1.15	20	
Silver	0.083	0.0050	0.1000	0	82.8	75	125	1.08	20	

Sample ID	**MB-11692**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481498**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.3	80	120			
Barium	0.44	0.020	0.5000	0	89.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	91.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402324**

13-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11692**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481499**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.44	0.0060	0.5000	0	89.0	80	120			
Lead	0.44	0.0050	0.5000	0	87.9	80	120			
Selenium	0.42	0.050	0.5000	0	83.9	80	120			
Silver	0.094	0.0050	0.1000	0	93.9	80	120			

Sample ID	**1402324-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481526**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.67	0.050	0.5000	0.2584	83.1	75	125			

Sample ID	**1402324-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11692**		RunNo:	**16728**				
Prep Date:	**2/12/2014**	Analysis Date:	**2/13/2014**		SeqNo:	**481527**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.65	0.050	0.5000	0.2584	77.9	75	125	3.92	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1402324 RcptNo: 1

Received by/date: A.T. 02/10/14

Logged By: **Ashley Gallegos** 2/10/2014 1:57:00 PM

Completed By: **Ashley Gallegos** 2/10/2014 2:18:28 PM

Reviewed By: JMS 2/10/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 13.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1403324	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/10/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	10:00	Jerry Sosa		02/10/14	1357
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Sunday, February 09, 2014 12:05 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Effluent Results 2/3/14
Attachments: Rpt_1402075_Final_v1.pdf

Scott/Carl – attached are the effluent results from 2/3/14:

Total = 0.64 mg/L

TCLP = 0.56 mg/L

Thanks!
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1402075

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/4/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402075**
Date Reported: **2/7/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-001 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.0010		mg/L	5	2/5/2014 3:52:21 PM	11565
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.086	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Barium	0.027	0.020		mg/L	1	2/5/2014 12:48:42 PM	11564
Cadmium	ND	0.0020		mg/L	1	2/5/2014 12:48:42 PM	11564
Chromium	ND	0.0060		mg/L	1	2/5/2014 12:48:42 PM	11564
Lead	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564
Selenium	0.64	0.050		mg/L	1	2/5/2014 12:48:42 PM	11564
Silver	ND	0.0050		mg/L	1	2/5/2014 12:48:42 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 2/3/2014 1:15:00 PM
Lab ID: 1402075-002 **Matrix:** AQUEOUS **Received Date:** 2/4/2014 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	2/5/2014 4:37:16 PM	11566
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Barium	0.11	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Cadmium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Chromium	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Lead	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Selenium	0.56	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564
Silver	ND	0.10		mg/L	1	2/5/2014 12:49:57 PM	11564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11565**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476431**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11565**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476432**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1402075-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476437**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0060	0.0010	0.005000	0	120	75	125			

Sample ID	**1402075-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11565**	RunNo:	**16548**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476438**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.0010	0.005000	0	113	75	125	6.40	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11566**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476453**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11566**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11566**	RunNo:	**16550**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476454**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476361**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11564**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476362**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	89.2	80	120			
Barium	ND	100	0.5000	0	89.6	80	120			
Cadmium	ND	1.0	0.5000	0	93.2	80	120			
Chromium	ND	5.0	0.5000	0	90.1	80	120			
Lead	ND	5.0	0.5000	0	87.8	80	120			
Selenium	ND	1.0	0.5000	0	91.0	80	120			
Silver	ND	5.0	0.1000	0	96.3	80	120			

Sample ID	**1402075-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476365**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04825	93.4	75	125			
Barium	0.57	0.10	0.5000	0.1089	91.2	75	125			
Cadmium	0.46	0.10	0.5000	0	92.4	75	125			
Chromium	0.44	0.10	0.5000	0	87.8	75	125			
Lead	0.42	0.10	0.5000	0	83.8	75	125			
Silver	ND	0.10	0.1000	0	97.6	75	125			

Sample ID	**1402075-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**		RunNo:	**16546**				
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**		SeqNo:	**476366**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.10	0.5000	0.04825	85.1	75	125	8.45	20	
Barium	0.52	0.10	0.5000	0.1089	81.6	75	125	8.90	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1402075-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**Effluent to Wells TC**	Batch ID:	**11564**	RunNo:	**16546**
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.43	0.10	0.5000	0	85.3	75	125	8.08	20	
Chromium	0.40	0.10	0.5000	0	81.0	75	125	8.05	20	
Lead	0.39	0.10	0.5000	0	78.1	75	125	7.10	20	
Silver	ND	0.10	0.1000	0	88.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402075**

07-Feb-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11564**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476425**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11564**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11564**	RunNo:	**16546**					
Prep Date:	**2/4/2014**	Analysis Date:	**2/5/2014**	SeqNo:	**476426**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0	89.2	80	120			
Barium	0.45	0.020	0.5000	0	89.6	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.2	80	120			
Chromium	0.45	0.0060	0.5000	0	90.1	80	120			
Lead	0.44	0.0050	0.5000	0	87.8	80	120			
Selenium	0.45	0.050	0.5000	0	91.0	80	120			
Silver	0.096	0.0050	0.1000	0	96.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1402075 RcptNo: 1

Received by/date: MG 02/04/14

Logged By: **Lindsay Mangin** 2/4/2014 9:00:00 AM

Completed By: **Lindsay Mangin** 2/4/2014 9:08:22 AM

Reviewed By: MG 02/04/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	FedEx		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402075	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
2/3/14	13:15	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
2/3/14	~~6:00~~ 13:15	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/3/14	14:30	Jerry Sosa	Michelle Gilbert	02/04/14	0900
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, February 03, 2014 2:35 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Monthly Interim Progress Report Submittal - January 2014
Attachments: OCD Order January 2014 Monthly Progress Report.pdf

Scott/Carl – please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between NRC & OCD (Dated November 14, 2013). The original hardcopy is going out to today via certified mail. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,
Mike

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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HOLLYFRONTIER.

February 3, 2014

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7006 0100 0003 6609 9719

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
January 2014 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the January 2014 monthly progress report, detailing the actions taken during the preceding calendar month of December 2013, and due on the first business day of the following month (i.e., February 3, 2014). This report also includes the final analytical results as of January 27, 2014, and the actions taken through approximately January 30, 2014.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste

Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12;
- The December 2013 progress report was submitted on January 2, 2014 pursuant to Paragraph 9.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in earlier progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the design and installation of a 200 gpm SeRT®. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M HILL for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for the 100 gpm SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.
- Refinery began processing Western Canadian Select (WCS) crude again.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for the 100 gpm trial SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

December 27, 2013

- Started biweekly sample collection at various locations in the trial Iron Co-Precipitation process.

January 4, 2014

- Restarted Hydrocracker Unit.

January 17, 2014

- Mechanical completion of the 100 gpm trial SeRT® unit.

January 20, 2014

- Commissioning of the 100 gpm trial SeRT® unit.

January 24, 2014

- Completed sample collection for the Iron Co-Precipitation trial.

January 30, 2014

- Refinery resumes normal production rate.

Navajo has developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. This schedule is provided below.

1. Iron Co-precipitation via ferric chloride injection:
    a. January 31, 2014 - Complete scale-up trial and assess data to move to continuous operation. The trial completion date was previously estimated to be December 27, 2013, and was extended approximately one month to continue close monitoring of the process and to evaluate impacts of the ferric chloride addition on the wastewater treatment system, including chemical interactions.
    b. February 1, 2014 - Move to full-scale continuous operation.
    c. Based on SeRT® process results, Navajo will consider discontinuing ferric chloride injection

2. SeRT® Process – 100 gpm trial unit:
    a. January 31, 2014 - Initial Startup.
    b. February 28, 2014 (estimated) - Target for stable operation and confirmed selenium reduction.

3. SeRT® Process: Depending on the results of the above SeRT® trial, potential installation of a full capacity permanent unit:
    a. February 13, 2014 (estimated) - Process engineering complete.
    b. December 31, 2014 (estimated) - Startup Goal.

Navajo plans to submit shortly a proposed schedule of projected milestones and deadlines for purposes of amending Exhibit A to the Order, as set forth in Paragraph 14 of that Exhibit.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 2. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through January 27, 2014). As of the sample collected on January 27, 2014, Navajo has achieved eleven consecutive weeks of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 2. The laboratory reports for the samples collected in December through January 27, 2014, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9th, 2013, among certain other earlier changes:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 2: Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801 Effluent	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801 Effluent	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.27	0.27
12/30/2013	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.33	0.33
1/6/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.23	0.23

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
1/13/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.31	0.31
1/20/2014	T-836 Effluent to Wells	Hall Environmental	EPA 6010B	0.51	0.51
1/27/2014	T-801 Effluent to Wells	Hall Environmental	EPA 6010B	0.49	0.49

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October, November, and December through January 27, 2014.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the January 27, 2014 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-001 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/4/2013 6:54:13 PM	10631
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.051	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Barium	0.032	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Cadmium	ND	0.0020		mg/L	1	12/3/2013 3:05:00 PM	10606
Chromium	ND	0.0060		mg/L	1	12/3/2013 3:05:00 PM	10606
Lead	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606
Selenium	0.77	0.050		mg/L	1	12/3/2013 3:05:00 PM	10606
Silver	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10631**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439377**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10631**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10631**	RunNo:	**15237**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439378**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**PBW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438128** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10606**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**LCSW**	Batch ID:	**10606**	RunNo:	**15198**
Prep Date:	**12/3/2013**	Analysis Date:	**12/3/2013**	SeqNo:	**438129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.50	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:15:00 AM
Lab ID: 1312047-002
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY, TCLP						Analyst: **JML**
Mercury	ND	0.020		mg/L	1	12/4/2013 7:36:06 PM
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**
Arsenic	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Barium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Cadmium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Chromium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Lead	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Selenium	0.88	0.10		mg/L	1	12/4/2013 11:20:03 AM
Silver	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10632**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439384**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10632**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439385**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

Sample ID	**1312047-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439387**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.7	75	125			

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10632**	RunNo:	**15238**					
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439388**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10620**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439004** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10620**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	105	80	120			
Barium	ND	100	0.5000	0	94.2	80	120			
Cadmium	ND	1.0	0.5000	0	104	80	120			
Chromium	ND	5.0	0.5000	0	95.6	80	120			
Lead	ND	5.0	0.5000	0	95.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	108	80	120			

Sample ID **1312047-002AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.10	0.5000	0.04824	101	75	125			
Barium	0.52	0.10	0.5000	0.07379	89.8	75	125			
Cadmium	0.50	0.10	0.5000	0	100	75	125			
Chromium	0.45	0.10	0.5000	0	90.8	75	125			
Lead	0.45	0.10	0.5000	0	90.1	75	125			
Silver	0.10	0.10	0.1000	0	103	75	125			

Sample ID **1312047-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04824	95.1	75	125	5.40	20	
Barium	0.50	0.10	0.5000	0.07379	84.8	75	125	4.83	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312047-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**WWTP 836 Effluent**	Batch ID:	**10620**	RunNo:	**15224**
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**	SeqNo:	**439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.10	0.5000	0	95.2	75	125	5.31	20	
Chromium	0.43	0.10	0.5000	0	86.1	75	125	5.28	20	
Lead	0.43	0.10	0.5000	0	85.3	75	125	5.47	20	
Silver	ND	0.10	0.1000	0	98.1	75	125	200	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312047	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ Total Hg & metals	☒ TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	Michelle Gee	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312046

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312046**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-001
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.37	0.050		mg/L	1	12/3/2013 2:11:58 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: API TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:55:00 AM
Lab ID: 1312046-002 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.48	0.10		mg/L	1	12/4/2013 10:54:34 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-003 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	7.5	1.0		mg/L	20	12/3/2013 2:25:28 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 5:50:00 AM
Lab ID: 1312046-004 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	9.4	1.0		mg/L	10	12/4/2013 11:27:09 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-005 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 2:36:48 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:35:00 AM
Lab ID: 1312046-006 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.9	0.50		mg/L	5	12/4/2013 11:29:30 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-007 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.82	0.25		mg/L	5	12/3/2013 2:53:49 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 836 Tank TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:10:00 AM
Lab ID: 1312046-008 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.76	0.10		mg/L	1	12/4/2013 11:01:39 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-009
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	0.63	0.050		mg/L	1	12/3/2013 2:56:31 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:05:00 AM
Lab ID: 1312046-010 **Matrix:** AQUEOUS **Received Date:** 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.83	0.10		mg/L	1	12/4/2013 11:04:02 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-011
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Selenium	3.2	0.25		mg/L	5	12/3/2013 3:02:04 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/2/2013 6:30:00 AM
Lab ID: 1312046-012
Matrix: AQUEOUS
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.8	0.50		mg/L	5	12/4/2013 11:31:53 AM	10620

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10620**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439004**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10620**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**10620**		RunNo:	**15224**				
Prep Date:	**12/3/2013**	Analysis Date:	**12/4/2013**		SeqNo:	**439005**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312046**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10606**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**PBW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438128**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10606**	SampType: **LCS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**LCSW**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438129**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.50	0.050	0.5000	0	101	80	120			

Sample ID	**1312046-005AMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438177**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.6	0.25	0.5000	3.188	90.1	75	125			

Sample ID	**1312046-005AMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Recoverable Metals**					
Client ID:	**WWTP 634**	Batch ID: **10606**			RunNo: **15198**					
Prep Date:	**12/3/2013**	Analysis Date: **12/3/2013**			SeqNo: **438178**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	3.7	0.25	0.5000	3.188	94.2	75	125	0.565	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312046 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:42:42 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required)	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)? (Not required)	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

Added 2mL HNO_3 to 003A for acceptable pH. 12/02/13

of preserved bottles checked for pH: 6 (<2 or >12 unless noted)

Adjusted? yes

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Change~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312045	Total Selenium 2008 6010	TCLP Selenium 1311/6010
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	HNO3	-001	X	
12/2/13	~~5:55~~ 5:55	Liquid	API	Plastic-1	NEAT	-002		X
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	HNO3	-003	X	
12/2/13	5:50	Liquid	D250 FLUE GAS Scrubber	Plastic-1	NEAT	-004		X
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	HNO3	-005	X	
12/2/13	6:35	Liquid	WWTP 634	Plastic-1	NEAT	-006		X
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	HNO3	-007	X	
12/2/13	6:10	Liquid	WWTP 836 Tank	Plastic-1	NEAT	-008		X
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	HNO3	-009	X	
12/2/13	6:05	Liquid	WWTP 801	Plastic-1	NEAT	-010		X
12/2/13	6:30	Liquid	W-20	Plastic-1	HNO3	-011	X	
12/2/13	6:30	Liquid	W-20	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	Anthony Widman			
				12/02/13	1443

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312316

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312316**
Date: **12/11/2013**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

All samples, excluding Hg, digested using EPA Method 3010.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-001
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/10/2013 4:25:22 PM	10723
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.031	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Barium	0.022	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Cadmium	ND	0.0020		mg/L	1	12/11/2013 10:15:00 AM	10734
Chromium	ND	0.0060		mg/L	1	12/11/2013 10:15:00 AM	10734
Lead	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734
Selenium	0.37	0.050		mg/L	1	12/11/2013 10:15:00 AM	10734
Silver	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WWTP 801 Effluent to Wells T
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312316-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/10/2013 4:59:51 PM	10731
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Barium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Cadmium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Chromium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Lead	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Selenium	0.38	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Silver	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10723**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443477**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10723**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443478**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.8	80	120			

Sample ID	**1312297-001GMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443481**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	75	125			

Sample ID	**1312297-001GMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**BatchQC**	Batch ID:	**10723**	RunNo:	**15396**					
Prep Date:	**12/9/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443482**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.3	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10731**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443489**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10731**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443490**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Sample ID	**1312287-001AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443493**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	75	125			

Sample ID	**1312287-001AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**BatchQC**	Batch ID:	**10731**	RunNo:	**15397**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/10/2013**	SeqNo:	**443494**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.5	80	120			
Barium	ND	100	0.5000	0	87.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.6	80	120			
Chromium	ND	5.0	0.5000	0	88.8	80	120			
Lead	ND	5.0	0.5000	0	88.1	80	120			
Selenium	ND	1.0	0.5000	0	88.2	80	120			
Silver	ND	5.0	0.1000	0	97.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.5	80	120			
Barium	0.44	0.020	0.5000	0	87.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.6	80	120			
Chromium	0.44	0.0060	0.5000	0	88.8	80	120			
Lead	0.44	0.0050	0.5000	0	88.1	80	120			
Selenium	0.44	0.050	0.5000	0	88.2	80	120			
Silver	0.098	0.0050	0.1000	0	97.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: **1312316** RcptNo: 1

Received by/date: MG 12/09/13

Logged By: **Michelle Garcia** 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/9/2013 2:30:49 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ✔	
9. Was preservative added to bottles?	Yes ✔	No ☐	NA ☐
	Added 1 mL HNO3 to 001A for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? YES
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 6°

HEAL No. 1312316

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	Total Selenium 200.8	TCLP Selenium 1311/6010	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	HNO3			X	
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	Neat				X

Date	Time	Relinquished by	Received by	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312315

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312315**
Date Reported: **12/11/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312315-001 **Matrix:** AQUEOUS

Client Sample ID: D-250 Flu Gas Scrubber
Collection Date: 12/9/2013 6:00:00 AM
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.9	1.0		mg/L	20	12/11/2013 10:45:44 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-002 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	7.4	1.0		mg/L	20	12/11/2013 10:48:06 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-003
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.5	0.25		mg/L	5	12/11/2013 10:50:27 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-004
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/11/2013 10:52:48 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-005 **Matrix:** AQUEOUS **Received Date:** 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 10:59:18 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-006
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	2.2	0.25		mg/L	5	12/11/2013 11:01:40 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-007
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:04:03 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SWS Bottoms W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-008
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:06:25 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-009
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	3.0	0.25		mg/L	5	12/11/2013 11:11:11 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-010
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/11/2013 11:13:35 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-011
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.38	0.050		mg/L	1	12/11/2013 10:10:17 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/9/2013 6:00:00 AM
Lab ID: 1312315-012
Matrix: AQUEOUS
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.28	0.050		mg/L	1	12/11/2013 10:12:38 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444229**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444230**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312315**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10734**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444166**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-10734**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**10734**	RunNo:	**15419**					
Prep Date:	**12/10/2013**	Analysis Date:	**12/11/2013**	SeqNo:	**444167**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	88.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312315 RcptNo: 1

Received by/date: MG 12/09/13

Logged By: Michelle Garcia 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/9/2013 2:31:56 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑ not required	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ Not required	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ☑	
9. Was preservative added to bottles?	Yes ☑	No	NA
10. VOA vials have zero headspace?	Yes ☐	No ☐	See Remarks No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No	Adjusted? Yes
14. Is it clear what analyses were requested?	Yes ☑	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standard ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312315	Total Selenium 6010	TCLP Selenium 1311/6010
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	HNO3	-001	X	
12/9/13	6:00	Liquid	D-250 Flu Gas Scurbber	Plastic-1	Neat	-002		X
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	HNO3	-003	X	
12/9/13	6:00	Liquid	D-130 Outlet	Plastic-1	Neat	-004		X
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	HNO3	-005	X	
12/9/13	6:00	Liquid	D-2101 Outlet	Plastic-1	Neat	-006		X
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	HNO3	-007	X	
12/9/13	6:00	Liquid	SWS Bottoms W-20 Outlet	Plastic-1	Neat	-008		X
12/9/13	6:00	Liquid	W-634	Plastic-1	HNO3	-009	X	
12/9/13	6:00	Liquid	W-634	Plastic-1	Neat	-010		X
12-9-13	0600	Liquid	T-830	Plastic-1	HNO3	-011	X	
12-9-13	0600	Liquid	T-830	Plastic-1	Neat	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/9/13	10:00	Jerry Sosa			
				12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 20, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312687

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312687**
Date Reported: **12/20/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **IDC**	
Mercury	ND	0.00020		mg/L	1	12/20/2013 1:52:17 PM	10902
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.042	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Barium	0.024	0.020		mg/L	1	12/18/2013 3:08:18 PM	10852
Cadmium	ND	0.0020		mg/L	1	12/18/2013 3:08:18 PM	10852
Chromium	ND	0.0060		mg/L	1	12/18/2013 3:08:18 PM	10852
Lead	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852
Selenium	0.43	0.050		mg/L	1	12/18/2013 3:08:18 PM	10852
Silver	ND	0.0050		mg/L	1	12/18/2013 3:08:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 801 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:40:00 AM
Lab ID: 1312687-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **IDC**	
Mercury	ND	0.020		mg/L	1	12/20/2013 1:11:22 PM	10901
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Barium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Cadmium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Chromium	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Lead	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852
Selenium	0.35	0.050		mg/L	1	12/18/2013 3:10:42 PM	10852
Silver	ND	0.10		mg/L	1	12/18/2013 3:10:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10902**	SampType:	**mblk**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**PBW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451283**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-10902**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**				
Client ID:	**LCSW**	Batch ID:	**10902**	RunNo:	**15653**				
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451284**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10901**	SampType:	**mblk**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451196**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10901**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10901**	RunNo:	**15651**					
Prep Date:	**12/19/2013**	Analysis Date:	**12/20/2013**	SeqNo:	**451197**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312687**

20-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448892**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-10852**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**	RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**	SeqNo:	**448893**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	94.9	80	120			
Barium	ND	100	0.5000	0	92.0	80	120			
Cadmium	ND	1.0	0.5000	0	95.7	80	120			
Chromium	ND	5.0	0.5000	0	92.9	80	120			
Lead	ND	5.0	0.5000	0	90.4	80	120			
Selenium	ND	1.0	0.5000	0	91.3	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312687 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 4:03:17 PM Michelle Garcia

Reviewed By: MNS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: \
(<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312487	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	HNO3	001	X	
12/16/13	6:40	Liquid	801 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
12/16/13	10:30	Anthony Widman		12/16/13	1500	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date	Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 19, 2013

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312686

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/16/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312686**
Date Reported: **12/19/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	9.4	5.0		mg/L	100	12/18/2013 1:14:42 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:15:00 AM
Lab ID: 1312686-002 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	11	1.0		mg/L	20	12/18/2013 1:24:18 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-003 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 1:29:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:10:00 AM
Lab ID: 1312686-004 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.4	0.25		mg/L	5	12/18/2013 1:43:46 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-005
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	0.37	0.050		mg/L	1	12/18/2013 1:46:09 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 7:20:00 AM
Lab ID: 1312686-006
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.23	0.050		mg/L	1	12/18/2013 1:48:30 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-007
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	2.5	0.25		mg/L	5	12/18/2013 1:53:22 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:55:00 AM
Lab ID: 1312686-008 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.1	0.25		mg/L	5	12/18/2013 2:22:57 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-009
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	1.8	0.25		mg/L	5	12/18/2013 2:27:43 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 5:45:00 AM
Lab ID: 1312686-010 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.6	0.25		mg/L	5	12/18/2013 2:32:14 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-011 **Matrix:** AQUEOUS **Received Date:** 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Selenium	4.2	0.25		mg/L	5	12/18/2013 3:01:06 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/16/2013 6:05:00 AM
Lab ID: 1312686-012
Matrix: AQUEOUS
Received Date: 12/16/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.6	0.25		mg/L	5	12/18/2013 3:05:54 PM	10852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312686**

19-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10852**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448892**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0								

Sample ID	**LCS-10852**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**10852**		RunNo:	**15589**					
Prep Date:	**12/17/2013**	Analysis Date:	**12/18/2013**		SeqNo:	**448893**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	1.0	0.5000	0	91.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312686 RcptNo: 1

Received by/date: LM 12/16/13

Logged By: **Michelle Garcia** 12/16/2013 3:00:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/16/2013 3:58:04 PM Michelle Garcia

Reviewed By: KMS 12/16/13

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☑ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (not required) Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? (Not required) Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☐ No ☑
9. Was preservative added to bottles? Yes ☑ No ☐ NA ☐

FOR METALS ANALYSIS: ADDED 1mL HNO3 TO 001A, 2mL HNO3 TO 007A, AND 2 mL HNO3 TO 009A FOR ACCEPTABLE pH

10. VOA vials have zero headspace? See Remarks Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? ~~_____~~ NO
Checked by: _____

12/16

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks: JA 12/16/13

~~Added 1 mL HNO3 to 001A, 003A, 005A for acceptable pH.~~

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: ~~Kara Germaine~~ Kelvin Newton

On Ice: ☑ Yes ☐ No

Sample Temperature: 4.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312686	Total Selenium 6010/6020	TCLP Selenium 1311/6010
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	HNO3	001	X	
12/16/13	6:15	Liquid	D250 FLU Gas Scrubber	Plastic-1	NEAT	002		X
12/16/13	6:10	Liquid	W-20	Plastic-1	HNO3	003	X	
12/16/13	6:10	Liquid	W20	Plastic-1	NEAT	004		X
12/16/13	7:20	Liquid	Tank 830	Plastic-1	HNO3	005	X	
12/16/13	7:20	Liquid	Tank 830	Plastic-1	NEAT	006		X
12/16/13	5:55	Liquid	D2101 outlet	Plastic-1	HNO3	007	X	
12/16/13	5:55	Liquid	D2101 Outlet	Plastic-1	NEAT	008		X
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	HNO3	009	X	
12/16/13	5:45	Liquid	D-130 outlet	Plastic-1	NEAT	010		X
12/16/13	6:25	Liquid	W-634	Plastic-1	HNO3	011	X	
12/16/13	6:25	Liquid	W-634	Plastic-1	NEAT	012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/16/13	10:00	Anthony Widman		12/16/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B14

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B14**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-001
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/27/2013 1:46:49 PM	11002
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.040	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Barium	0.042	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Cadmium	ND	0.0020		mg/L	1	12/30/2013 3:55:17 PM	11005
Chromium	0.0070	0.0060		mg/L	1	12/30/2013 3:55:17 PM	11005
Lead	ND	0.0050		mg/L	1	12/27/2013 10:13:49 AM	11005
Selenium	0.27	0.050		mg/L	1	12/27/2013 10:13:49 AM	11005
Silver	ND	0.0050		mg/L	1	12/30/2013 3:55:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/27/2013 3:02:36 PM	11004
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Barium	0.12	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Cadmium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Chromium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Lead	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Selenium	0.27	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Silver	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11002**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455051**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11002**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11002**	RunNo:	**15766**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455052**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11004**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455102**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11004**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11004**	RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455103**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**455302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.4	80	120			
Barium	ND	100	0.5000	0	92.9	80	120			
Cadmium	ND	1.0	0.5000	0	98.7	80	120			
Chromium	ND	5.0	0.5000	0	93.2	80	120			
Lead	ND	5.0	0.5000	0	93.1	80	120			
Selenium	ND	1.0	0.5000	0	94.4	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11005**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11005**	RunNo:	**15777**
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**	SeqNo:	**456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	93.4	80	120			
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.7	80	120			
Chromium	0.47	0.0060	0.5000	0	93.2	80	120			
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	98.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B14 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:44:48 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature 3.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312814	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	HNO3	-001	X	
12/23/13	6:25	Liquid	836 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	12:00	Anthony Widman		12/23/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B16

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 14 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B16**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-001 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.6	0.25		mg/L	5	12/30/2013 3:57:41 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:00:00 AM
Lab ID: 1312B16-002 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	4.8	0.50		mg/L	5	12/30/2013 4:00:05 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-003
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	14	10		mg/L	200	12/30/2013 4:12:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:05:00 AM
Lab ID: 1312B16-004 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	17	2.0		mg/L	20	12/30/2013 4:14:33 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-005 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.4	0.25		mg/L	5	12/30/2013 4:16:56 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:35:00 AM
Lab ID: 1312B16-006 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.0	0.50		mg/L	5	12/30/2013 4:19:20 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-007
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	0.41	0.050		mg/L	1	12/30/2013 4:21:46 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 830 WWTP
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:15:00 AM
Lab ID: 1312B16-008
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.32	0.10		mg/L	1	12/30/2013 4:24:09 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-009 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	1.1	1.0		mg/L	20	12/30/2013 4:26:34 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Discharge
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:28:00 AM
Lab ID: 1312B16-010 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	0.10	0.10		mg/L	1	12/30/2013 4:29:01 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-011 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	2.1	0.25		mg/L	5	12/30/2013 4:36:08 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D2101-Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:40:00 AM
Lab ID: 1312B16-012
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	2.3	0.50		mg/L	5	12/30/2013 4:38:32 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-013 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Selenium	4.8	0.25		mg/L	5	12/30/2013 4:40:55 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 5:55:00 AM
Lab ID: 1312B16-014 **Matrix:** AQUEOUS **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Selenium	5.0	1.0		mg/L	10	12/30/2013 4:43:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455301**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455302**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	94.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B16**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11005**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456705**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11005**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11005**		RunNo:	**15777**				
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**456706**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.47	0.050	0.5000	0	94.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B16 RcptNo: 1

Received by/date: 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/23/2013 4:50:54 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑ SEE REMARKS	NA ☐ 12/23/13
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 4 (<2 or >12 unless noted)

Adjusted? 16

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: FOR METALS ANALYSIS: ADDED 4mL HNO_3 TO -003A & -005A AND 2mL TO -007A & -011A FOR ACCEPTABLE pH 12/23/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312316	Total Selenium 6010	TCLP Selenium 1311/6010
12/23/13	6:00	Liquid	WW20	plastic 1	HNO3	-001	X	
12/23/13	6:00	Liquid	WW20	plastic 1	NEAT	-002		X
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	HNO3	-003	X	
12/23/13	6:05	Liquid	D-250 FW Gas Scrubber	plastic 1	NEAT	-004		X
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	HNO3	-005	X	
12/23/13	6:35	Liquid	D-130 Desalter	plastic 1	NEAT	-006		X
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	HNO3	-007	X	
12/23/13	6:15	Liquid	Tank 830 WWTP	plastic 1	NEAT	-008		X
12/23/13	6:28	Liquid	836 Discharge	plastic 1	HNO3	-009	X	
12/23/13	6:28	Liquid	836 Discharge	plastic 1	NEAT	-010		X
12/23/13	6:40	Liquid	D2101 - Desalter	plastic 1	HNO3	-011	X	
12/23/13	6:40	Liquid	D2101 Desalter	plastic 1	NEAT	-012		X

Date: 12/23/13	Time: 10:00	Relinquished by: Anthony Widmer	Received by:	Date: 12/23/13	Time: 1500
Date:	Time:	Relinquished by:	Received by:	Date:	Time:

Remarks: Expedited turn-around and results sent to Mike Holder

Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: ~~Aaron Strange~~ Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312R16	Total Selenium 2 (6010)	TCLP Selenium 1311/6010
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	HNO3	-05	X	
12/23/13	5:55	Liquid	W-634 outlet	Plastic/1	NEAT	-06		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	10:00	Anthony Widman			
Date:	Time:	Relinquished by:	Received by:	12/23/13	1500

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 10, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C58

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312C58**
Date Reported: **1/10/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/1/2014 12:58:17 PM	11042
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.045	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Barium	0.032	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Cadmium	ND	0.0020		mg/L	1	1/2/2014 10:53:15 AM	11044
Chromium	ND	0.0060		mg/L	1	1/2/2014 10:53:15 AM	11044
Lead	ND	0.0050		mg/L	1	1/2/2014 10:53:15 AM	11044
Selenium	0.33	0.050		mg/L	1	1/2/2014 10:53:15 AM	11044
Silver	ND	0.0050	B	mg/L	1	1/2/2014 10:53:15 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 809 Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C58-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/1/2014 1:41:46 PM	11043
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Barium	0.16	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Cadmium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Chromium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Lead	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Selenium	0.33	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Silver	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11042**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457324**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11042**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457325**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1312C58-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457327**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.7	75	125			

Sample ID	**1312C58-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457328**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.2	75	125	1.68	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11043**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457333**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11043**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457334**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Sample ID	**1312C58-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457336**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.9	75	125			

Sample ID	**1312C58-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11043**	RunNo:	**15856**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457337**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.5	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457226** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457227** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.1	80	120			
Barium	0.47	0.10	0.5000	0	94.8	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.48	0.10	0.5000	0	95.5	80	120			
Lead	0.48	0.10	0.5000	0	95.8	80	120			
Selenium	0.49	0.10	0.5000	0	97.5	80	120			
Silver	0.12	0.10	0.1000	0	116	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**PBW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	0.027	0.0050								

Sample ID	**LCS-11044**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**
Client ID:	**LCSW**	Batch ID:	**11044**	RunNo:	**15850**
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**	SeqNo:	**457262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.1	80	120			
Barium	0.47	0.020	0.5000	0	94.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.48	0.0060	0.5000	0	95.5	80	120			
Lead	0.48	0.0050	0.5000	0	95.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.12	0.0050	0.1000	0	116	80	120			B

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C58 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 3:03:51 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: ____ (<2 or >12 unless noted)

Adjusted? ____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project Name: Wastewater Effluent Monitoring
Phone #: 575-748-3311	Project #:
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kelsey Newton / Byron Tommy
	On Ice: ☑ Yes ☐ No
	Sample Temperature: 1.0°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312C58	Total Selenium 200.8	TCLP Selenium 1311/6010	① Total RCRA 8 metals	② TCLP RCRA 8 metals
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	HNO3	-001			X	
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	NEAT	-002				X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman			
				12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010 [redacted] AW
② TCLP Method 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C57

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312C57**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regrading total selenium for samples "D-250 Flu Gas Scrubber" and "Tank 836". The internal standard was elevated for these samples.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-001 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.43	0.022	0.050		mg/L	1	1/2/2014 8:55:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-002 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.34	0.031	0.10		mg/L	1	1/2/2014 9:10:18 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-003
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.9	0.22	0.50		mg/L	10	1/2/2014 11:41:40 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:55:00 AM
Lab ID: 1312C57-004
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.7	0.31	1.0		mg/L	10	1/2/2014 11:44:02 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-005 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	7.3	4.5	10	J	mg/L	200	1/2/2014 11:08:34 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-006 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	15	0.62	2.0		mg/L	20	1/2/2014 11:10:57 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-007
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	2.3	0.11	0.25		mg/L	5	1/2/2014 11:13:19 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:20:00 AM
Lab ID: 1312C57-008 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	2.6	0.15	0.50		mg/L	5	1/2/2014 11:15:41 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-009
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.97	0.022	0.050		mg/L	1	1/2/2014 9:27:14 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:15:00 AM
Lab ID: 1312C57-010 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	1.8	0.15	0.50		mg/L	5	1/2/2014 11:18:04 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-011
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.9	0.11	0.25		mg/L	5	1/2/2014 11:20:25 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 5:50:00 AM
Lab ID: 1312C57-012 **Matrix:** AQUEOUS **Received Date:** 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.9	0.15	0.50		mg/L	5	1/2/2014 11:25:03 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-013
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.6	1.1	2.5	J	mg/L	50	1/2/2014 11:46:26 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-014
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.37	0.031	0.10		mg/L	1	1/2/2014 10:43:38 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-015
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.63	0.11	0.25		mg/L	5	1/2/2014 11:55:48 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-016
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.35	0.031	0.10		mg/L	1	1/2/2014 10:48:22 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-017
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.88	0.45	1.0	J	mg/L	20	1/2/2014 12:10:07 PM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Tank 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 12/30/2013 6:00:00 AM
Lab ID: 1312C57-018
Matrix: AQUEOUS
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.88	0.031	0.10		mg/L	1	1/2/2014 10:57:58 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457226**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457227**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C57**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1312C57-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457244**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.94	0.050	0.5000	0.4257	102	75	125			

Sample ID	**1312C57-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Out of Walnut Filter**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457245**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.96	0.050	0.5000	0.4257	107	75	125	2.55	20	

Sample ID	**MB-11044**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457261**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11044**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11044**		RunNo:	**15850**				
Prep Date:	**12/31/2013**	Analysis Date:	**1/2/2014**		SeqNo:	**457262**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.5	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C57 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: **Michelle Garcia** 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 12/30/2013 2:59:39 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? YES
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: Added 5 mL HNO_3 to 005 for acceptable pH. Added 1 mL HNO_3 to 007 and 009 for acceptable pH. MG 12/30/13

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton / Tormey
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1312657	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	Out of Walnut Filters	plastic-1	HNO3	001	X	
12/30/13	6:20	Liquid	Out of Walnut Filters	plastic-1	NEAT	002		X
12/30/13	5:55	Liquid	W-20	plastic-1	HNO3	003	X	
12/30/13	5:55	Liquid	W-20	plastic-1	NEAT	004		X
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	HNO3	005	X	
12/30/13	6:00	Liquid	D-250 Fluid Gas Scrubber	plastic-1	NEAT	006		X
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	HNO3	007	X	
12/30/13	6:20	Liquid	D-2101 Desalter	plastic-1	NEAT	008		X
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	HNO3	009	X	
12/30/13	6:15	Liquid	D-130 Desalter	plastic-1	NEAT	010		X
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	HNO3	011	X	
12/30/13	5:50	Liquid	W-634 outlet	plastic-1	NEAT	012		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widmer	Michelle Garcia	12/30/13	1430

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Aaron Strange / Kevin Newton / Byron Ironmonger

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312057	Total Selenium 6010	TCLP Selenium 1311/6010
12/30/13	6:00	Liquid	T-805	plastic 1	HNO3	013	X	
12/30/13	6:00	Liquid	T-805	plastic-1	NEAT	014		X
12/30/13	6:00	Liquid	DAF	plastic-1	HNO3	015	X	
12/30/13	6:00	Liquid	DAF	plastic-1	NEAT	016		X
12/30/13	6:00	Liquid	Tank 836	plastic 1	HNO3	017	X	
12/30/13	6:00	Liquid	Tank 836	plastic 1	NEAT	018		X

Date	Time	Relinquished by	Received by	Date	Time
12/30/13	10:00	Anthony Widman	Michelle Garcia	12/30/13	1430
		Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401126

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401126**
Date Reported: **1/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/7/2014 5:38:31 PM	11110
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Barium	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Cadmium	ND	0.0020		mg/L	1	1/8/2014 2:57:35 PM	11119
Chromium	ND	0.0060		mg/L	1	1/8/2014 2:57:35 PM	11119
Lead	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119
Selenium	0.30	0.050		mg/L	1	1/8/2014 2:57:35 PM	11119
Silver	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401126-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/7/2014 6:26:10 PM	11114
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Barium	0.26	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Cadmium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Chromium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Lead	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Selenium	0.23	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Silver	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11110**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459784**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11110**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459785**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID	**1401126-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459787**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0044	0.00020	0.005000	0	87.7	75	125			

Sample ID	**1401126-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11110**	RunNo:	**15950**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459788**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.9	75	125	2.46	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11114**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459793**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11114**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11114**	RunNo:	**15951**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/7/2014**	SeqNo:	**459794**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.8	80	120			
Barium	0.47	0.10	0.5000	0	93.9	80	120			
Cadmium	0.49	0.10	0.5000	0	99.0	80	120			
Chromium	0.48	0.10	0.5000	0	95.6	80	120			
Lead	0.47	0.10	0.5000	0	95.0	80	120			
Selenium	0.49	0.10	0.5000	0	97.4	80	120			
Silver	ND	0.10	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11119**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**	RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**	SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.8	80	120			
Barium	0.47	0.020	0.5000	0	93.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	99.0	80	120			
Chromium	0.48	0.0060	0.5000	0	95.6	80	120			
Lead	0.47	0.0050	0.5000	0	95.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.4	80	120			
Silver	0.099	0.0050	0.1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401126 RcptNo: 1

Received by/date: MG 01/06/14

Logged By: Michelle Garcia 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: Michelle Garcia 1/6/2014 2:19:46 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401126	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
1/6/14	10:00	Anthony Widmer	[illegible]	1/06/14 1410	(1) Totals method 6010
Date:	Time:	Relinquished by:	Received by:	Date Time	(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401138

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401138**
Date: **1/9/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Notes Regarding the total selenium analysis for the following samples:
T-805 (FLDC)
836 TK
D-250 Flu Gas Scrubber

The above samples had elevated recoveries for the internal standards.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.7	0.22	0.50		mg/L	10	1/8/2014 3:01:31 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:55:00 AM
Lab ID: 1401138-002 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	6.0	0.31	1.0		mg/L	10	1/8/2014 3:11:03 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 (FLDC)
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-003 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.2	0.45	1.0		mg/L	20	1/8/2014 3:13:39 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-004 **Matrix:** AQUEOUS

Client Sample ID: T-805 (FLDC) TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.17	0.031	0.10		mg/L	1	1/8/2014 3:15:59 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-005 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.27	0.022	0.050		mg/L	1	1/8/2014 3:17:08 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-006 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut filters TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.20	0.031	0.10		mg/L	1	1/8/2014 3:22:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-007 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	1.0	0.45	1.0		mg/L	20	1/8/2014 3:25:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 TK TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-008 **Matrix:** AQUEOUS **Received Date:** 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.56	0.031	0.10		mg/L	1	1/8/2014 3:24:24 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-009
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	0.34	0.022	0.050		mg/L	1	1/8/2014 3:27:55 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-010 **Matrix:** AQUEOUS

Client Sample ID: Out of DAF TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.18	0.031	0.10		mg/L	1	1/8/2014 3:29:05 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-011
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	4.5	0.11	0.25		mg/L	5	1/8/2014 3:43:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:25:00 AM
Lab ID: 1401138-012
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.3	0.15	0.50		mg/L	5	1/8/2014 3:45:19 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-013
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	ND	0.45	1.0		mg/L	20	1/8/2014 3:46:32 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:00:00 AM
Lab ID: 1401138-014
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	0.19	0.031	0.10		mg/L	1	1/8/2014 3:48:02 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401138-015 **Matrix:** AQUEOUS

Client Sample ID: D 130 Outlet Desalter
Collection Date: 1/6/2014 6:20:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	3.0	0.11	0.25		mg/L	5	1/8/2014 3:54:46 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D 130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 6:20:00 AM
Lab ID: 1401138-016
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	3.2	0.15	0.50		mg/L	5	1/8/2014 4:05:54 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-017
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **ELS**	
Selenium	5.4	0.22	0.50		mg/L	10	1/8/2014 4:07:16 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 364 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/6/2014 5:50:00 AM
Lab ID: 1401138-018
Matrix: AQUEOUS
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **ELS**	
Selenium	5.8	0.31	1.0		mg/L	10	1/8/2014 4:08:40 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459944**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**					
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459945**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.49	0.10	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401138**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11119**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459892**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11119**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11119**		RunNo:	**15959**				
Prep Date:	**1/7/2014**	Analysis Date:	**1/8/2014**		SeqNo:	**459893**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401138 RcptNo: 1

Received by/date:

Logged By: **Michelle Garcia** 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 1/6/2014 3:32:30 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☐	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
	Added 5 mL HNO3 to 013 for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 8 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? yes
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: MK

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 10°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	5:55	Liquid	W-20	plastic-1	HNO3	-001	X	
1/6/14	5:55	Liquid	W-20	plastic-1	NEAT	-002		X
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	HNO3	-003	X	
1/6/14	6:00	Liquid	T-805 (FLOC)	plastic-1	NEAT	-004		X
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	HNO3	-005	X	
1/6/14	6:00	Liquid	Out of walnut filters	plastic-1	NEAT	-006		X
1/6/14	6:00	Liquid	836 TK	plastic-1	HNO3	-007	X	
1/6/14	6:00	Liquid	836 TK	plastic-1	NEAT	-008		X
1/6/14	6:00	Liquid	Out of DAF	plastic-1	HNO3	-009	X	
1/6/14	6:00	Liquid	Out of DAF	plastic-1	NEAT	-010		X
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	HNO3	-011	X	
1/6/14	6:25	Liquid	D2101 Inlet Distiller	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/6/14	10:00	Anthony Widmen			
				01/06/14	1410

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401138	Total Selenium 6010	TCLP Selenium 1311/6010
1/6/14	10:20	Liquid	D250 Flu Gas Scrubber	plastic	HNO3	-013	X	
1/6/14	10:00	Liquid	D250 Flu Gas Scrubber	plastic	NEAT	-014		X
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	HNO3	-015	X	
1/6/14	10:20	Liquid	D130 outlet Desalter	plastic	NEAT	-016		X
1/6/14	5:50	Liquid	634 outlet	plastic	HNO3	-017	X	
1/6/14	5:50	Liquid	634 outlet	plastic	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date Time
1/6/14	10:00			01/06/14 1410
Date:	Time:	Relinquished by:	Received by:	Date Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 21, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401508

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401508**
Date Reported: **1/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **TES**	
Mercury	ND	0.00020		mg/L	1	1/18/2014 11:49:50 AM	11287
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.036	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Barium	0.029	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Cadmium	ND	0.0020		mg/L	1	1/15/2014 3:44:35 PM	11233
Chromium	ND	0.0060		mg/L	1	1/15/2014 3:44:35 PM	11233
Lead	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233
Selenium	0.35	0.050		mg/L	1	1/15/2014 3:44:35 PM	11233
Silver	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401508-002 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **TES**	
Mercury	ND	0.020		mg/L	1	1/18/2014 12:51:48 PM	11288
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Barium	0.10	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Cadmium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Chromium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Lead	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Selenium	0.31	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Silver	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11287**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465495**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11287**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11287**	RunNo:	**16156**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**465496**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11288**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466007**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11288**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11288**	RunNo:	**16175**					
Prep Date:	**1/18/2014**	Analysis Date:	**1/18/2014**	SeqNo:	**466008**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463359** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.10	0.5000	0	103	80	120			
Barium	0.46	0.10	0.5000	0	92.9	80	120			
Cadmium	0.49	0.10	0.5000	0	98.5	80	120			
Chromium	0.46	0.10	0.5000	0	92.5	80	120			
Lead	0.49	0.10	0.5000	0	98.7	80	120			
Selenium	0.51	0.10	0.5000	0	101	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1401508-001AMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463365**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0.03565	106	75	125			
Barium	0.48	0.020	0.5000	0.02901	90.5	75	125			
Cadmium	0.50	0.0020	0.5000	0	100	75	125			
Chromium	0.46	0.0060	0.5000	0	91.5	75	125			
Lead	0.49	0.0050	0.5000	0	98.9	75	125			
Selenium	0.86	0.050	0.5000	0.3543	100	75	125			
Silver	0.10	0.0050	0.1000	0	102	75	125			

Sample ID	**1401508-001AMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**Effluent to Wells**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463366**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.56	0.020	0.5000	0.03565	104	75	125	1.85	20	
Barium	0.49	0.020	0.5000	0.02901	92.6	75	125	2.15	20	
Cadmium	0.50	0.0020	0.5000	0	100	75	125	0.0540	20	
Chromium	0.46	0.0060	0.5000	0	91.4	75	125	0.105	20	
Lead	0.49	0.0050	0.5000	0	97.9	75	125	1.02	20	
Selenium	0.85	0.050	0.5000	0.3543	99.8	75	125	0.336	20	
Silver	0.10	0.0050	0.1000	0	104	75	125	2.05	20	

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463376**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**				
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463377**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.5	80	120			
Chromium	0.46	0.0060	0.5000	0	92.5	80	120			
Lead	0.49	0.0050	0.5000	0	98.7	80	120			
Selenium	0.51	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401508 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:22:11 PM

Reviewed By: IO 01/13/2014 IO 01/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401508	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/13/14	6:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/13/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/13/14	12:00	Anthony Widman		01/13/14	14:10
		Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401507

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1401507**
Date: **1/20/2014**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Remarks regarding Total selenium for sample "TK 836":
Sample "TK 836" is being reported with an elevated internal standard.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-001 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.1	1.1	2.5	J	mg/L	50	1/15/2014 3:57:59 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: T-805 FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-002
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.34	0.031	0.10		mg/L	1	1/15/2014 3:50:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401507-003 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/13/2014 6:00:00 AM
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.37	0.022	0.050		mg/L	1	1/15/2014 3:55:08 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-004
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.35	0.031	0.10		mg/L	1	1/15/2014 4:03:26 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-005
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.45	1.0		mg/L	20	1/15/2014 4:12:16 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-006
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.0	0.15	0.50		mg/L	5	1/15/2014 4:14:38 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-007
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.1	0.11	0.25		mg/L	5	1/15/2014 4:15:44 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-008
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.5	0.15	0.50		mg/L	5	1/15/2014 4:26:49 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-009
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.41	0.022	0.050		mg/L	1	1/15/2014 4:18:17 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:00:00 AM
Lab ID: 1401507-010 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.33	0.031	0.10		mg/L	1	1/15/2014 4:28:24 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-011
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	5.3	0.22	0.50		mg/L	10	1/15/2014 4:34:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:15:00 AM
Lab ID: 1401507-012
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.7	0.31	1.0		mg/L	10	1/15/2014 4:36:21 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-013
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	18	11	25	J	mg/L	500	1/15/2014 4:45:32 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:25:00 AM
Lab ID: 1401507-014
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	18	1.5	5.0		mg/L	50	1/15/2014 4:51:22 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-015
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.22	0.50		mg/L	10	1/15/2014 4:52:41 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Oulet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:10:00 AM
Lab ID: 1401507-016 **Matrix:** AQUEOUS **Received Date:** 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	5.4	0.31	1.0		mg/L	10	1/15/2014 4:54:07 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-017
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.7	0.11	0.25		mg/L	5	1/15/2014 5:02:37 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet DesalterTCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/13/2014 6:30:00 AM
Lab ID: 1401507-018
Matrix: AQUEOUS
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	3.0	0.15	0.50		mg/L	5	1/15/2014 5:04:00 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463358**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.10								

Sample ID	**LCS-11233**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**		RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**		SeqNo:	**463359**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.51	0.10	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401507**

20-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11233**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463376**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11233**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11233**	RunNo:	**16087**					
Prep Date:	**1/15/2014**	Analysis Date:	**1/15/2014**	SeqNo:	**463377**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	0.050	0.5000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401507 RcptNo: 1

Received by/date: 01/13/14

Logged By: **Lindsay Mangin** 1/13/2014 2:10:00 PM

Completed By: **Lindsay Mangin** 1/13/2014 3:09:26 PM

Reviewed By: IO 01/13/2014

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☑	~~No~~ ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

01/13/14

of preserved bottles checked for pH: 9 (<2 or >12 unless noted)

Adjusted? YES

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: -013 FOR METALS ANALYSIS: ADDED 2mL HNO_3 TO -013A AND 1mL HNO_3 TO -017A FOR ACCEPTABLE PH. 01/13/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	HNO3	-001	X	
1/13/14	6:00	Liquid	T-805 FLOC	plastic-1	NEAT	-002		X
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	HNO3	-003	X	
1/13/14	6:00	Liquid	out of Walnut Filters	plastic-1	NEAT	-004		X
1/13/14	6:00	Liquid	TK 830	plastic-1	HNO3	-005	X	
1/13/14	6:00	Liquid	TK 830	plastic-1	NEAT	-006		X
1/13/14	6:30	Liquid	D-130 after Desalter	plastic-1	HNO3	-007	X	
1/13/14	6:30	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-008		X
1/13/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/13/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/13/14	6:15	Liquid	W-20	plastic-1	HNO3	-011	X	
1/13/14	6:15	Liquid	W-20	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/13/14	10:00	Anthony Widman		01/13/14	1410
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.9

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401507	Total Selenium 6010	TCLP Selenium 1311/6010
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-013	X	
1/13/14	6:25	Liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-014		X
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	HNO3	-015	X	
1/13/14	6:10	Liquid	W-634 Outlet	Plastic-1	NEAT	-016		X
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	HNO3	-017	X	
1/13/14	6:30	Liquid	D-2101 Outlet Desalter	Plastic-1	NEAT	-018		X

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
1/13/14	10:00	Anthony Widman		01/13/14	12:10	Expedited turn-around and results sent to Mike Holder
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 24, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401813

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401813**
Date Reported: **1/24/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **ELS**	
Mercury	ND	0.00020		mg/L	1	1/23/2014 8:39:48 AM	11339
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.030	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Barium	0.026	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Cadmium	ND	0.0020		mg/L	1	1/23/2014 11:17:28 AM	11353
Chromium	ND	0.0060		mg/L	1	1/23/2014 11:17:28 AM	11353
Lead	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353
Selenium	0.51	0.050		mg/L	1	1/23/2014 11:17:28 AM	11353
Silver	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-002 **Matrix:** AQUEOUS **Received Date:** 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **ELS**	
Mercury	ND	0.020		mg/L	1	1/24/2014 7:50:29 AM	11362
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Barium	0.12	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Cadmium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Chromium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Lead	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Selenium	0.51	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Silver	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11339**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468302**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11339**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468303**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11362**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**				
Client ID:	**PBW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469084**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11362**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**LCSW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469085**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Sample ID	**1401813-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469089**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.3	75	125			

Sample ID	**1401813-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469090**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.10	0.5000	0	92.5	80	120			
Barium	0.46	0.10	0.5000	0	91.8	80	120			
Cadmium	0.47	0.10	0.5000	0	93.1	80	120			
Chromium	0.45	0.10	0.5000	0	90.8	80	120			
Lead	0.45	0.10	0.5000	0	90.9	80	120			
Selenium	0.45	0.10	0.5000	0	90.2	80	120			
Silver	ND	0.10	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468523**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468524**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	92.5	80	120			
Barium	0.46	0.020	0.5000	0	91.8	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.1	80	120			
Chromium	0.45	0.0060	0.5000	0	90.8	80	120			
Lead	0.45	0.0050	0.5000	0	90.9	80	120			
Selenium	0.45	0.050	0.5000	0	90.2	80	120			
Silver	0.095	0.0050	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401813 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:46:48 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401813	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widman	Ashley Gallegos	01/20	1507

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 28, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401811

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/20/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 24th, 2014.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401811**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.9	0.11	0.25		mg/L	5	1/23/2014 11:54:04 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:25:00 AM
Lab ID: 1401811-002
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	3.0	0.15	0.50		mg/L	5	1/23/2014 11:55:14 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-003
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.11	0.25		mg/L	5	1/23/2014 12:00:39 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 Outlet Desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:20:00 AM
Lab ID: 1401811-004
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	2.5	0.15	0.50		mg/L	5	1/23/2014 12:05:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-005
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.6	0.45	1.0		mg/L	20	1/23/2014 12:07:55 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of TK 836 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-006
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.71	0.031	0.10		mg/L	1	1/23/2014 11:32:45 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-007
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.54	0.022	0.050		mg/L	1	1/23/2014 11:33:52 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-008
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:35:03 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-009
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	0.75	0.045	0.10		mg/L	2	1/23/2014 12:09:23 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-010
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.57	0.031	0.10		mg/L	1	1/23/2014 11:38:32 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-011
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	1.0	0.22	0.50		mg/L	10	1/23/2014 12:10:31 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of FLOC TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-012
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.55	0.031	0.10		mg/L	1	1/23/2014 11:41:18 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-013
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.8	0.11	0.25		mg/L	5	1/23/2014 12:14:24 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 5:55:00 AM
Lab ID: 1401811-014
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.5	0.31	1.0		mg/L	10	1/23/2014 12:15:36 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-015
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	ND	4.5	10		mg/L	200	1/23/2014 12:26:20 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:10:00 AM
Lab ID: 1401811-016
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	0.098	0.031	0.10	J	mg/L	1	1/23/2014 11:50:30 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-017
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA 6010B: TOTAL METALS								Analyst: **JLF**
7782-49-2	Selenium	4.9	0.22	0.50		mg/L	10	1/23/2014 12:27:30 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401811-018
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 6010B: TCLP METALS								Analyst: **JLF**
7782-49-2	Selenium	5.2	0.31	1.0		mg/L	10	1/23/2014 12:28:41 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**
28-Jan-14

Client: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.10	0.5000	0	90.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401811**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468523**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11353**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11353**		RunNo:	**16253**				
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**		SeqNo:	**468524**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.45	0.050	0.5000	0	90.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401811 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:34:52 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☑
9. Was preservative added to bottles? Yes ☑ No ☑ NA ☐

- metals analysis: Added 1mL HNO_3 to -003A, 2mL HNO_3 to -015A for acceptable pH.

10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: 9 (<2 or >12 unless noted) 01/21/14
Adjusted? YES
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	HNO3	-001	X	
1/20/14	6:25	Liquid	D-2101 outlet Desalter	plastic-1	NEAT	-002		X
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	HNO3	-003	X	
1/20/14	6:20	Liquid	D-130 outlet Desalter	plastic-1	NEAT	-004		X
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	HNO3	-005	X	
1/20/14	6:00	Liquid	out of TIC 836	plastic-1	NEAT	-006		X
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	HNO3	-007	X	
1/20/14	6:00	Liquid	out of Walnut filters	plastic-1	NEAT	-008		X
1/20/14	6:00	Liquid	out of DAF	plastic-1	HNO3	-009	X	
1/20/14	6:00	Liquid	out of DAF	plastic-1	NEAT	-010		X
1/20/14	6:00	Liquid	out of FLOC	plastic-1	HNO3	-011	X	
1/20/14	6:00	Liquid	out of FLOC	plastic-1	NEAT	-012		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401811	Total Selenium 6010	TCLP Selenium 1311/6010
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	HNO3	-013	X	
1/20/14	5:55	Liquid	W-634 outlet	plastic-1	NEAT	-014		X
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	HNO3	-015	X	
1/20/14	6:10	Liquid	D-250 Flu Gas Scrubber	plastic-1	NEAT	-016		X
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	HNO3	-017	X	
1/20/14	6:00	Liquid	W-20 outlet	plastic-1	NEAT	-018		X

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks: Expedited turn-around and results sent to Mike Holder
1/20/14	10:00	Anthony Widmer	Ashley Gallegos	01/20/14	1507	
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
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TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A62

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401A62**
Date Reported: **1/31/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-001
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.00020		mg/L	1	1/30/2014 12:31:11 PM	11463
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.037	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Barium	0.026	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Cadmium	ND	0.0020		mg/L	1	1/30/2014 6:46:11 AM	11461
Chromium	ND	0.0060		mg/L	1	1/30/2014 6:46:11 AM	11461
Lead	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461
Selenium	0.52	0.050		mg/L	1	1/30/2014 12:43:22 PM	11461
Silver	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-002 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **DBD**	
Mercury	ND	0.020		mg/L	1	1/30/2014 10:50:53 AM	11464
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Barium	0.15	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Cadmium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Chromium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Lead	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Selenium	0.49	0.10		mg/L	1	1/30/2014 12:44:37 PM	11461
Silver	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11463**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473049**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11463**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473050**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11464**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473005**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11464**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473006**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472329**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472330**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.10	0.5000	0	86.2	80	120			
Barium	0.42	0.10	0.5000	0	84.4	80	120			
Cadmium	0.43	0.10	0.5000	0	85.1	80	120			E
Chromium	0.42	0.10	0.5000	0	84.5	80	120			E
Lead	0.42	0.10	0.5000	0	84.1	80	120			E
Silver	ND	0.10	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472418**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Silver	ND	0.0050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472419**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.020	0.5000	0	86.2	80	120			
Barium	0.42	0.020	0.5000	0	84.4	80	120			
Cadmium	0.43	0.0020	0.5000	0	85.1	80	120			
Chromium	0.42	0.0060	0.5000	0	84.5	80	120			
Lead	0.42	0.0050	0.5000	0	84.1	80	120			
Silver	0.087	0.0050	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A62 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:37:54 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A02	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/27/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	01/27/14	14:50

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A61

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-001 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	2.0	0.11	0.25		mg/L	5	1/30/2014 11:50:25 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-2101 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-002
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	2.0	0.15	0.50		mg/L	5	1/30/2014 11:51:40 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-003 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.8	0.11	0.25		mg/L	5	1/30/2014 12:04:46 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-130 outlet desalter TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-004
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	1.4	0.15	0.50		mg/L	5	1/30/2014 12:05:59 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-005 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.2	0.11	0.25		mg/L	5	1/30/2014 12:07:11 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-20 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-006 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.2	0.15	0.50		mg/L	5	1/30/2014 12:08:26 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-007
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	17	4.5	10		mg/L	200	1/30/2014 12:11:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: D-250 Flu Gas Scrubber TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:05:00 AM
Lab ID: 1401A61-008
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	10	0.31	1.0		mg/L	10	1/30/2014 12:12:47 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-009
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.55	0.022	0.050		mg/L	1	1/30/2014 12:18:04 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of DAF TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-010 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.58	0.062	0.20		mg/L	2	1/30/2014 12:26:49 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-011 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.2	0.22	0.50		mg/L	10	1/30/2014 3:36:34 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out Of Floc TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A61-012 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.43	0.031	0.10		mg/L	1	1/30/2014 12:22:38 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401A61-013 **Matrix:** AQUEOUS

Client Sample ID: Out of Walnut Filters
Collection Date: 1/27/2014 6:20:00 AM
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	0.51	0.022	0.050		mg/L	1	1/30/2014 12:25:32 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of Walnut Filters TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:20:00 AM
Lab ID: 1401A61-014
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.51	0.031	0.10		mg/L	1	1/30/2014 12:30:56 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-015
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	1.9	1.1	2.5	J	mg/L	50	1/30/2014 12:38:25 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Out of T-801 TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:15:00 AM
Lab ID: 1401A61-016
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	0.15	0.031	0.10		mg/L	1	1/30/2014 12:39:40 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-017
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 6010B: TOTAL METALS							Analyst: **JLF**	
Selenium	4.0	0.11	0.25		mg/L	5	1/30/2014 12:40:55 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: W-634 Outlet TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 8:55:00 AM
Lab ID: 1401A61-018
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: TCLP METALS							Analyst: **JLF**	
Selenium	4.3	0.15	0.50		mg/L	5	1/30/2014 12:42:08 PM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Sample ID	**1401A61-002AMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472814**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.5	0.50	0.5000	2.006	93.8	75	125			

Sample ID	**1401A61-002AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**D-2101 outlet desalt**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472815**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.6	0.50	0.5000	2.006	121	75	125	5.32	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A61**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.023	0.050								J

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A61 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:22:04 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? Yes
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

17. Additional remarks: For -001, 2mL HNO3 was added for acceptable pH. Added 11mL HNO3 to -007 for acceptable pH. Added 4mL HNO3 to -003 for acceptable pH. mg 01/27/14

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ **Rush** **Next Day**

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A21	Total Selenium 6010	TCLP Selenium 1311/6010
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	HNO3	-001	X	
1/27/14	6:20	liquid	D-2101 outlet Desalter	Plastic-1	NEAT	-002		X
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	HNO3	-003	X	
1/27/14	6:15	liquid	D-130 outlet Desalter	Plastic-1	NEAT	-004		X
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	HNO3	-005	X	
1/27/14	8:55	liquid	W-20 Outlet	Plastic-1	NEAT	-006		X
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	HNO3	-007	X	
1/27/14	6:05	liquid	D-250 Flu Gas Scrubber	Plastic-1	NEAT	-008		X
1/27/14	6:00	liquid	Out of DAF	Plastic-1	HNO3	-009	X	
1/27/14	6:00	liquid	Out of DAF	Plastic-1	NEAT	-010		X
1/27/14	6:00	liquid	Out of Floc	Plastic-1	HNO3	-011	X	
1/27/14	6:00	liquid	Out of Floc	Plastic-1	NEAT	-012		X

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	14:50

Date	Time	Relinquished by	Received by	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401141	Analysis Request: Total Selenium 6010	Analysis Request: TCLP Selenium 1311/6010
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	HNO3	-001013	X	
1/27/14	6:20	liquid	Out of Walnut Filters	Plastic-1	NEAT	-002014		X
1/27/14	6:15	liquid	Out of T-801	Plastic-1	HNO3	-003015	X	
1/27/14	6:15	liquid	Out of T-801	Plastic-1	NEAT	-004016		X
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	HNO3	-005017	X	
1/27/14	8:55	liquid	W-634 Outlet	Plastic-1	NEAT	-006018		X

01/27/14

Date	Time	Relinquished by	Received by	Date	Time
1/27/14	10:00	Jerry Sosa			
				01/27/14	1450

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment B:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.84
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27
12/26/2013	T-801 Effluent to Wells	Hall	0.27	-	-	0.27
12/30/2013	T-836 Effluent to Wells	Hall	0.33	-	-	0.33
1/6/2014	T-836 Effluent to Wells	Hall	0.23	-	-	0.23
1/9/2014	T-801 Effluent to Wells	Hall	0.29	-	-	0.29
1/13/2014	T-801 Effluent to Wells	Hall	0.31	-	-	0.31
1/13/2014	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
1/13/2014	T-801 Effluent to Wells	Hall	0.51	-	-	0.51
1/13/2014	T-801 Effluent to Wells	Hall	0.23	-	-	0.23
1/13/2014	T-801 Effluent to Wells	Hall	0.49	-	-	0.49

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through January 13, 2014; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Laboratory Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		<0.1 (ND)		-	-	-		-	0.85		0.91		0.90	0.90	0.90	-	-		-	-		-	-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		<1.0 (ND)		-	-	0.39		-	0.75		0.65		0.74	0.74	0.74	-	0.46		-	-		-	-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	0.00	0.00	0.00	-	0.53	0.50	-	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		<1.0 (ND)		-	-	0.39		-	0.79		0.75		0.79	0.79	0.79	-	0.43		-	-		-	-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	0.00	0.00	0.00	-	0.41	0.42	-	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		<0.1 (ND)		-	-	0.11		-	0.74		0.58		0.61	0.61	0.61	-	0.39		-	-		-	-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	0.10	0.10	-	-	<0.050 (ND)	0.11	-	0.82	0.78	0.65	0.61	0.00	0.00	0.00	-	0.37	0.38	-	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	0.71	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	0.83	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	0.75	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	0.84	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		10.00		-	-	<0.2 (ND)		-	0.99		0.94		0.95	0.95	0.95	-	0.37		-	-		-	-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	9.42	9.71	-	-	<0.202 (ND)	-	-	0.98	0.99	0.97	0.95	0.00	0.00	0.00	-	0.58	0.48	-	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		14.00		-	-	<0.2 (ND)		-	0.83		0.88		0.89	0.89	0.89	-	0.40		-	1.70		-	3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	0.00	0.00	0.00	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.23	1.23	1.23	1.20	0.33		-	3.30		-	4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	0.00	0.00	0.00	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		14.00		-	-	0.60		-	0.89		1.10		1.13	1.13	1.13	-	0.40		-	2.90		-	3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	0.00	0.00	0.00	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	-	H302670
11/2/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/3/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	0.98	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	-	1311082

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Laboratory Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	-	-	-	1.20	-	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	1.20	1.20	1.20	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	1.10	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	1.10	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	-	1311402
11/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/13/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	0.99	0.99	0.99	-	-	-	-	-	-	-	-	-	-	-	1311625
11/15/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	1.00	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.86	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.74	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	10.00	10.00	-	-	-	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.76	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	-	1312046 1312047

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator		DAF Bin#S. Brotheres 24	RO Reject	Laboratory Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.7	3.7	3.8	3.8	-	-	12	12	0.41	1.1	-	-	-	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.6	4.6	4.4	4.4	-	-	11	11	1.6	3.1	-	-	-	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.2	4.2	4.1	4.1	-	-	7.9	7.9	1.6	1.9	-	-	-	0.11	0.11	-	-	-	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5	5	4.8	4.8	-	-	17	17	2	2.3	-	-	-	-	-	0.10	0.10	-	-	-	0.27	0.32	0.32	-	-	-	-	-	-	<0.5	<0.5	1312B14 1312B16
12/26/2013	Hall Environmental	6.10	6.10	6.00	6.00	-	-	3.20	3.20	2.60	3.30	-	-	-	0.55	0.55	-	-	-	-	-	0.27	0.28	0.28	-	-	-	-	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.30	0.31	0.34	-	-	-	-	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.90	3.90	5.70	5.70	-	-	15.00	15.00	1.80	2.60	-	-	-	-	-	0.88	0.88	0.37	0.35	0.34	0.33	-	-	-	-	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.80	5.80	6.00	6.00	-	-	0.19	0.19	3.20	3.30	-	-	-	-	-	0.56	0.56	0.17	0.18	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.90	5.90	5.80	5.80	-	-	17.00	17.00	1.20	2.90	-	-	-	-	-	-	-	0.14	0.21	0.25	0.29	-	-	-	-	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	5.40	5.40	5.70	5.70	-	-	18.00	18.00	1.50	3.00	-	-	-	-	-	1.00	1.00	0.34	0.33	0.35	0.31	-	-	-	-	-	-	-	-	-	-	1401507 1401508
1/13/2014	Hall Environmental	4.50	4.50	4.50	4.50	-	-	0.17	0.17	2.20	3.60	-	-	-	0.64	0.64	-	-	0.18	0.22	0.20	0.24	-	-	-	-	-	-	-	-	-	-	1401682 1401683 1401684
1/13/2014	Hall Environmental	5.50	5.50	5.20	5.20	-	-	0.10	0.10	2.50	3.00	-	-	-	-	-	0.71	0.71	0.55	0.57	0.55	0.51	-	-	-	-	-	-	-	-	-	-	1401811 1401813
1/13/2014	Hall Environmental	4.90	4.90	5.00	5.00	-	-	0.09	0.09	1.7	2.4	-	-	-	-	-	0.72	0.72	0.18	0.19	0.20	0.23	-	-	-	-	-	-	-	-	-	-	1401980 1401981
1/13/2014	Hall Environmental	4.30	4.30	4.20	4.20	-	-	10.00	10.00	1.40	2.00	-	-	-	0.15	0.15	-	-	0.43	0.58	0.51	0.49	-	-	-	-	-	-	-	-	-	-	1401A61 1401A62

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through January 13, 2014; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		0.21		-	-	-		-	0.87		0.90		-	-	-	-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	0.25	0.23	-	-	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		0.07		-	-	0.31		-	0.87		0.73		-	-	-	-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	0.13	0.10	-	-	0.39	0.35	-	0.93	0.90	0.84	0.79	-	-	-	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		0.10		-	-	0.33		-	0.88		0.77		-	-	-	-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	0.16	0.13	-	-	0.52	0.42	-	0.92	0.90	0.88	0.82	-	-	-	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		0.07		-	-	1.10		-	0.91		0.78		-	-	-	-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	0.10	0.09	-	-	1.83	1.47	-	1.11	1.01	0.92	0.85	-	-	-	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	5.10	5.10	-	-	1.20	1.20	-	0.92	0.92	1.00	1.00	-	-	-	-	0.27	-	0.05	-	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	8.70	8.70	-	-	0.94	0.94	-	0.91	0.91	1.10	1.10	-	-	-	-	0.24	-	0.03	-	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	9.50	9.50	-	-	0.54	0.54	-	1.10	1.10	1.20	1.20	-	-	-	-	0.26	-	0.05	-	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	6.60	6.60	-	-	0.05	0.05	-	0.91	0.91	0.85	0.85	-	-	-	-	0.21	-	0.08	-	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		3.40		-	-	0.15		-	0.84		1.10		-	-	-	-	1.40	-	0.09	-	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	5.38	4.39	-	-	<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	-	-	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		5.40		-	-	0.11		-	0.98		0.95		-	-	-	-	0.26	-	0.05	-	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	8.23	6.82	-	-	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	-	-	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		1.50		-	-	0.06		-	1.20		1.20		-	-	-	0.88	0.29	-	0.13	-	0.14	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	4.24	2.87	-	-	<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	-	-	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		3.90		-	-	0.31		-	0.97		1.10		-	-	-	-	0.28	-	0.30	-	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	5.36	4.63	-	-	0.33	0.32	-	0.62	0.79	0.85	0.97	-	-	-	-	0.24	-	2.58	-	2.92	-	H302670
11/2/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/3/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	-	-	-	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	-	-	-	0.51	-	-	-	-	-	-	1311156 1311209

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	-	-	-	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	-	-	-	M3259
11/13/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-	-	-	-	-			1311625
11/15/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	-	-	0.43	-	-	0.72	0.72	-	-	-	0.59	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	-	-	-	-	0.36	0.65	0.65	0.66	0.66	-	-	-	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-	-	-	-	-	0.50	0.50	-	0.66	0.66	-	-	-	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	7.90	7.90	-	-	-	-	-	-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	7.50	7.50	-	-	-	-	0.37	0.63	0.63	0.82	0.82	-	-	-	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter Outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		T-805 Eff.	DAF Eff.	Walnut Filter Eff.	Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 Overhead Stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	9.9	9.90	1.50	2.20	-	-	-	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.7	3.70	3.4	3.4	-	-	11	11	0.44	0.91	-	-	-	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.2	4.2	4.2	4.2	-	-	9.4	9.4	1.80	2.50	-	-	-	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.9	3.9	3.9	3.9	-	-	6.4	6.4	1.50	1.70	-	-	-	0.99	0.99	-	-	-	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.8	4.8	4.6	4.6	-	-	14	14	1.40	2.10	-	-	-	-	-	1.1	1.1	-	-	-	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16
12/26/2013	Hall Environmental	5.8	5.8	5.7	5.7	-	-	3.0	3.0	2.60	3.00	-	-	-	1.3	1.3	-	-	-	-	-	0.38	0.33	0.33	-	-	-	-	1312B62 1312B63
12/27/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	0.38	0.37	0.38	-	-	-	-	-	-	1312C01
12/30/2013	Hall Environmental	3.9	3.9	5.9	5.9	-	-	7.3	7.3	0.97	2.30	-	-	-	-	-	0.88	0.88	1.60	0.63	0.43	0.33	-	-	-	-	-	-	1312C57 1312C58
1/6/2014	Hall Environmental	5.4	5.4	5.7	5.7	-	-	<0.45	<0.45	3.00	4.50	-	-	-	-	-	1.0	1.0	1.20	0.34	0.27	0.30	-	-	-	-	-	-	1401138 1401126
1/9/2014	Hall Environmental	5.6	5.6	5.6	5.6	-	-	16.0	16.0	2.00	2.90	-	-	-	-	-	-	-	1.80	0.42	0.43	0.43	-	-	-	-	-	-	1401363 1401360
1/13/2014	Hall Environmental	4.00	4.00	5.30	5.30	-	-	18.00	18.00	1.10	2.70	-	-	-	-	-	1.20	1.20	2.1	0.41	0.37	0.35	-	-	-	-	-	-	1401507 1401508
1/13/2014	Hall Environmental	3.70	3.70	3.20	3.20	-	-	<5	<5	2.30	3.40	-	-	-	3.70	3.70	-	-	1.60	0.25	0.20	0.26	-	-	-	-	-	-	1401682 1401683 1401684
1/13/2014	Hall Environmental	4.80	4.80	4.90	4.90	-	-	<4.5	<4.5	2.50	2.90	-	-	-	-	-	1.60	1.60	1.00	0.75	0.54	0.51	-	-	-	-	-	-	1401811 1401813
1/13/2014	Hall Environmental	4.60	4.60	4.00	4.00	-	-	<0.22	<0.22	1.70	2.20	-	-	-	-	-	0.68	0.68	1.40	0.24	0.21	0.23	-	-	-	-	-	-	1401980 1401981
1/13/2014	Hall Environmental	4.00	4.00	4.20	4.20	-	-	17.00	17.00	1.80	2.00	-	-	-	1.90	1.90	-	-	1.20	0.55	0.51	0.52	-	-	-	-	-	-	1401A61 1401A62

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Friday, January 31, 2014 11:28 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Effluent Results 1/20/14; 1/23/14; 1/27/14
Attachments: Rpt_1401A62_Final_v1.pdf; Rpt_1401813_Final_v1.pdf; Rpt_1401980_Final_v1.pdf

Scott/Carl – attached are 3 analytical reports for selenium in effluent. We are still well below TCLP limits however we saw an increase from previous levels on 1/20, then a decrease to previous levels on 1/23, and then another increase on 1/27. We continue to monitor – not sure why the fluctuation other than we have been increasing rate but don't have that definitively tied to it.

Thanks,
Mike

1/20:

Total = 0.51 mg/L & TCLP = 0.51 mg/L

1/23:

Total = 0.23 mg/L & TCLP = 0.23 mg/L

1/27

Total = 0.52 mg/L & TCLP = 0.49 mg/L

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 31, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401A62

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401A62**
Date Reported: **1/31/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent To Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-001
Matrix: AQUEOUS
Received Date: 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.00020		mg/L	1	1/30/2014 12:31:11 PM	11463
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.037	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Barium	0.026	0.020		mg/L	1	1/30/2014 6:46:11 AM	11461
Cadmium	ND	0.0020		mg/L	1	1/30/2014 6:46:11 AM	11461
Chromium	ND	0.0060		mg/L	1	1/30/2014 6:46:11 AM	11461
Lead	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461
Selenium	0.52	0.050		mg/L	1	1/30/2014 12:43:22 PM	11461
Silver	ND	0.0050		mg/L	1	1/30/2014 6:46:11 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/27/2014 6:00:00 AM
Lab ID: 1401A62-002 **Matrix:** AQUEOUS **Received Date:** 1/27/2014 2:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **DBD**	
Mercury	ND	0.020		mg/L	1	1/30/2014 10:50:53 AM	11464
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Barium	0.15	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Cadmium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Chromium	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Lead	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461
Selenium	0.49	0.10		mg/L	1	1/30/2014 12:44:37 PM	11461
Silver	ND	0.10		mg/L	1	1/30/2014 6:47:28 AM	11461

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11463**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473049**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11463**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11463**	RunNo:	**16401**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473050**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11464**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473005**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11464**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11464**	RunNo:	**16400**					
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**	SeqNo:	**473006**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472329**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472330**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.10	0.5000	0	86.2	80	120			
Barium	0.42	0.10	0.5000	0	84.4	80	120			
Cadmium	0.43	0.10	0.5000	0	85.1	80	120			E
Chromium	0.42	0.10	0.5000	0	84.5	80	120			E
Lead	0.42	0.10	0.5000	0	84.1	80	120			E
Silver	ND	0.10	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472718**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.10								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: TCLP Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472719**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.10	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A62**

31-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472418**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Silver	ND	0.0050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16378**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472419**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.020	0.5000	0	86.2	80	120			
Barium	0.42	0.020	0.5000	0	84.4	80	120			
Cadmium	0.43	0.0020	0.5000	0	85.1	80	120			
Chromium	0.42	0.0060	0.5000	0	84.5	80	120			
Lead	0.42	0.0050	0.5000	0	84.1	80	120			
Silver	0.087	0.0050	0.1000	0	87.3	80	120			

Sample ID	**MB-11461**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**PBW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472730**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.050								

Sample ID	**LCS-11461**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Metals**				
Client ID:	**LCSW**	Batch ID:	**11461**		RunNo:	**16392**				
Prep Date:	**1/29/2014**	Analysis Date:	**1/30/2014**		SeqNo:	**472731**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	87.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401A62 RcptNo: 1

Received by/date: 01/27/14

Logged By: **Lindsay Mangin** 1/27/2014 2:50:00 PM

Completed By: **Lindsay Mangin** 1/27/2014 3:37:54 PM

Reviewed By: 01/27/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A02	Analysis Request: (1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
1/27/14	6:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/27/14	10:00	Jerry Sosa			
Date:	Time:	Relinquished by:	Received by:	01/27/14	14:50

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 24, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401813

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401813**
Date Reported: **1/24/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-001
Matrix: AQUEOUS
Received Date: 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **ELS**	
Mercury	ND	0.00020		mg/L	1	1/23/2014 8:39:48 AM	11339
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.030	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Barium	0.026	0.020		mg/L	1	1/23/2014 11:17:28 AM	11353
Cadmium	ND	0.0020		mg/L	1	1/23/2014 11:17:28 AM	11353
Chromium	ND	0.0060		mg/L	1	1/23/2014 11:17:28 AM	11353
Lead	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353
Selenium	0.51	0.050		mg/L	1	1/23/2014 11:17:28 AM	11353
Silver	ND	0.0050		mg/L	1	1/23/2014 11:17:28 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/20/2014 6:00:00 AM
Lab ID: 1401813-002 **Matrix:** AQUEOUS **Received Date:** 1/20/2014 3:07:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **ELS**	
Mercury	ND	0.020		mg/L	1	1/24/2014 7:50:29 AM	11362
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Barium	0.12	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Cadmium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Chromium	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Lead	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Selenium	0.51	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353
Silver	ND	0.10		mg/L	1	1/23/2014 11:18:42 AM	11353

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11339**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468302**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11339**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11339**	RunNo:	**16246**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468303**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11362**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**				
Client ID:	**PBW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469084**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11362**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**LCSW**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469085**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Sample ID	**1401813-002AMS**	SampType:	**MS**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469089**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.3	75	125			

Sample ID	**1401813-002AMSD**	SampType:	**MSD**		TestCode:	**MERCURY, TCLP**				
Client ID:	**Effluent to Wells**	Batch ID:	**11362**		RunNo:	**16271**				
Prep Date:	**1/23/2014**	Analysis Date:	**1/24/2014**		SeqNo:	**469090**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	89.9	75	125	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468468** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.10	0.5000	0	92.5	80	120			
Barium	0.46	0.10	0.5000	0	91.8	80	120			
Cadmium	0.47	0.10	0.5000	0	93.1	80	120			
Chromium	0.45	0.10	0.5000	0	90.8	80	120			
Lead	0.45	0.10	0.5000	0	90.9	80	120			
Selenium	0.45	0.10	0.5000	0	90.2	80	120			
Silver	ND	0.10	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401813**

24-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11353**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468523**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-11353**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11353**	RunNo:	**16253**					
Prep Date:	**1/22/2014**	Analysis Date:	**1/23/2014**	SeqNo:	**468524**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	92.5	80	120			
Barium	0.46	0.020	0.5000	0	91.8	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.1	80	120			
Chromium	0.45	0.0060	0.5000	0	90.8	80	120			
Lead	0.45	0.0050	0.5000	0	90.9	80	120			
Selenium	0.45	0.050	0.5000	0	90.2	80	120			
Silver	0.095	0.0050	0.1000	0	95.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401813 RcptNo: 1

Received by/date: 01/20/14

Logged By: Ashley Gallegos 1/20/2014 3:07:00 PM

Completed By: Ashley Gallegos 1/21/2014 8:46:48 AM

Reviewed By: 01/21/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401813	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/20/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time
1/20/14	10:00	Anthony Widman	Ashley Gallegos	01/20	1507

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 28, 2014

Mike Holder

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401980

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/23/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401980**
Date Reported: **1/28/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 1/23/2014 6:00:00 AM
Lab ID: 1401980-001
Matrix: AQUEOUS
Received Date: 1/23/2014 2:37:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JLF**	
Mercury	ND	0.00020		mg/L	1	1/24/2014 2:57:39 PM	11392
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.040	0.020		mg/L	1	1/27/2014 7:30:52 AM	11397
Barium	0.030	0.020		mg/L	1	1/27/2014 7:30:52 AM	11397
Cadmium	ND	0.0020		mg/L	1	1/27/2014 7:30:52 AM	11397
Chromium	ND	0.0060		mg/L	1	1/27/2014 7:30:52 AM	11397
Lead	ND	0.0050		mg/L	1	1/27/2014 7:30:52 AM	11397
Selenium	0.23	0.050		mg/L	1	1/27/2014 7:30:52 AM	11397
Silver	ND	0.0050		mg/L	1	1/27/2014 7:30:52 AM	11397

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Effluent to Wells TCLP
Project: Wastewater Effluent Monitoring
Collection Date: 1/23/2014 6:00:00 AM
Lab ID: 1401980-002 **Matrix:** AQUEOUS **Received Date:** 1/23/2014 2:37:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JLF**	
Mercury	ND	0.020		mg/L	1	1/27/2014 3:49:22 PM	11408
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397
Barium	ND	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397
Cadmium	ND	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397
Chromium	ND	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397
Lead	ND	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397
Selenium	0.23	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397
Silver	ND	0.10		mg/L	1	1/27/2014 7:34:33 AM	11397

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401980**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11392**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11392**	RunNo:	**16292**					
Prep Date:	**1/24/2014**	Analysis Date:	**1/24/2014**	SeqNo:	**469666**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11392**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11392**	RunNo:	**16292**					
Prep Date:	**1/24/2014**	Analysis Date:	**1/24/2014**	SeqNo:	**469667**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID	**1401980-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11392**	RunNo:	**16292**					
Prep Date:	**1/24/2014**	Analysis Date:	**1/24/2014**	SeqNo:	**469669**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.7	75	125			

Sample ID	**1401980-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Effluent to Wells**	Batch ID:	**11392**	RunNo:	**16292**					
Prep Date:	**1/24/2014**	Analysis Date:	**1/24/2014**	SeqNo:	**469670**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	75	125	1.20	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401980**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11408**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11408**	RunNo:	**16326**					
Prep Date:	**1/27/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**470590**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-11408**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11408**	RunNo:	**16326**					
Prep Date:	**1/27/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**470591**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	**1401980-002AMS**	SampType:	**MS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11408**	RunNo:	**16326**					
Prep Date:	**1/27/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**470593**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.0	75	125			

Sample ID	**1401980-002AMSD**	SampType:	**MSD**	TestCode:	**MERCURY, TCLP**					
Client ID:	**Effluent to Wells TC**	Batch ID:	**11408**	RunNo:	**16326**					
Prep Date:	**1/27/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**470594**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.0	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401980**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11397**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**PBW**	Batch ID:	**11397**	RunNo:	**16302**
Prep Date:	**1/24/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**469977** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID	**LCS-11397**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: TCLP Metals**
Client ID:	**LCSW**	Batch ID:	**11397**	RunNo:	**16302**
Prep Date:	**1/24/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**469978** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.0	80	120			
Barium	0.48	0.10	0.5000	0	95.6	80	120			
Cadmium	0.49	0.10	0.5000	0	97.1	80	120			
Chromium	0.48	0.10	0.5000	0	96.0	80	120			
Lead	0.48	0.10	0.5000	0	96.3	80	120			
Selenium	0.48	0.10	0.5000	0	95.9	80	120			
Silver	0.10	0.10	0.1000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401980**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **1401980-001AMS** SampType: **MS** TestCode: **EPA 6010B: Total Metals**

Client ID: **Effluent to Wells** Batch ID: **11397** RunNo: **16302**

Prep Date: **1/24/2014** Analysis Date: **1/27/2014** SeqNo: **469980** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.020	0.5000	0.03957	102	75	125			
Barium	0.51	0.020	0.5000	0.02991	95.6	75	125			
Cadmium	0.49	0.0020	0.5000	0	98.2	75	125			
Chromium	0.48	0.0060	0.5000	0.001930	94.8	75	125			
Lead	0.47	0.0050	0.5000	0	94.6	75	125			
Selenium	0.72	0.050	0.5000	0.2314	97.3	75	125			
Silver	0.10	0.0050	0.1000	0	102	75	125			

Sample ID **1401980-001AMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **Effluent to Wells** Batch ID: **11397** RunNo: **16302**

Prep Date: **1/24/2014** Analysis Date: **1/27/2014** SeqNo: **469981** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.53	0.020	0.5000	0.03957	99.1	75	125	2.98	20	
Barium	0.50	0.020	0.5000	0.02991	94.0	75	125	1.61	20	
Cadmium	0.48	0.0020	0.5000	0	96.9	75	125	1.31	20	
Chromium	0.47	0.0060	0.5000	0.001930	93.5	75	125	1.35	20	
Lead	0.47	0.0050	0.5000	0	93.4	75	125	1.30	20	
Selenium	0.71	0.050	0.5000	0.2314	95.9	75	125	0.927	20	
Silver	0.10	0.0050	0.1000	0	100	75	125	1.80	20	

Sample ID **MB-11397** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **11397** RunNo: **16302**

Prep Date: **1/24/2014** Analysis Date: **1/27/2014** SeqNo: **470031** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-11397** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **11397** RunNo: **16302**

Prep Date: **1/24/2014** Analysis Date: **1/27/2014** SeqNo: **470032** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.0	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401980**

28-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LCS-11397**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID:	**11397**	RunNo:	**16302**					
Prep Date:	**1/24/2014**	Analysis Date:	**1/27/2014**	SeqNo:	**470032**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.020	0.5000	0	95.6	80	120			
Cadmium	0.49	0.0020	0.5000	0	97.1	80	120			
Chromium	0.48	0.0060	0.5000	0	96.0	80	120			
Lead	0.48	0.0050	0.5000	0	96.3	80	120			
Selenium	0.48	0.050	0.5000	0	95.9	80	120			
Silver	0.10	0.0050	0.1000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401980 RcptNo: 1

Received by/date: MG 01/23/14

Logged By: **Michelle Garcia** 1/23/2014 2:37:00 PM Michelle Garcia

Completed By: **Michelle Garcia** 1/23/2014 3:04:43 PM Michelle Garcia

Reviewed By: 01/23/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 0 (<2 or >12 unless noted)

Adjusted? NO

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	
☐ Standard ☐ Level 4 (Full Validation)	Mike Holder
☐ Other _____	Sampler: Kevin Newton
☐ EDD (Type) _____	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.5

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401980	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/23/14	10:00	Liquid	Effluent to Wells	1 Plastic	HNO3	-001	X	
1/23/14	10:00	Liquid	Effluent to Wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/23/14	10:00	Anthony Widman			
Date:	Time:	Relinquished by:	Received by:	Date: 01/23/14	Time: 1437

Remarks:
(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Tuesday, January 21, 2014 10:10 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Effluent Results 1/13/14
Attachments: Rpt_1401508_Final_v1.pdf

Scott/Carl – attached are the effluent results from 1/13/14:

Total = 0.35 mg/L

TCLP = 0.31 mg/L

Thanks!
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 21, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401508

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/13/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401508**
Date Reported: **1/21/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401508-001 **Matrix:** AQUEOUS

Client Sample ID: Effluent to Wells
Collection Date: 1/13/2014 6:00:00 AM
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **TES**	
Mercury	ND	0.00020		mg/L	1	1/18/2014 11:49:50 AM	11287
EPA 6010B: TOTAL METALS						Analyst: **JLF**	
Arsenic	0.036	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Barium	0.029	0.020		mg/L	1	1/15/2014 3:44:35 PM	11233
Cadmium	ND	0.0020		mg/L	1	1/15/2014 3:44:35 PM	11233
Chromium	ND	0.0060		mg/L	1	1/15/2014 3:44:35 PM	11233
Lead	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233
Selenium	0.35	0.050		mg/L	1	1/15/2014 3:44:35 PM	11233
Silver	ND	0.0050		mg/L	1	1/15/2014 3:44:35 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401508-002 **Matrix:** AQUEOUS

Client Sample ID: Effluent to Wells TCLP
Collection Date: 1/13/2014 6:00:00 AM
Received Date: 1/13/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **TES**	
Mercury	ND	0.020		mg/L	1	1/18/2014 12:51:48 PM	11288
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Barium	0.10	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Cadmium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Chromium	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Lead	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Selenium	0.31	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233
Silver	ND	0.10		mg/L	1	1/15/2014 3:48:02 PM	11233

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11287**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **11287**	RunNo: **16156**
Prep Date: **1/18/2014**	Analysis Date: **1/18/2014**	SeqNo: **465495** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-11287**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **11287**	RunNo: **16156**
Prep Date: **1/18/2014**	Analysis Date: **1/18/2014**	SeqNo: **465496** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **1401508-001AMS** SampType: **MS** TestCode: **EPA 6010B: Total Metals**

Client ID: **Effluent to Wells** Batch ID: **11233** RunNo: **16087**

Prep Date: **1/15/2014** Analysis Date: **1/15/2014** SeqNo: **463365** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0.03565	106	75	125			
Barium	0.48	0.020	0.5000	0.02901	90.5	75	125			
Cadmium	0.50	0.0020	0.5000	0	100	75	125			
Chromium	0.46	0.0060	0.5000	0	91.5	75	125			
Lead	0.49	0.0050	0.5000	0	98.9	75	125			
Selenium	0.86	0.050	0.5000	0.3543	100	75	125			
Silver	0.10	0.0050	0.1000	0	102	75	125			

Sample ID **1401508-001AMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **Effluent to Wells** Batch ID: **11233** RunNo: **16087**

Prep Date: **1/15/2014** Analysis Date: **1/15/2014** SeqNo: **463366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.56	0.020	0.5000	0.03565	104	75	125	1.85	20	
Barium	0.49	0.020	0.5000	0.02901	92.6	75	125	2.15	20	
Cadmium	0.50	0.0020	0.5000	0	100	75	125	0.0540	20	
Chromium	0.46	0.0060	0.5000	0	91.4	75	125	0.105	20	
Lead	0.49	0.0050	0.5000	0	97.9	75	125	1.02	20	
Selenium	0.85	0.050	0.5000	0.3543	99.8	75	125	0.336	20	
Silver	0.10	0.0050	0.1000	0	104	75	125	2.05	20	

Sample ID **MB-11233** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **11233** RunNo: **16087**

Prep Date: **1/15/2014** Analysis Date: **1/15/2014** SeqNo: **463376** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-11233** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **11233** RunNo: **16087**

Prep Date: **1/15/2014** Analysis Date: **1/15/2014** SeqNo: **463377** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **LCS-11233**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **11233**	RunNo: **16087**
Prep Date: **1/15/2014**	Analysis Date: **1/15/2014**	SeqNo: **463377** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.5	80	120			
Chromium	0.46	0.0060	0.5000	0	92.5	80	120			
Lead	0.49	0.0050	0.5000	0	98.7	80	120			
Selenium	0.51	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1401508 RcptNo: 1

Received by/date: 01/13/14

Logged By: Lindsay Mangin 1/13/2014 2:10:00 PM

Completed By: Lindsay Mangin 1/13/2014 3:22:11 PM

Reviewed By: IO 01/13/2014 IO 01/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/13/14	6:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/13/14	6:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date	Time	Relinquished by:	Received by:	Date	Time	Remarks:
1/13/14	10:00	Anthony Widman		01/13/14	14:10	(1) Totals method 6010 (2) TCLP 1311/6010
Date:	Time:	Relinquished by:	Received by:	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11233**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **11233**	RunNo: **16087**
Prep Date: **1/15/2014**	Analysis Date: **1/15/2014**	SeqNo: **463358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID **LCS-11233**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **11233**	RunNo: **16087**
Prep Date: **1/15/2014**	Analysis Date: **1/15/2014**	SeqNo: **463359** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.10	0.5000	0	103	80	120			
Barium	0.46	0.10	0.5000	0	92.9	80	120			
Cadmium	0.49	0.10	0.5000	0	98.5	80	120			
Chromium	0.46	0.10	0.5000	0	92.5	80	120			
Lead	0.49	0.10	0.5000	0	98.7	80	120			
Selenium	0.51	0.10	0.5000	0	101	80	120			
Silver	0.10	0.10	0.1000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401508**

21-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11288**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **11288**	RunNo: **16175**
Prep Date: **1/18/2014**	Analysis Date: **1/18/2014**	SeqNo: **466007** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-11288**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **11288**	RunNo: **16175**
Prep Date: **1/18/2014**	Analysis Date: **1/18/2014**	SeqNo: **466008** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Friday, January 10, 2014 7:49 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Effluent Results for 12/30/12 & 1/6/14
Attachments: Rpt_1401126_Final_v1.pdf; Rpt_1312C58_Final_v1.pdf

Scott/Carl -attached are the results for 12/30 (total & TCLP both = 0.33 mg/L) – received today & 1/6 (total = 0.30 mg/L & TCLP = 0.23 mg/L) – received yesterday. Have a good weekend!

Thanks,
Mike

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1401126

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1401126**
Date Reported: **1/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401126-001 **Matrix:** AQUEOUS

Client Sample ID: Effluent to Wells
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/7/2014 5:38:31 PM	11110
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Barium	0.034	0.020		mg/L	1	1/8/2014 2:57:35 PM	11119
Cadmium	ND	0.0020		mg/L	1	1/8/2014 2:57:35 PM	11119
Chromium	ND	0.0060		mg/L	1	1/8/2014 2:57:35 PM	11119
Lead	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119
Selenium	0.30	0.050		mg/L	1	1/8/2014 2:57:35 PM	11119
Silver	ND	0.0050		mg/L	1	1/8/2014 2:57:35 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1401126-002 **Matrix:** AQUEOUS

Client Sample ID: Effluent to Wells TCLP
Collection Date: 1/6/2014 6:00:00 AM
Received Date: 1/6/2014 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/7/2014 6:26:10 PM	11114
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Barium	0.26	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Cadmium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Chromium	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Lead	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Selenium	0.23	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119
Silver	ND	0.10		mg/L	1	1/8/2014 2:59:10 PM	11119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11110**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **11110**	RunNo: **15950**							
Prep Date: **1/7/2014**	Analysis Date: **1/7/2014**	SeqNo: **459784**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-11110**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **11110**	RunNo: **15950**							
Prep Date: **1/7/2014**	Analysis Date: **1/7/2014**	SeqNo: **459785**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID **1401126-001AMS**	SampType: **MS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **Effluent to Wells**	Batch ID: **11110**	RunNo: **15950**							
Prep Date: **1/7/2014**	Analysis Date: **1/7/2014**	SeqNo: **459787**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0044	0.00020	0.005000	0	87.7	75	125			

Sample ID **1401126-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **Effluent to Wells**	Batch ID: **11110**	RunNo: **15950**							
Prep Date: **1/7/2014**	Analysis Date: **1/7/2014**	SeqNo: **459788**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	89.9	75	125	2.46	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11114**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**							
Client ID: **PBW**	Batch ID: **11114**	RunNo: **15951**							
Prep Date: **1/7/2014**	Analysis Date: **1/7/2014**	SeqNo: **459793**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-11114**	SampType: **LCS**	TestCode: **MERCURY, TCLP**							
Client ID: **LCSW**	Batch ID: **11114**	RunNo: **15951**							
Prep Date: **1/7/2014**	Analysis Date: **1/7/2014**	SeqNo: **459794**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.6	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401126**

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11119**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **11119**	RunNo: **15959**
Prep Date: **1/7/2014**	Analysis Date: **1/8/2014**	SeqNo: **459944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID **LCS-11119**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **11119**	RunNo: **15959**
Prep Date: **1/7/2014**	Analysis Date: **1/8/2014**	SeqNo: **459945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	98.8	80	120			
Barium	0.47	0.10	0.5000	0	93.9	80	120			
Cadmium	0.49	0.10	0.5000	0	99.0	80	120			
Chromium	0.48	0.10	0.5000	0	95.6	80	120			
Lead	0.47	0.10	0.5000	0	95.0	80	120			
Selenium	0.49	0.10	0.5000	0	97.4	80	120			
Silver	ND	0.10	0.1000	0	99.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

WO#: **1401126**

Hall Environmental Analysis Laboratory, Inc.

09-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11119**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **11119**	RunNo: **15959**
Prep Date: **1/7/2014**	Analysis Date: **1/8/2014**	SeqNo: **459892** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-11119**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **11119**	RunNo: **15959**
Prep Date: **1/7/2014**	Analysis Date: **1/8/2014**	SeqNo: **459893** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.8	80	120			
Barium	0.47	0.020	0.5000	0	93.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	99.0	80	120			
Chromium	0.48	0.0060	0.5000	0	95.6	80	120			
Lead	0.47	0.0050	0.5000	0	95.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.4	80	120			
Silver	0.099	0.0050	0.1000	0	99.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1401126 RcptNo: 1

Received by/date: MG 01/06/14

Logged By: Michelle Garcia 1/6/2014 2:10:00 PM Michelle Garcia

Completed By: Michelle Garcia 1/6/2014 2:19:46 PM Michelle Garcia

Reviewed By: 01/06/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

[redacted]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	HNO3	-001	X	
1/6/14	10:00	Liquid	Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/6/14	10:00	Anthony Widmer	[illegible]	1/06/14	1410
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010

(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 10, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312C58

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/30/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312C58**
Date Reported: **1/10/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312C58-001 **Matrix:** AQUEOUS

Client Sample ID: 809 Effluent to Wells
Collection Date: 12/30/2013 6:00:00 AM
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	1/1/2014 12:58:17 PM	11042
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.045	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Barium	0.032	0.020		mg/L	1	1/2/2014 10:53:15 AM	11044
Cadmium	ND	0.0020		mg/L	1	1/2/2014 10:53:15 AM	11044
Chromium	ND	0.0060		mg/L	1	1/2/2014 10:53:15 AM	11044
Lead	ND	0.0050		mg/L	1	1/2/2014 10:53:15 AM	11044
Selenium	0.33	0.050		mg/L	1	1/2/2014 10:53:15 AM	11044
Silver	ND	0.0050	B	mg/L	1	1/2/2014 10:53:15 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312C58-002 **Matrix:** AQUEOUS

Client Sample ID: 809 Effluent to Wells TCLP
Collection Date: 12/30/2013 6:00:00 AM
Received Date: 12/30/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	1/1/2014 1:41:46 PM	11043
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Barium	0.16	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Cadmium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Chromium	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Lead	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Selenium	0.33	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044
Silver	ND	0.10		mg/L	1	1/2/2014 10:55:36 AM	11044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-11042**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457324**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-11042**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457325**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID	**1312C58-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457327**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.7	75	125			

Sample ID	**1312C58-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**809 Effluent to Well**	Batch ID:	**11042**	RunNo:	**15855**					
Prep Date:	**12/31/2013**	Analysis Date:	**1/1/2014**	SeqNo:	**457328**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.2	75	125	1.68	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11043**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **11043**	RunNo: **15856**
Prep Date: **12/31/2013**	Analysis Date: **1/1/2014**	SeqNo: **457333** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-11043**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **11043**	RunNo: **15856**
Prep Date: **12/31/2013**	Analysis Date: **1/1/2014**	SeqNo: **457334** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Sample ID **1312C58-002AMS**	SampType: **MS**	TestCode: **MERCURY, TCLP**
Client ID: **809 Effluent to Well**	Batch ID: **11043**	RunNo: **15856**
Prep Date: **12/31/2013**	Analysis Date: **1/1/2014**	SeqNo: **457336** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.9	75	125			

Sample ID **1312C58-002AMSD**	SampType: **MSD**	TestCode: **MERCURY, TCLP**
Client ID: **809 Effluent to Well**	Batch ID: **11043**	RunNo: **15856**
Prep Date: **12/31/2013**	Analysis Date: **1/1/2014**	SeqNo: **457337** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	87.5	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11044**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **11044**	RunNo: **15850**
Prep Date: **12/31/2013**	Analysis Date: **1/2/2014**	SeqNo: **457226** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.10								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.10								
Lead	ND	0.10								
Selenium	ND	0.10								
Silver	ND	0.10								

Sample ID **LCS-11044**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **11044**	RunNo: **15850**
Prep Date: **12/31/2013**	Analysis Date: **1/2/2014**	SeqNo: **457227** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.10	0.5000	0	97.1	80	120			
Barium	0.47	0.10	0.5000	0	94.8	80	120			
Cadmium	0.50	0.10	0.5000	0	100	80	120			
Chromium	0.48	0.10	0.5000	0	95.5	80	120			
Lead	0.48	0.10	0.5000	0	95.8	80	120			
Selenium	0.49	0.10	0.5000	0	97.5	80	120			
Silver	0.12	0.10	0.1000	0	116	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312C58**

10-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11044**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **11044**	RunNo: **15850**
Prep Date: **12/31/2013**	Analysis Date: **1/2/2014**	SeqNo: **457261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	0.027	0.0050								

Sample ID **LCS-11044**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **11044**	RunNo: **15850**
Prep Date: **12/31/2013**	Analysis Date: **1/2/2014**	SeqNo: **457262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.1	80	120			
Barium	0.47	0.020	0.5000	0	94.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.48	0.0060	0.5000	0	95.5	80	120			
Lead	0.48	0.0050	0.5000	0	95.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.12	0.0050	0.1000	0	116	80	120			B

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312C58 RcptNo: 1

Received by/date: MG 12/30/13

Logged By: Michelle Garcia 12/30/2013 2:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/30/2013 3:08:51 PM Michelle Garcia

Reviewed By: 12/30/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: MG

Special Handling (If applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Venton / Baran Tahmoorg
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312058	Total Selenium 200.8	TCLP Selenium 1311/6010	☒ DTotal RCRA 8 metals	☒ DTCLP RCRA 8 metals
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	HNO3	-001			X	
12/30/13	10:00	Liquid	809 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/30/13	10:00	Anthony Widman			
				12/30/13	1430
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
DTotals method 6010 4W.
DTCLP Method 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, January 02, 2014 3:17 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: 12/23/13 WWTP Effluent Se Results
Attachments: Rpt_1312B14_Final_v1.pdf

Scott/Carl – attached please find the effluent Se results for 12/23 – Total & TCLP both equaled 0.27 mg/L.

Thanks,
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential.If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments.Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312B14

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312B14**
Date Reported: **1/2/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312B14-001 **Matrix:** AQUEOUS

Client Sample ID: 836 Effluent to Wells
Collection Date: 12/23/2013 6:25:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY							Analyst: **JML**
Mercury	ND	0.00020		mg/L	1	12/27/2013 1:46:49 PM	11002
EPA 6010B: TOTAL METALS							Analyst: **ELS**
Arsenic	0.040	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Barium	0.042	0.020		mg/L	1	12/27/2013 10:13:49 AM	11005
Cadmium	ND	0.0020		mg/L	1	12/30/2013 3:55:17 PM	11005
Chromium	0.0070	0.0060		mg/L	1	12/30/2013 3:55:17 PM	11005
Lead	ND	0.0050		mg/L	1	12/27/2013 10:13:49 AM	11005
Selenium	0.27	0.050		mg/L	1	12/27/2013 10:13:49 AM	11005
Silver	ND	0.0050		mg/L	1	12/30/2013 3:55:17 PM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: 836 Effluent to Wells
Project: Wastewater Effluent Monitoring
Collection Date: 12/23/2013 6:25:00 AM
Lab ID: 1312B14-002
Matrix: AQUEOUS
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/27/2013 3:02:36 PM	11004
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Barium	0.12	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Cadmium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Chromium	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Lead	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Selenium	0.27	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005
Silver	ND	0.10		mg/L	1	12/27/2013 10:16:11 AM	11005

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11002**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **11002**	RunNo: **15766**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **455051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-11002**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **11002**	RunNo: **15766**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **455052** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11004**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **11004**	RunNo: **15770**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **455102** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-11004**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **11004**	RunNo: **15770**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **455103** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.6	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11005**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **11005**	RunNo: **15777**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **455301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-11005**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **11005**	RunNo: **15777**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **455302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.4	80	120			
Barium	ND	100	0.5000	0	92.9	80	120			
Cadmium	ND	1.0	0.5000	0	98.7	80	120			
Chromium	ND	5.0	0.5000	0	93.2	80	120			
Lead	ND	5.0	0.5000	0	93.1	80	120			
Selenium	ND	1.0	0.5000	0	94.4	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B14**

02-Jan-14

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-11005**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **11005**	RunNo: **15777**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **456705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-11005**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **11005**	RunNo: **15777**
Prep Date: **12/26/2013**	Analysis Date: **12/27/2013**	SeqNo: **456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	93.4	80	120			
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.7	80	120			
Chromium	0.47	0.0060	0.5000	0	93.2	80	120			
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	98.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B14 RcptNo: 1

Received by/date: 12/23/13

Logged By: Lindsay Mangin 12/23/2013 3:00:00 PM

Completed By: Lindsay Mangin 12/23/2013 4:44:48 PM

Reviewed By: 12/23/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☒ Yes ☐ No

Sample Temperature: 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/23/13	10:25	Liquid	836 Effluent to wells	1 Plastic	HNO3	-001	X	
12/23/13	10:25	Liquid	836 Effluent to wells	1 Plastic	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/23/13	12:00	Anthony Widman		12/23/13	1500
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

1/7/14
Glenn:
pls see pg 5-
should we run this
by NMED?
Carl C
thy modified
procedure"..

HOLLYFRONTIER.

January 2, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
December 2013 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the December 2013 monthly progress report, detailing the actions taken during the preceding calendar month of November 2013, and due on the first business day of the following month (i.e., January 2, 2013). This report also includes the final analytical results as of December 23, 2013, and the actions taken through approximately December 23, 2013.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the

Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in the November 21 and December 2, 2013 progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the design and installation of a 200 gpm SeRT®. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M Hill for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 2. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through December 23, 2013). As of the sample collected on December 9, 2013, Navajo has achieved four consecutive weeks of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 2. The laboratory reports for the samples collected in November through December 23, 2013, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9th, 2013:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 2: Weekly Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.27	0.27

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

b) *A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).*

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October and November through December 23, 2013.

c) *The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.*

As of the December 23, 2013 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, January 02, 2014 3:21 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Monthly Interim Progress Report Submittal - December 2013
Attachments: OCD Order December 2013 Monthly Progress Report.pdf

Scott/Carl – please find attached a copy of the monthly report required by Condition 9 of Exhibit A of the Amended and Supplemental Agreed Order between NRC & OCD (Dated November 14, 2013). The original hardcopy is going out to today via certified mail. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Thanks,
Mike

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

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HOLLYFRONTIER.

January 2, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
December 2013 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the December 2013 monthly progress report, detailing the actions taken during the preceding calendar month of November 2013, and due on the first business day of the following month (i.e., January 2, 2013). This report also includes the final analytical results as of December 23, 2013, and the actions taken through approximately December 23, 2013.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the

Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in the November 21 and December 2, 2013 progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the design and installation of a 200 gpm SeRT®. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M Hill for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a full-scale trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced full-scale trial of Iron Co-precipitation process at a dose of 100 mg/L of ferric chloride.

November 29, 2013

- Halted the full-scale trial of Iron Co-precipitation process due to restriction in wastewater flow through the Walnut Shell Filter unit located downstream of the DAF.

December 2, 2013

- Installed foundations for SeRT® unit.

December 4, 2013

- Obtained interim OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies.
- Prepared new bench-scale test plan to provide operating guidelines for Iron Co-precipitation chemical dosing rates.

December 5, 2013

- Commenced extensive additional jar testing for the Iron Co-Precipitation process. The goal was to test various combinations of dosages of ferric chloride and two substances that are part of normal operation of the DAF – a coagulant and flocculent.

December 6, 2013

- Restarted full-scale Iron Co-Precipitation trial with a reduced ferric chloride dose of 20 mg/L to examine impacts on the Walnut Shell Filter.

December 9, 2013

- Equipment components for SeRT® unit began to arrive.

December 16, 2013

- Increased ferric chloride dose for full-scale Iron Co-Precipitation trial from 20 mg/L to 50 mg/L.
- Obtained OCD approval under Paragraph 13 of Exhibit A to the Order for the use of Iron Co-precipitation and SeRT® as remedies, subject to the submittal of dates for milestones and deadlines.

Navajo has developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. This schedule is provided below.

1. **Iron Co-precipitation via ferric chloride injection:**
    a. January 31, 2014 (estimated) - Complete scale-up trial and assess data to move to continuous operation. The trial completion date was previously estimated to be December 27th, 2103, and was extended approximately one month to continue close monitoring of the process and to evaluate impacts of the ferric chloride addition on the wastewater treatment system, including chemical interactions.
    b. February 1, 2014 (estimated) - Move to full-scale continuous operation.
2. **SeRT® Process – 100 gpm trial unit:** Obtain the existing idle unit at Valero for trial stream treatment as part of the short-term selenium reduction remedy:
    a. January 17, 2014 (estimated) - Mechanical completion of trial SeRT® unit.
    b. Mid-to-late February 2014 (estimated) - Startup.
3. **SeRT® Process**- Depending on the results of the above SeRT® trial, potential installation of a full capacity permanent unit:
    a. February 6, 2014 (estimated) - Process engineering complete.
    b. June 2014 (estimated) - Startup Goal.

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 2. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through December 23, 2013). As of the sample collected on December 9, 2013, Navajo has achieved four consecutive weeks of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 2. The laboratory reports for the samples collected in November through December 23, 2013, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9th, 2013:

1. Filtrations for TCLP analysis by EPA Method 1311 are now made using a 0.7 micron glass fiber filter.
2. An acid matrix of 6% nitric acid and 5% hydrochloric acid is now used in accordance with EPA Method 3010.
3. Calibration standards and quality control samples are now prepared using the same acid matrix (6% nitric acid and 5% hydrochloric acid).
4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 2: Weekly Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.27	0.27

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

b) *A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).*

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October and November through December 23, 2013.

c) *The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.*

As of the December 23, 2013 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

HOLLYFRONTIER.

RECEIVED OCD
2014 JAN -6 P 4:0

January 2, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0056

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
December 2013 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the Oil Conservation Division (OCD) a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

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b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the December 2013 monthly progress report, detailing the actions taken during the preceding calendar month of November 2013, and due on the first business day of the following month (i.e., January 2, 2013). This report also includes the final analytical results as of December 23, 2013, and the actions taken through approximately December 23, 2013.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau. A list of these notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the

Order, including submission of the results of required sampling within three (3) business days of receipt of final data and submittal of various reports, as follows:

- The interim progress report was submitted on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order;
- The November 2013 progress report was submitted on December 2, 2013 pursuant to Paragraph 9;
- The review of selenium sampling data report was submitted on December 4, 2013 pursuant to Paragraph 11;
- The summary of technical evaluation for short-term remedy selection report was submitted on December 13, 2013 pursuant to Paragraph 12.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
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November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, which are described in the November 21 and December 2, 2013 progress reports. Navajo has also aggressively pursued short-term selenium control strategies which are detailed in its report of December 13, 2013 summarizing the technical evaluation for short-term remedy selection. Navajo's long-term selenium control strategy is the design and installation of a 200 gpm SeRT®. An updated timeline of the activities to support these solutions is provided below.

October 30-31, 2013

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- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.
- Hired a relocation contractor to mark the unit for removal.

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- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

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Navajo has developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. This schedule is provided below.

1. **Iron Co-precipitation via ferric chloride injection:**
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3. **SeRT® Process**- Depending on the results of the above SeRT® trial, potential installation of a full capacity permanent unit:
    a. February 6, 2014 (estimated) - Process engineering complete.
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In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) *A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.*

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 2. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through December 23, 2013). As of the sample collected on December 9, 2013, Navajo has achieved four consecutive weeks of compliant sampling since the issuance date of the Order. Additional monitoring performed on a weekly basis is also presented in Table 2. The laboratory reports for the samples collected in November through December 23, 2013, are provided in Attachment A.

As described in the December 4, 2013 review of selenium sampling data report, CH2M HILL made certain recommendations to modify sample preparation and processing in order to decrease variability in sampling analysis procedures and analytical instrumentation configurations used by Navajo's contract laboratories. Specifically, Hall Environmental implemented the following procedural modifications starting December 9th, 2013:

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4. An internal standard of yttrium or scandium is now used in all samples. If the recovery of the internal standard exceeds 120%, the samples are to be screened for a native presence of the internal standard. If the samples natively contain the target internal standard, an alternate internal standard is to be utilized.
5. The same preparation batches and analytical batches are now used for digestion and analysis of TCLP and total selenium samples. Ideally, a sample is analyzed for total selenium and is then analyzed for TCLP selenium immediately afterwards to reduce variations due to instrument calibration, instrument drift, or digestate age.
6. All spectra for samples are now reviewed to verify that there are no optical interferences and that peaks are being correctly integrated.
7. All split samples are now analyzed using the same acid digestion and analytical methods to ensure data comparability.

Table 2: Weekly Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
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		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78
11/25/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.75	0.75
12/2/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.88	0.88
12/9/2013[3]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.38	0.38
12/16/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.35	0.35
12/23/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.27	0.27

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.
[3]Digestion procedure and sample processing altered as described above.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request).

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the months of October and November through December 23, 2013.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the December 23, 2013 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

Attachment B:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76	-	-	0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73	-	-	0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/24/2013[1]	T-836 Effluent to Wells	Hall	0.84	-	-	0.084
11/25/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/26/2013	T-836 Effluent to Wells	Hall	0.72	-	-	0.72
11/27/2013	T-801 Effluent to Wells	Hall	0.69	-	-	0.69
11/28/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/29/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75
11/30/2013	T-801 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	Injection Well Effluent Sampling Point	Hall	0.88	-	-	0.88
12/2/2013	T-836 Effluent to Wells	Hall	0.76	-	-	0.76
12/2/2013	T-801 Effluent to Wells	Hall	0.83	-	-	0.83
12/5/2013	T-836 Effluent to Wells	Hall	0.47	-	-	0.47

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	TCLP Selenium Concentration
12/9/2013	T-801 Effluent to Wells	Hall	0.38	-	-	0.38
12/12/2013	Effluent to Wells	Hall	0.56	-	-	0.56
12/16/2013	T-801 Effluent to Wells	Hall	0.35	-	-	0.35
12/19/2013	T-801 Effluent to Wells	Hall	0.24	-	-	0.24
12/23/2013	T-836 Effluent to Wells	Hall	0.27	-	-	0.27

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

Note: Samples labeled as "T-801 Effluent to Wells" or "T-836 Effluent to Wells" were collected from the OCD-approved sample location.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through December 23, 2013; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter outlet (D-130)	Desalter outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 overhead stripper	Unit #34 MHC Cold Separator		RO Reject	Laboratory Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		<0.1 (ND)		-	-	-		-	0.85		0.91		-	-		-	-		-	-		-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	0.24	0.24	-	-	-	-	-	0.80	0.83	0.89	0.90	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		<1.0 (ND)		-	-	0.39		-	0.75		0.65		-	0.46		-	-		-	-		-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	0.13	0.13	-	-	0.46	0.43	-	0.71	0.73	0.82	0.74	-	0.53	0.50	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		<1.0 (ND)		-	-	0.39		-	0.79		0.75		-	0.43		-	-		-	-		-	1310B47/ 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	0.07	0.07	-	-	0.38	0.39	-	0.84	0.81	0.83	0.79	-	0.41	0.42	-	-	-	-	-	-	-	13101089/ 13101196
10/24/2013	Hall Environmental	5.00		-		-		<0.1 (ND)		-	-	0.11		-	0.74		0.58		-	0.39		-	-		-	-		-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	0.10	0.10	-	-	<0.050 (ND)	0.11	-	0.82	0.78	0.65	0.61	-	0.37	0.38	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	9.20	9.20	-	-	1.60	1.60	-	0.79	0.79	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	12.00	12.00	-	-	1.30	1.30	-	0.81	0.81	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	12.00	12.00	-	-	0.70	0.70	-	0.95	0.95	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	11.00	11.00	-	-	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		10.00		-	-	<0.2 (ND)		-	0.99		0.94		-	0.37		-	-		-	-		-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	9.42	9.71	-	-	<0.202 (ND)	-	-	0.98	0.99	0.97	0.95	-	0.58	0.48	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		14.00		-	-	<0.2 (ND)		-	0.83		0.88		-	0.40		-	1.70		-	3.30		-	1310E22/ 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	11.30	12.65	-	-	<1.0 (ND)	-	-	0.88	0.85	0.90	0.89	-	0.38	0.39	-	1.28	1.49	-	1.77	2.54	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		14.00		-	-	<1.0 (ND)		-	0.80		1.20		1.20	0.33		-	3.30		-	4.00		-	1310E78/ 1310E81/ 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	10.30	12.15	-	-	<1.0 (ND)	-	-	1.09	0.95	1.26	1.23	-	0.40	0.36	-	2.38	2.84	-	1.50	2.75	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		14.00		-	-	0.60		-	0.89		1.10		-	0.40		-	2.90		-	3.10		-	1311033/ 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	14.20	14.10	-	-	0.51	0.55	-	0.94	0.92	1.16	1.13	-	0.46	0.43	-	1.23	2.07	-	2.85	2.98	-	H302670
11/2/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/3/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-	-	-	-	-	0.42	0.74	0.74	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	1.20	-	-	-	-	-	-	-	-	-	1311156/ 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	-	-	-	-	-	-	-	-	-	<0.1 (ND)	1311362/ 1311336

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter outlet (D-130)	Desalter outlet (D-2101)	API-Inlet		API Outlet	T-801		T-836		Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit 44 overhead stripper	Unit #34 MHC Cold Separator		RO Reject	Laboratory Report
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	-	-	0.43	-	-	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	-	-	0.20	-	-	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	1311402
11/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/13/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	-	-	0.21	-	-	0.99	0.99	-	-	-	-	-	-	-	-	-	-	1311625
11/15/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	1311694
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	-	-	0.51	-	-	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	1311743/ 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	-	-	-	-	0.43	0.63	0.63	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	4.20	4.20	4.10	4.10	0.07	0.07	-	-	-	-	-	-	0.46	0.46	-	0.74	0.74	0.75	-	-	-	3.30	3.30	6.00	-	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	3.70	3.70	4.00	4.00	1.00	1.00	10.00	10.00	-	-	-	-	-	-	-	-	-	0.72	0.50	0.50	-	-	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	0.69	-	-	-	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.90	3.90	3.80	3.80	-	-	9.40	9.40	-	-	-	-	0.48	0.83	0.83	0.76	0.76	0.88	-	-	-	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	3.10	3.10	-	-	0.52	0.52	0.43	0.87	-	-	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.10	3.10	3.00	3.00	-	-	7.40	7.40	1.60	2.20	-	-	-	-	-	-	-	0.38	0.28	0.28	-	-	-	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.7	3.7	3.8	3.8	-	-	12	12	0.41	1.1	-	-	-	-	-	-	-	0.56	0.26	0.26	-	-	-	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.6	4.6	4.4	4.4	-	-	11	11	1.6	3.1	-	-	-	-	-	-	-	0.35	0.23	0.23	-	-	-	-	-	-	-	1312686 1312687
12/19/2013	Hall Environmental	4.2	4.2	4.1	4.1	-	-	7.9	7.9	1.6	1.9	-	-	-	0.11	0.11	-	-	0.24	0.35	0.35	-	-	-	-	-	-	-	1312960
12/23/2013	Hall Environmental	5	5	4.8	4.8	-	-	17	17	2	2.3	-	-	-	-	-	0.10	0.10	0.27	0.32	0.32	-	-	-	-	-	-	-	1312B14 1312B16

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from November 1, 2013 through December 23, 2013; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter outlet (D-2101)	API-Inlet		API Outlet	Tk-801		Tk-836		Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 overhead stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	1.49	-	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		0.21				-		-	0.87		0.90		-	-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	0.25	0.23			-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		0.07				0.31		-	0.87		0.73		-	0.39	-	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	0.13	0.10			0.39	0.35	-	0.93	0.90	0.84	0.79	-	0.59	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		0.10				0.33		-	0.88		0.77		-	0.32	-	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	0.16	0.13			0.52	0.42	-	0.92	0.90	0.88	0.82	-	0.37	-	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		0.07				1.10		-	0.91		0.78		-	0.33	-	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	0.10	0.09			1.83	1.47	-	1.11	1.01	0.92	0.85	-	0.53	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	5.10	5.10			1.20	1.20	-	0.92	0.92	1.00	1.00	-	0.27	-	0.05	-	-	-	1310C53/ 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	8.70	8.70			0.94	0.94	-	0.91	0.91	1.10	1.10	-	0.24	-	0.03	-	0.03	-	1310C57/ 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	9.50	9.50			0.54	0.54	-	1.10	1.10	1.20	1.20	-	0.26	-	0.05	-	0.05	-	1310C59/ 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	6.60	6.60			0.05	0.05	-	0.91	0.91	0.85	0.85	-	0.21	-	0.08	-	0.08	-	1310D18/ 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		3.40				0.15		-	0.84		1.10		-	1.40	-	0.09	-	0.23	-	1310D78/ 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	5.38	4.39			<0.041 1 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	0.51	-	0.01	-	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		5.40				0.11		-	0.98		0.95		-	0.26	-	0.05	-	0.25	-	1310E22/ 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	8.23	6.82			<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	0.24	-	2.15	-	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		1.50				0.06		-	1.20		1.20		0.88	0.29	-	0.13	-	0.14	-	1310E78/ 1310E81/ 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	4.24	2.87			<0.1 (ND)	0.06	-	0.65	0.93	0.79	0.996	-	0.29	-	2.51	-	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		3.90				0.31		-	0.97		1.10		-	0.28	-	0.30	-	0.37	-	1311033/ 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	5.36	4.63			0.33	0.32	-	0.62	0.79	0.85	0.97	-	0.24	-	2.58	-	2.92	-	H302670
11/2/2013	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/3/2013	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-			-	-	0.10	1.10	1.10	0.66	0.66	0.98	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	0.84	0.84	-	-	0.51	-	-	-	-	-	-	1311156/ 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-			-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-			0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	-	0.011	1311362/ 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-			-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	-	1311362

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		Desalter Outlet (D-130)	Desalter outlet (D-2101)	API-Inlet		API Outlet	Tk-801		Tk-836		Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit 44 overhead stripper	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	Result	
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-			-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-			-	-	0.14	-	-	0.95	0.95	0.08	0.22	0.38	-	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-			-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	-	M3259
11/13/2013	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-			-	-	0.15	-	-	1.10	1.10	-	-	-	-	-			1311625
11/15/2013	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.88	-	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-			-	-	0.43	-	-	0.72	0.72	0.59	-	-	-	-	-	-	1311743/ 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.87	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-			-	-	0.36	0.65	0.65	0.66	0.66	0.68	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.78	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-			-	-	-	-	-	-	-	0.22	-	-	-	-	-	-	1311A50
11/24/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.67	-	-	-	-	-	-	1311B06
11/25/2013	Hall Environmental	3.30	3.30	3.10	3.10	1.90	1.90	-	-			-	-	0.50	0.50	-	0.66	0.66	0.59	-	-	2.20	1.20	-	-	1311B06 1311B05
11/26/2013	Hall Environmental	2.10	2.10	3.20	3.20	0.39	0.39	7.90	7.90			-	-	-	-	-	-	-	0.66	0.43	-	-	-	-	-	1311B34
11/27/2013	Hall Environmental	2.90	2.90	2.80	2.80	-	-	-	-			-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	1311B96 1311B97
11/28/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.68	-	-	-	-	-	-	1311B99
11/29/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.64	-	-	-	-	-	-	1311C00
11/30/2013	Hall Environmental	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	1312001
12/2/2013	Hall Environmental	3.20	3.20	3.20	3.20	-	-	7.50	7.50			-	-	0.37	0.63	0.63	0.82	0.82	0.77	-	-	-	-	-	-	1312046 1312047
12/5/2013	Hall Environmental	-	-	2.30	2.30	-	-	0.36	0.36	0.27	0.67	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	1312225 1312228
12/9/2013	Hall Environmental	3.00	3.00	3.10	3.10	-	-	9.9	9.90	1.50	2.20	-	-	-	-	-	-	-	0.37	0.38	0.38	-	-	-	-	1312315 1312316
12/12/2013	Hall Environmental	3.7	3.70	3.4	3.4	-	-	11	11	0.44	0.91	-	-	-	-	-	-	-	0.55	0.39	0.39	-	-	-	-	1312548
12/16/2013	Hall Environmental	4.2	4.2	4.2	4.2	-	-	9.4	9.4	1.8	2.5	-	-	-	-	-	-	-	0.43	0.37	0.37					1312686 1312687
12/19/2013	Hall Environmental	3.9	3.9	3.9	3.9	-	-	6.4	6.4	1.5	1.7	-	-	-	0.99	0.99	-	-	0.24	0.43	0.43	-	-	-	-	1312960
12/23/2013	Hall Environmental	4.8	4.8	4.6	4.6	-	-	14	14	1.4	2.1	-	-	-	-	-	1.1	1.1	0.27	0.41	0.41	-	-	-	-	1312B14 1312B16

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Brancard, Bill, EMNRD
Sent: Monday, December 30, 2013 11:03 AM
To: Holder, Mike; Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Subject: RE: Short term Remedies Evaluation Report - 12/13/13

Mike,

Thank you for the response. We look forward to seeing your proposals.

Bill Brancard

From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Monday, December 30, 2013 10:39 AM
To: Brancard, Bill, EMNRD; Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: RE: Short term Remedies Evaluation Report - 12/13/13

Bill – sorry for the delay in responding – In the upcoming monthly report we will have new proposed dates for the two systems. Based on the results to date of the FeCl injection we have been modifying its operation and the trail period has extended. Please let me know if you have any questions.

Thanks,
Mike

From: Brancard, Bill, EMNRD [mailto:bill.brancard@state.nm.us]
Sent: Monday, December 16, 2013 1:47 PM
To: McWatters, Denise; McKee, Michael; Holder, Mike
Cc: Bailey, Jami, EMNRD; Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Subject: Short term Remedies Evaluation Report - 12/13/13

Ladies and Gentlemen:

The Oil Conservation Division is in receipt of the attached report on technical evaluation of potential short term remedies for the Navajo Refinery in Artesia, New Mexico that was submitted by Navajo Refinery Company (Navajo) on December 13, 2013. This report complies with paragraph 12 of Exhibit A to the Amended and Supplemental Agreed Compliance Order, dated November 14, 2013 (Order).

In the report, Navajo selected two short term remedies:

1. Iron co-precipitation via ferric chloride injection; and
2. Phillips 66, SeRT® Process.

The Oil Conservation Division approves the remedies selected in the attached report subject to the following. In the report, Navajo listed dates for the estimated completion of bench scale tests and startup of the full scale operations. However, at our meeting on November 12, Navajo stated that the dates in the report are estimates and Navajo would later submit milestones and deadlines that could be incorporated into the Order

as required by paragraph 14 of Exhibit A. Please confirm this understanding and provide an estimate on when Navajo will submit such dates to OCD.

Thank you for your cooperation,

Bill Brancard
General Counsel
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe NM 87505
505.476.3210
Bill.brancard@state.nm.us

-----Original Message-----
From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Friday, December 13, 2013 2:43 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Subject: Fwd: Short term Remedies Evaluation Report - 12/13/13

>
> Scott/Carl – please find attached a copy of the summary of technical evaluation for short-term remedy selection required by Condition 12 of Exhibit A of the Amended and Supplemental Agreed Order between NRC & OCD (Dated November 14, 2013). The original hardcopy is going out to today via certified mail.
> According to Condition 14 of the same Exhibit A and following the OCD approval of the selected remedy, we will be in contact with you to amend exhibit A to establish milestones and deadlines for construction and completion of the Remediation Project.
> Please don't hesitate to call me with any questions and thanks for your assistance in this matter.
>
>
> Mike Holder
> Environmental Manager
> Navajo Refining Company, L.L.C.
> 501 E Main Street
> Artesia, NM 88210
> (575) 746-5487 (office)
> (575) 308-1115 (cell)
>
> CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.
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RECEIVED OCD

2013 DEC 20 P 3:07

December 13, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0919

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
December 2013 Summary of Technical Evaluation for Short-Term Remedy Selection
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This summary report is submitted pursuant to Paragraph 12 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001 with the Oil Conservation Division (OCD), dated November 14, 2013 (the "Order"). Paragraph 12 requires that Navajo provide to OCD a summary of Navajo's technical evaluation of any potential short term refinery process change(s) to reduce selenium concentrations in wastewater going to the injection wells. The summary is due on or before December 13, 2013 and is to include the following:

1. Navajo's selection of a short-term remedy(ies);
2. Dates for completion of any necessary bench scale or other trials;
3. Dates of anticipated installation of any selected technology(ies); and
4. Dates of anticipated startup of any selected technology(ies).

Steps taken since October 15, 2013 to address selenium reduction in wastewater have been described in detail in Navajo's November 21 and December 2, 2013 interim progress reports submitted to OCD. The December 2 interim report also outlined a preliminary schedule for the further commissioning of short-term and long-term remedies for selenium reduction technologies, subject to change as necessary. Updates to that schedule are included in this report.

Summary of Technical Evaluation of Short Term Remedies

The short-term remedies selected by Navajo and identified in the above interim progress reports are as follows:

1. Iron Co-precipitation via ferric chloride injection

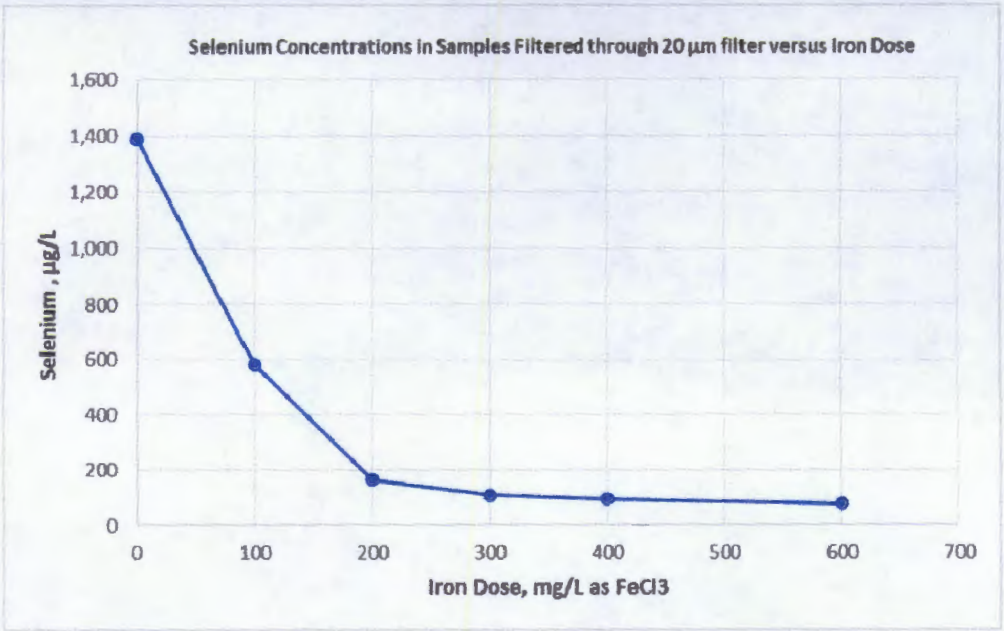
2. Phillips 66, SeRT® Process – 100 gpm Surplus Unit Obtained from Valero[1]

By email correspondence of November 27, 2013, Navajo requested that OCD approve these remedies under Section 13 of Exhibit A to the Order. In response, OCD provided interim approval via email to Mr. Michael McKee of Navajo, dated December 4, 2013. OCD indicated that final approval of the remedies is subject to OCD's review and approval of Navajo's technical evaluation and proposed milestones and deadlines to be provided by Navajo in accordance with Section 12 of Order Exhibit A. OCD further indicated that, upon final approval, in accordance with Section 14 of Exhibit A to the Order, OCD and Navajo shall amend Exhibit A to establish milestones and deadlines for the construction and completion of the Remediation Project (i.e., the selected short-term remedies).

Iron Co-Precipitation via Ferric Chloride Injection

As previously discussed with OCD, Navajo has been moving aggressively to assess the viability of Iron Co-precipitation (ICP) technology. Navajo selected ICP because of the feasibility of implementing this process at full scale in a shorter timeframe than other options. This technology has been widely used since the 1990s, particularly at U.S. West Coast refineries, with fairly good success. Based on the results of initial jar testing performed by CH2M HILL in early November, 2013 (November 12-14), the technology also appears promising in reducing selenium concentrations at Navajo. In these tests, selenium reduction in excess of 50% was observed at a nominal dose of 100 mg/L of $FeCl_3$ (see Exhibit 1, below).

Exhibit 1- Iron Co-precipitation jar test summary results (based on CH2M HILL Jar Test Studies).



Based on the results of these studies, Navajo completed engineering for iron (ferric chloride) injection during November 19-22, 2013, and on November 26, 2013, Navajo completed installation

[1] This unit was described in the December 2, 2013 interim progress report as a 200 gpm unit. The actual size specification is 100 gpm.

of the equipment necessary to conduct a scale-up trial of the iron co-precipitation process at the Refinery's wastewater treatment plant. The trial commenced on November 27, 2013, beginning the period to assess efficacy of selenium removal under actual Refinery operating conditions. These steps were described in the December 2, 2013 monthly interim progress report submitted pursuant to Paragraph 9 of Exhibit A to the Order Attachment A hereto includes a schematic depicting the pilot Iron Co-precipitation setup and monitoring plan.

In order to protect the quality of the treated wastewater effluent and to minimize impacts on injection well operations, Navajo followed a highly cautious approach for start-up of the ICP full-scale trial, anticipating that, as is the case with any trial, unforeseen problems may arise. The scale-up trial ran for 5 hours on November 27 and then again on November 28 for 3 hours, with monitoring of chemical dosing rates and quality of effluent downstream of the secondary DAF unit. Injection of ferric chloride was halted on November 29, 2013 after observing a restriction in wastewater flow going through the Walnut Shell Filter unit located downstream of the DAF (T-896, see Attachment A). This restriction in flow necessitated more frequent backwashing of the Walnut Shell Filter media than required under normal operating conditions (the filter is typically backwashed every 8 hours as part of normal operations). Routine backwashing allows any buildup of solids in the filter to be removed and restores the filter to its normal design flow rating.

Initial troubleshooting and review of relevant operating data did not indicate an increase in suspended solids (measured using turbidity as a surrogate monitoring parameter) in the DAF effluent as a result of the ICP process. In fact, turbidity was reported to be lower after the ferric chloride addition than before. Monitoring data, however, was limited, given that the ICP process had operated for only a short period. As a result, the available data did not lead to any firm conclusions as to what caused the need to backwash the walnut shell filters more frequently than normally required. Navajo has requested CH2M HILL, who has been retained to assist with selenium reduction measures, to prepare an evaluation study to determine the root cause of the increased backwash frequency at the Walnut Shell Filter and to assess whether this increase was a direct result of adding ferric chloride to the effluent. Navajo also asked CH2M HILL to further review the chemical addition program, particularly the potential interaction of ferric chloride with two other chemicals (a coagulant and a flocculant) that are part of the normal operation of the DAF unit. Dosages for these two chemicals remained the same before, during, and after halting the ICP trial. CH2M HILL will evaluate if a reduction in dosages of one or both of these two chemicals could improve operation of Walnut Shell Filters. Further, Navajo placed an order for new replacement Walnut Shell media in case the observed operational problems were due to the age of media.

As part of the above effort, CH2M HILL prepared a new bench scale test plan on December 4, 2013, which was implemented in part on December 5 and 6, 2013, and continued through the week of December 9th. Results from these tests were not final as of the date of this report. The tests were designed to provide operating guidelines for chemical dosing rates to improve solids separation in the DAF and to prevent post-precipitation of iron in DAF effluent, overdosing of chemicals, and potential adverse impacts on the Walnut Shell Filter.

In addition to the bench scale test described above, Navajo has also taken steps to optimize the ICP system in the field. On December 6, 2013, the iron dose for the full scale trial was reduced from 100 mg/L to 20 mg/L to determine potential impacts on the Walnut Shell Filter. Field observations are currently underway, but no final conclusions have been reached as of the date of this report. Results of the bench scale and field trials will be communicated to OCD in subsequent correspondence as soon as the data is fully evaluated.

Because of the limited period of ICP operation, Navajo has collected only one sample for TCLP analysis while the system was running. The sample was collected on December 9, 2013 during a trial dose of 20 mg/L Ferric Chloride. The selenium concentration based on the TCLP analytical protocol shows a result of 0.37 mg/L and total selenium analysis shows a result of 0.38 mg/L. More data is required to determine the selenium removal efficiency of the ICP system. Additional sampling will be implemented once the above operational issues are resolved and the full-scale trial is operating within acceptable parameters.

In summary, Navajo expects that the ICP process will reduce selenium in the full-scale trial based on the results of the bench scale testing that has been conducted to date. Resolution of the operational issues described above is important to the sustained and reliable operation of the process, but these issues are not indicative of a fatal flaw in the use of this technology to reduce selenium concentrations. Navajo believes that these operational issues will be resolved once the ongoing bench scale and field investigations are completed.

SeRT® Process – 100 gpm Surplus Unit Obtained from Valero

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CH2M HILL was contracted to provide technical and engineering support for the installation of the SeRT® unit. CH2M HILL and Navajo have reviewed performance data from other sources using the Phillips SeRT® technology, and based on this review and evaluation, this technology appears to be promising in reducing selenium concentrations in wastewater. The performance data itself, however, is subject to a confidentiality agreement with Phillips 66, the licensor of this technology. Therefore, Navajo cannot currently share this data with OCD. Performance data on the unit at the Artesia Refinery will not be generated until after the unit is commissioned and start-up commenced per the schedule included in this report. Navajo nonetheless anticipates that this technology will be effective in reducing selenium concentrations in the discharge to the injection wells. This expectation is based largely on bench scale testing performed by Phillips 66, the results of which are also subject to confidentiality agreement.

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Navajo has developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. This schedule is provided below.

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    b. December 27, 2013 (estimated) - complete scale up trial and assess data to move to continuous operation.
    c. January 2, 2014 (estimated) - Move to full scale continuous operation

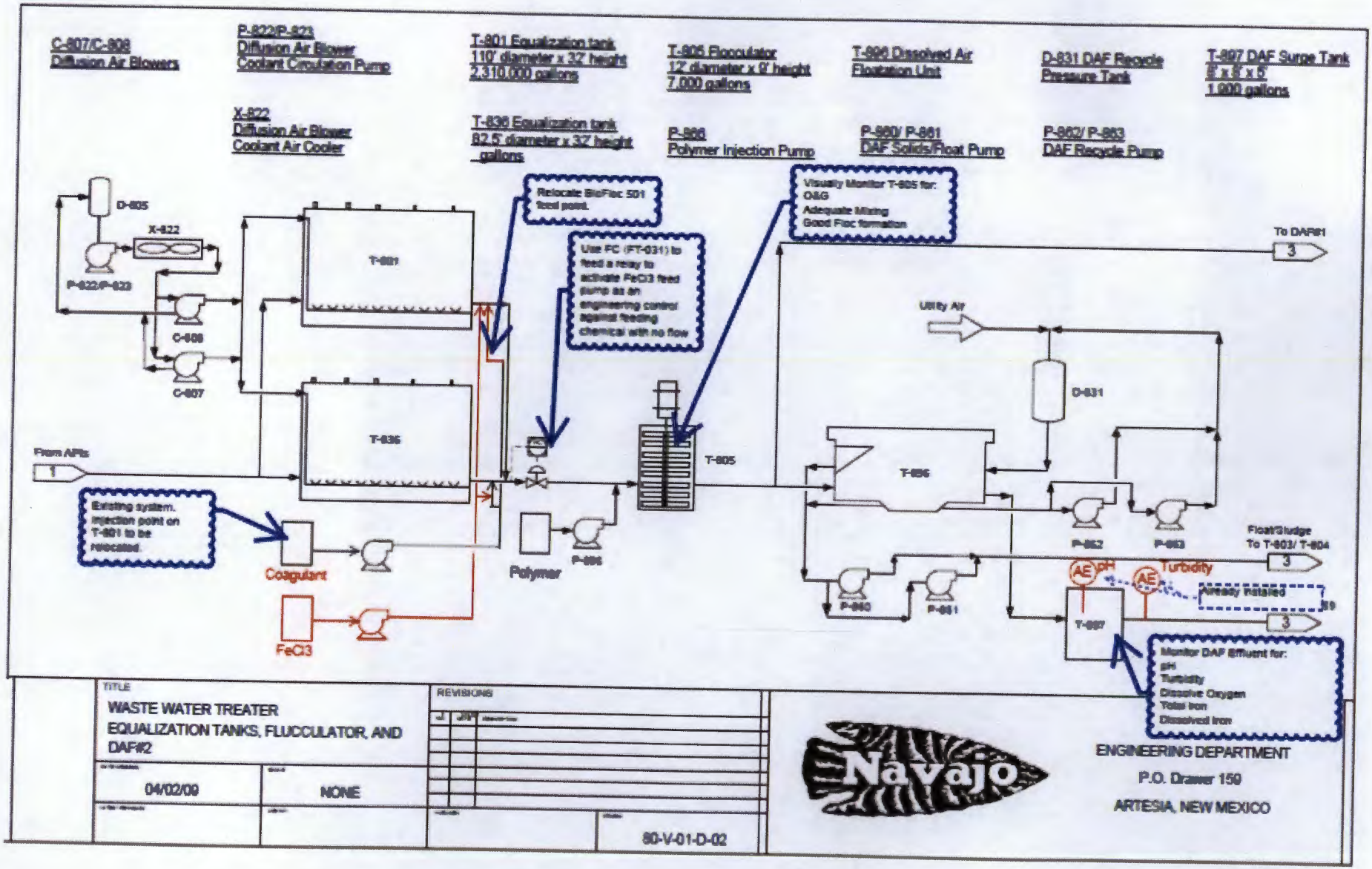
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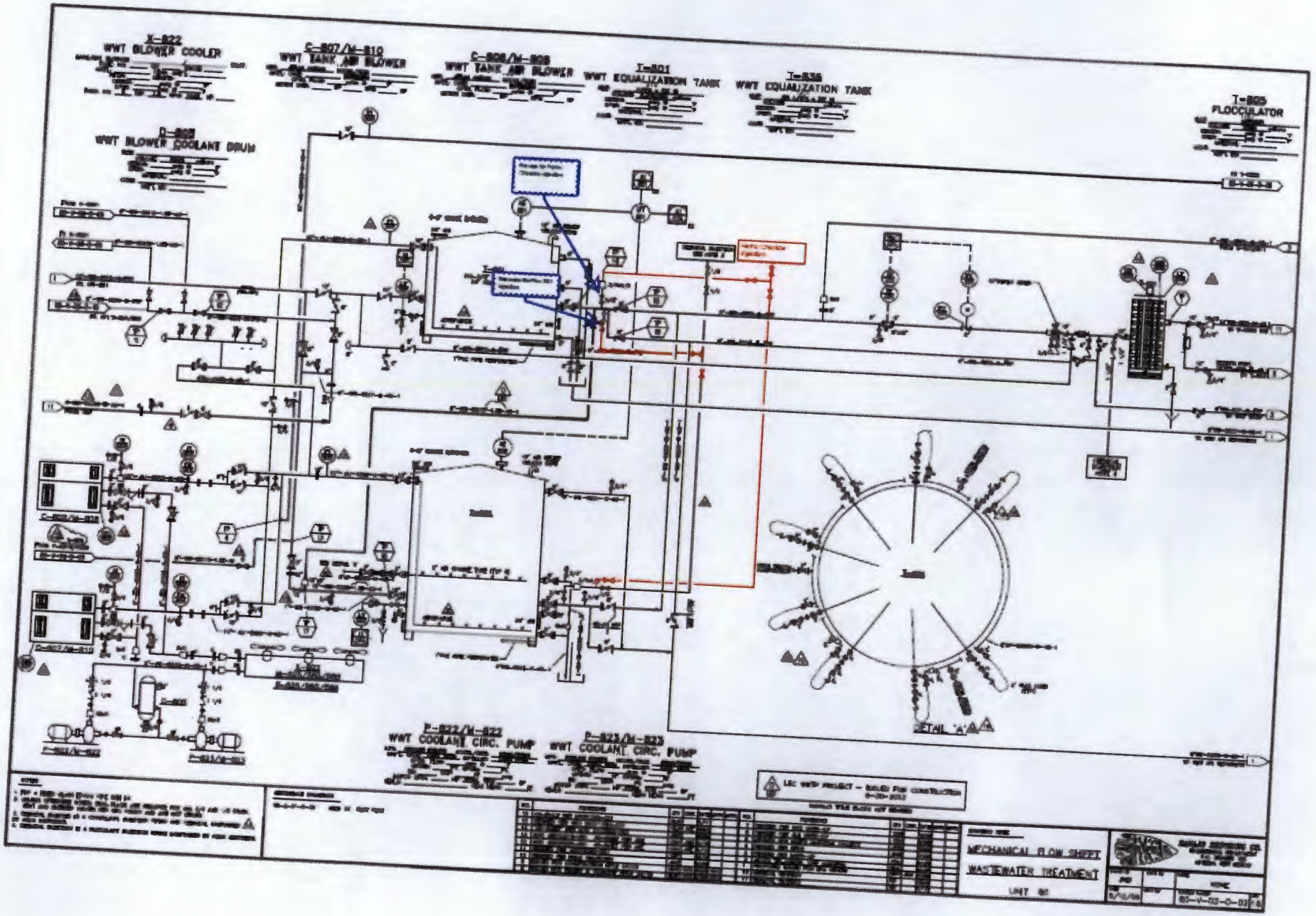
If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium short term remedies.

Sincerely,

Mike Holder
Environmental Manager, NRC

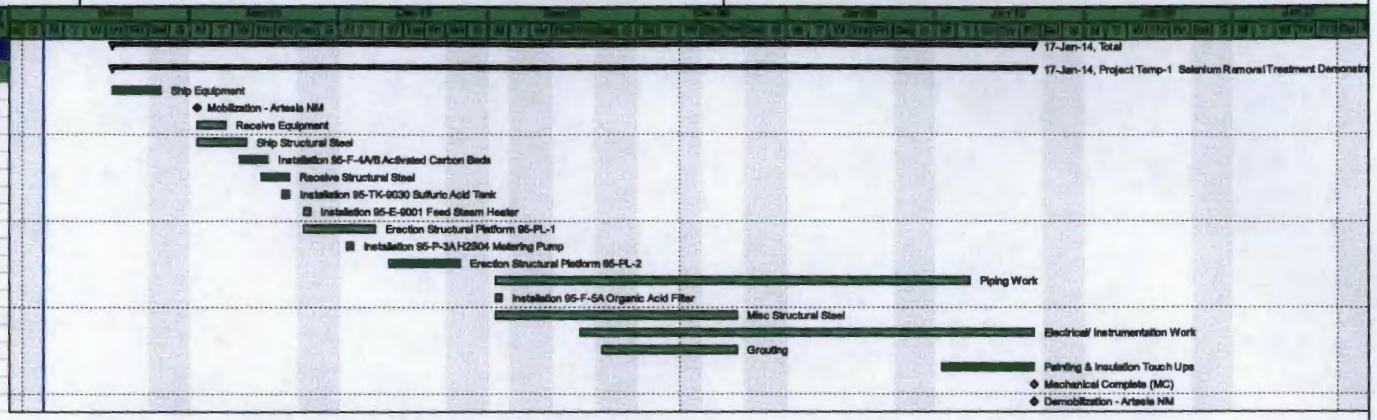
Attachment A:
Iron Co-Precipitation Full Scale Pilot Schematic


C-807/C-808
Diffusion Air Blowers
P-822/P-823
Diffusion Air Blower
Coolant Circulation Pump
T-801 Equalization tank
110' diameter x 32' height
2,310,000 gallons
T-805 Flocculator
12' diameter x 9' height
7,000 gallons
T-806 Dissolved Air
Floatation Unit
D-831 DAF Recycle
Pressure Tank
T-807 DAF Surge Tank
8' x 8' x 5'
1,900 gallons
X-822
Diffusion Air Blower
Coolant Air Cooler
T-836 Equalization tank
82.5' diameter x 32' height
gallons
P-806
Polymer Injection Pump
P-860/ P-861
DAF Solids/Float Pump
P-862/ P-863
DAF Recycle Pump
D-805
X-822
P-822/P-823
C-808
C-807
T-801
T-836
Relocate BioFloc 501
feed point.
Use FC (FT-031) to
feed a relay to
activate FeCl3 feed
pump as an
engineering control
against feeding
chemical with no flow
Visually Monitor T-805 for:
O&G
Adequate Mixing
Good Floc formation
To DAF#1
3
Utility Air
D-831
T-805
T-806
From APIs
1
Existing system.
injection point on
T-801 to be
relocated.
Coagulant
FeCl3
Polymer
P-806
P-862
P-863
Float/Sludge
To T-803/ T-804
3
AE
pH
AE
Turbidity
Already Installed
P-860
P-861
T-807
3
Monitor DAF Effluent for:
pH
Turbidity
Dissolve Oxygen
Total Iron
Dissolved Iron
TITLE
WASTE WATER TREATER
EQUALIZATION TANKS, FLUCCULATOR, AND
DAF#2
REVISIONS
04/02/09
NONE
80-V-01-D-02
Navajo
ENGINEERING DEPARTMENT
P.O. Drawer 150
ARTESIA, NEW MEXICO


X-822
WWT BLOWER COOLER
C-807/M-810
WWT TANK AIR BLOWER
C-808/M-809
WWT TANK AIR BLOWER
T-801
WWT EQUALIZATION TANK
T-836
WWT EQUALIZATION TANK
T-805
FLOCCULATOR
D-822
WWT BLOWER COOLANT DRUM
P-822/M-822
WWT COOLANT CIRC. PUMP
P-823/M-823
WWT COOLANT CIRC. PUMP
DETAIL 'A'
MECHANICAL FLOW SHEET
WASTEWATER TREATMENT
UNIT 80

Attachment B:
Valero SeRT® Unit Implementation Schedule

Total		69	0	28-Dec-13	17-Jan-14	0
Project Temp-1 Selenium Removal Treat		69	0	28-Dec-13	17-Jan-14	0
A5015	Ship Equipment	3	0	05-Dec-13*	07-Dec-13	0
A1000	Mobilization - Artesia NM	0	0	09-Dec-13*		0
A5005	Receive Equipment	2	0	09-Dec-13	10-Dec-13	1
A5020	Ship Structural Steel	3	0	09-Dec-13	11-Dec-13	0
M1005	Installation 95-F-4A/B Activated Carbon Be	2	0	11-Dec-13	12-Dec-13	1
A5010	Receive Structural Steel	2	0	12-Dec-13	13-Dec-13	0
M1015	Installation 95-TK-9030 Sulfuric Acid Tank	1	0	13-Dec-13	13-Dec-13	25
M1000	Installation 95-E-9001 Feed Steam Heater	1	0	14-Dec-13	14-Dec-13	25
D1000	Erection Structural Platform 95-PL-1	3	0	14-Dec-13	17-Dec-13	0
M1020	Installation 95-P-3A H2SO4 Metering Pump	1	0	16-Dec-13	16-Dec-13	25
D1005	Erection Structural Platform 95-PL-2	4	0	16-Dec-13	21-Dec-13	0
D3000	Piping Work	17	0	23-Dec-13	14-Jan-14	0
M1010	Installation 95-F-5A Organic Acid Filter	1	0	23-Dec-13	23-Dec-13	19
D1010	Misc Structural Steel	8	0	23-Dec-13	03-Jan-14	9
D4000	Electrical/ Instrumentation Work	18	0	27-Dec-13	17-Jan-14	0
M1025	Grouting	5	0	26-Dec-13	03-Jan-14	12
S1000	Painting & Insulation Touch Ups	5	0	13-Jan-14	17-Jan-14	0
A2000	Mechanical Complete (MC)	0	0		17-Jan-14	0
A1005	Demobilization - Artesia NM	0	0		17-Jan-14	0



Actual Work | Remaining Work | Critical Remaining Work | Summary | Milestone

TASK filter: All Activities

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Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Friday, December 13, 2013 2:43 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Subject: Fwd: Short term Remedies Evaluation Report - 12/13/13
Attachments: OCD Order Short Term Remedies Evaluation Report 12-13-13.pdf

>
> Scott/Carl – please find attached a copy of the summary of technical evaluation for short-term remedy selection required by Condition 12 of Exhibit A of the Amended and Supplemental Agreed Order between NRC & OCD (Dated November 14, 2013). The original hardcopy is going out to today via certified mail.
> According to Condition 14 of the same Exhibit A and following the OCD approval of the selected remedy, we will be in contact with you to amend exhibit A to establish milestones and deadlines for construction and completion of the Remediation Project.
> Please don't hesitate to call me with any questions and thanks for your assistance in this matter.
>
>
> Mike Holder
> Environmental Manager
> Navajo Refining Company, L.L.C.
> 501 E Main Street
> Artesia, NM 88210
> (575) 746-5487 (office)
> (575) 308-1115 (cell)
>
> CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.
>

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HOLLYFRONTIER.

December 13, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0919

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
December 2013 Summary of Technical Evaluation for Short-Term Remedy Selection
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This summary report is submitted pursuant to Paragraph 12 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001 with the Oil Conservation Division (OCD), dated November 14, 2013 (the "Order"). Paragraph 12 requires that Navajo provide to OCD a summary of Navajo's technical evaluation of any potential short term refinery process change(s) to reduce selenium concentrations in wastewater going to the injection wells. The summary is due on or before December 13, 2013 and is to include the following:

1. Navajo's selection of a short-term remedy(ies);
2. Dates for completion of any necessary bench scale or other trials;
3. Dates of anticipated installation of any selected technology(ies); and
4. Dates of anticipated startup of any selected technology(ies).

Steps taken since October 15, 2013 to address selenium reduction in wastewater have been described in detail in Navajo's November 21 and December 2, 2013 interim progress reports submitted to OCD. The December 2 interim report also outlined a preliminary schedule for the further commissioning of short-term and long-term remedies for selenium reduction technologies, subject to change as necessary. Updates to that schedule are included in this report.

Summary of Technical Evaluation of Short Term Remedies

The short-term remedies selected by Navajo and identified in the above interim progress reports are as follows:

1. Iron Co-precipitation via ferric chloride injection

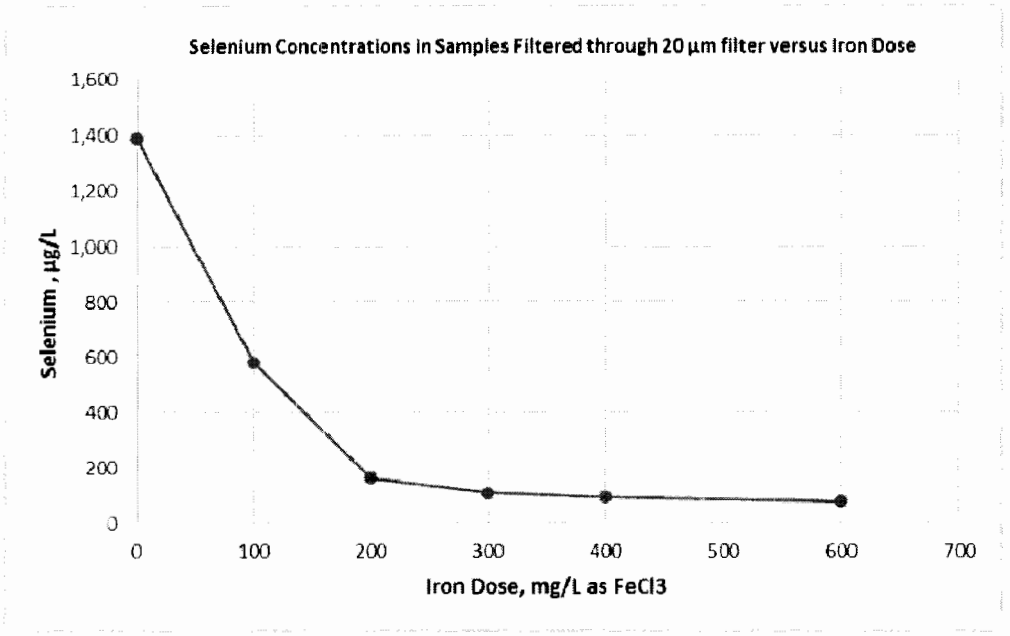
2. Phillips 66, SeRT® Process – 100 gpm Surplus Unit Obtained from Valero[1]

By email correspondence of November 27, 2013, Navajo requested that OCD approve these remedies under Section 13 of Exhibit A to the Order. In response, OCD provided interim approval via email to Mr. Michael McKee of Navajo, dated December 4, 2013. OCD indicated that final approval of the remedies is subject to OCD's review and approval of Navajo's technical evaluation and proposed milestones and deadlines to be provided by Navajo in accordance with Section 12 of Order Exhibit A. OCD further indicated that, upon final approval, in accordance with Section 14 of Exhibit A to the Order, OCD and Navajo shall amend Exhibit A to establish milestones and deadlines for the construction and completion of the Remediation Project (i.e., the selected short-term remedies).

Iron Co-Precipitation via Ferric Chloride Injection

As previously discussed with OCD, Navajo has been moving aggressively to assess the viability of Iron Co-precipitation (ICP) technology. Navajo selected ICP because of the feasibility of implementing this process at full scale in a shorter timeframe than other options. This technology has been widely used since the 1990s, particularly at U.S. West Coast refineries, with fairly good success. Based on the results of initial jar testing performed by CH2M HILL in early November, 2013 (November 12-14), the technology also appears promising in reducing selenium concentrations at Navajo. In these tests, selenium reduction in excess of 50% was observed at a nominal dose of 100 mg/L of $FeCl_3$ (see Exhibit 1, below).

Exhibit 1- Iron Co-precipitation jar test summary results (based on CH2M HILL Jar Test Studies).



Based on the results of these studies, Navajo completed engineering for iron (ferric chloride) injection during November 19-22, 2013, and on November 26, 2013, Navajo completed installation

[1] This unit was described in the December 2, 2013 interim progress report as a 200 gpm unit. The actual size specification is 100 gpm.

of the equipment necessary to conduct a scale-up trial of the iron co-precipitation process at the Refinery's wastewater treatment plant. The trial commenced on November 27, 2013, beginning the period to assess efficacy of selenium removal under actual Refinery operating conditions. These steps were described in the December 2, 2013 monthly interim progress report submitted pursuant to Paragraph 9 of Exhibit A to the Order Attachment A hereto includes a schematic depicting the pilot Iron Co-precipitation setup and monitoring plan.

In order to protect the quality of the treated wastewater effluent and to minimize impacts on injection well operations, Navajo followed a highly cautious approach for start-up of the ICP full-scale trial, anticipating that, as is the case with any trial, unforeseen problems may arise. The scale-up trial ran for 5 hours on November 27 and then again on November 28 for 3 hours, with monitoring of chemical dosing rates and quality of effluent downstream of the secondary DAF unit. Injection of ferric chloride was halted on November 29, 2013 after observing a restriction in wastewater flow going through the Walnut Shell Filter unit located downstream of the DAF (T-896, see Attachment A). This restriction in flow necessitated more frequent backwashing of the Walnut Shell Filter media than required under normal operating conditions (the filter is typically backwashed every 8 hours as part of normal operations). Routine backwashing allows any buildup of solids in the filter to be removed and restores the filter to its normal design flow rating.

Initial troubleshooting and review of relevant operating data did not indicate an increase in suspended solids (measured using turbidity as a surrogate monitoring parameter) in the DAF effluent as a result of the ICP process. In fact, turbidity was reported to be lower after the ferric chloride addition than before. Monitoring data, however, was limited, given that the ICP process had operated for only a short period. As a result, the available data did not lead to any firm conclusions as to what caused the need to backwash the walnut shell filters more frequently than normally required. Navajo has requested CH2M HILL, who has been retained to assist with selenium reduction measures, to prepare an evaluation study to determine the root cause of the increased backwash frequency at the Walnut Shell Filter and to assess whether this increase was a direct result of adding ferric chloride to the effluent. Navajo also asked CH2M HILL to further review the chemical addition program, particularly the potential interaction of ferric chloride with two other chemicals (a coagulant and a flocculant) that are part of the normal operation of the DAF unit. Dosages for these two chemicals remained the same before, during, and after halting the ICP trial. CH2M HILL will evaluate if a reduction in dosages of one or both of these two chemicals could improve operation of Walnut Shell Filters. Further, Navajo placed an order for new replacement Walnut Shell media in case the observed operational problems were due to the age of media.

As part of the above effort, CH2M HILL prepared a new bench scale test plan on December 4, 2013, which was implemented in part on December 5 and 6, 2013, and continued through the week of December 9th. Results from these tests were not final as of the date of this report. The tests were designed to provide operating guidelines for chemical dosing rates to improve solids separation in the DAF and to prevent post-precipitation of iron in DAF effluent, overdosing of chemicals, and potential adverse impacts on the Walnut Shell Filter.

In addition to the bench scale test described above, Navajo has also taken steps to optimize the ICP system in the field. On December 6, 2013, the iron dose for the full scale trial was reduced from 100 mg/L to 20 mg/L to determine potential impacts on the Walnut Shell Filter. Field observations are currently underway, but no final conclusions have been reached as of the date of this report. Results of the bench scale and field trials will be communicated to OCD in subsequent correspondence as soon as the data is fully evaluated.

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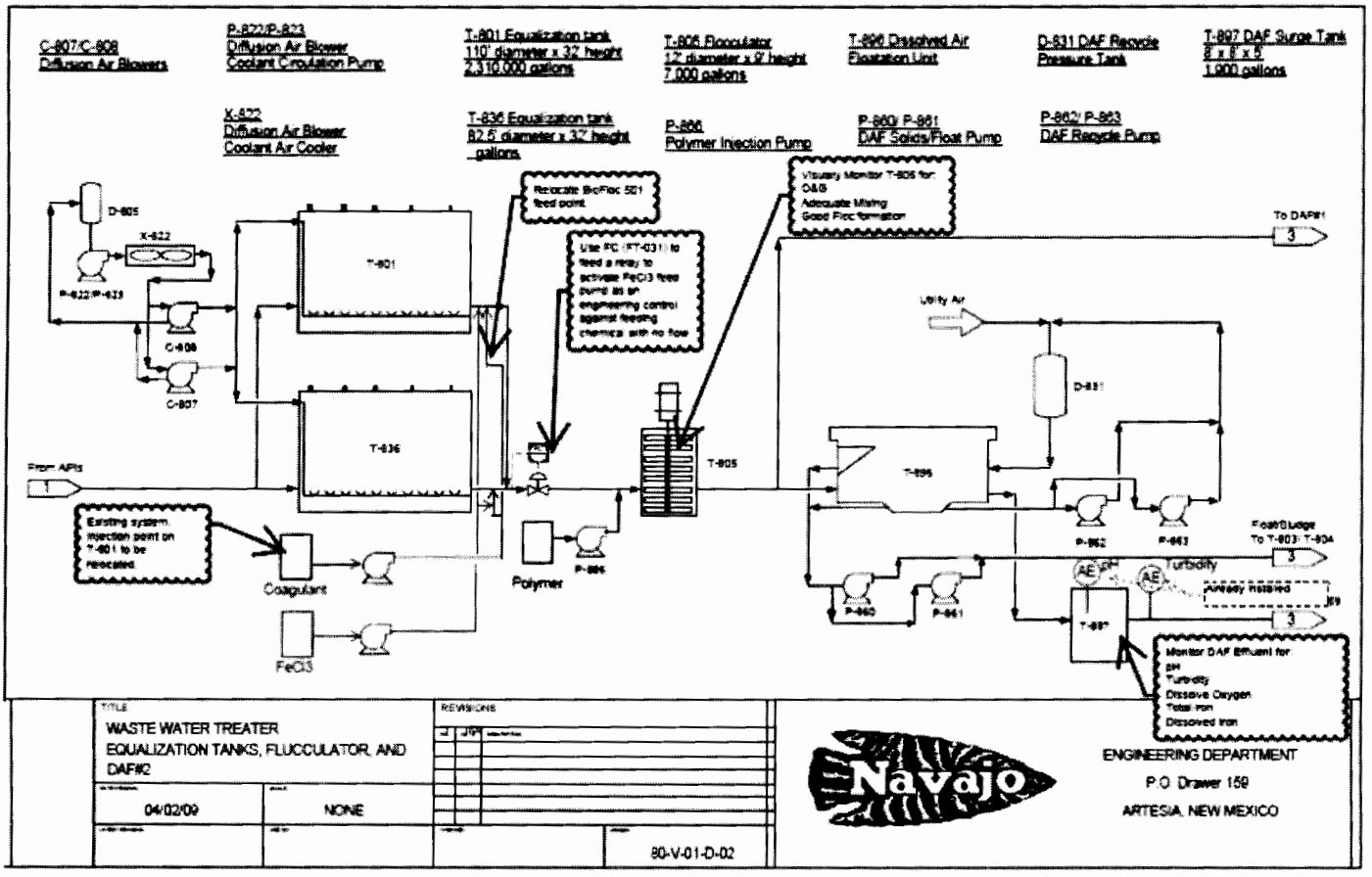
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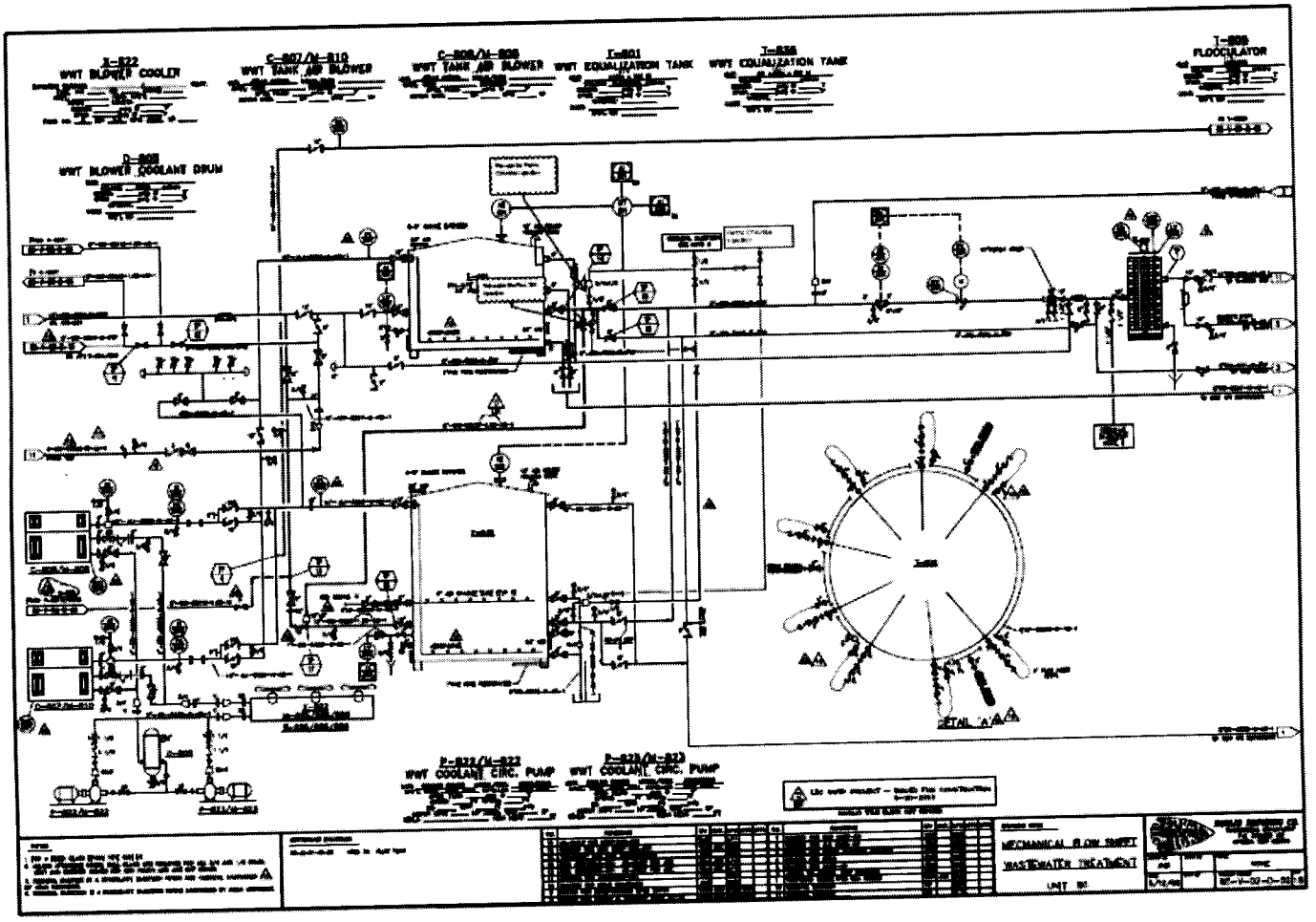
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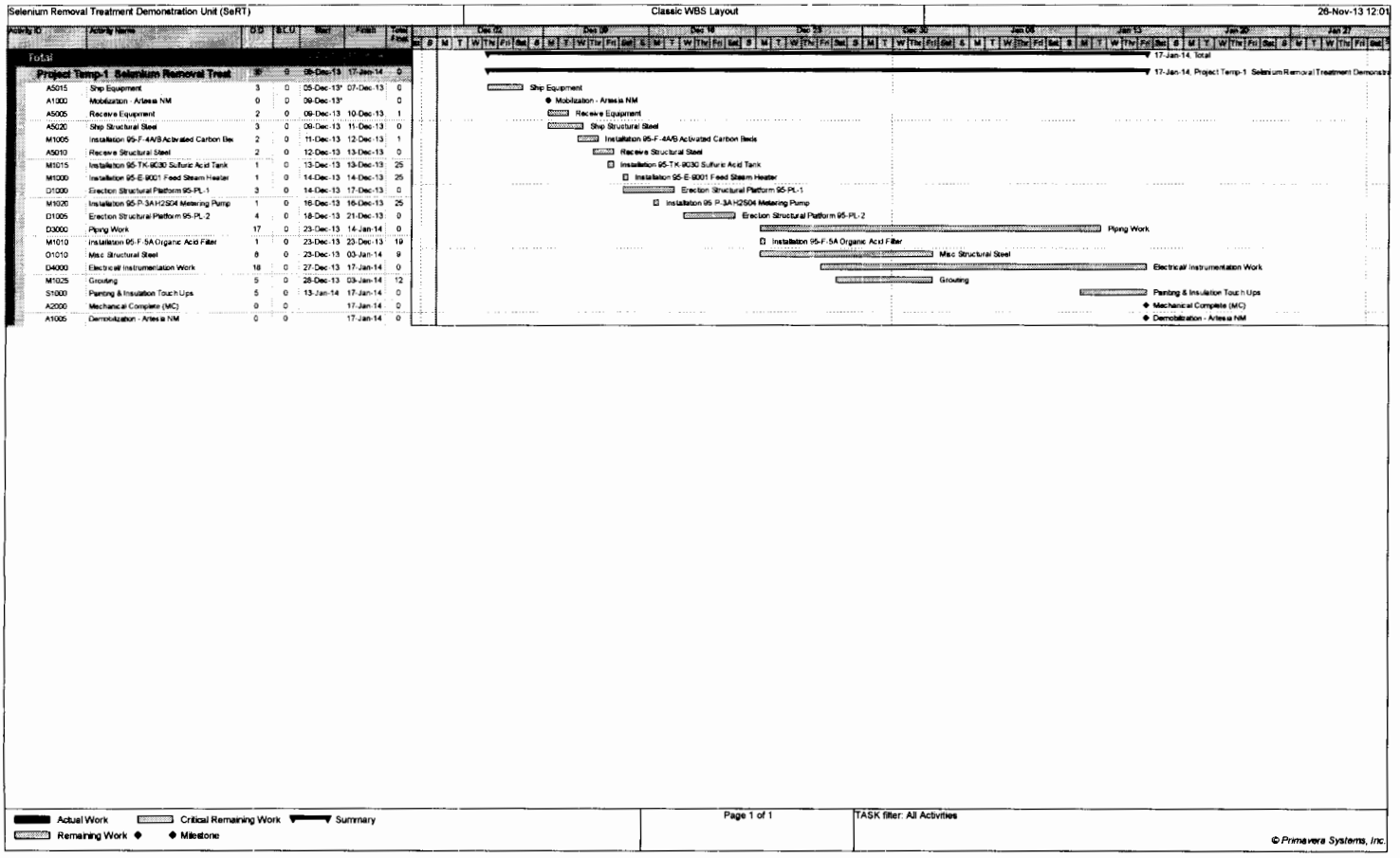
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Environmental Manager, NRC

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FLOCCULATOR
WWT COOLANT CIRC. PUMP
WWT COOLANT CIRC. PUMP
DETAIL 'A'
MECHANICAL FLOW SHEET
WASTEWATER TREATMENT

Attachment B:
Valero SeRT® Unit Implementation Schedule


Selenium Removal Treatment Demonstration Unit (SeRT)
Classic WBS Layout
26-Nov-13 12:01
Activity ID
Activity Name
O.D.
B.C.U.
Start
Finish
Total Float
Total
Project Temp-1 Selenium Removal Treat
A5015 Ship Equipment
A1000 Mobilization - Artesia NM
A5005 Receive Equipment
A5020 Ship Structural Steel
M1005 Installation 95-F-4A/B Activated Carbon Be
A5010 Receive Structural Steel
M1015 Installation 95-TK-9030 Sulfuric Acid Tank
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D1010 Misc Structural Steel
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M1025 Grouting
S1000 Painting & Insulation Touch Ups
A2000 Mechanical Complete (MC)
A1005 Demobilization - Artesia NM
Dec 02
Dec 09
Dec 16
Dec 23
Dec 30
Jan 06
Jan 13
Jan 20
Jan 27
17-Jan-14 Total
17-Jan-14 Project Temp-1 Selenium Removal Treatment Demonstra
Ship Equipment
Mobilization - Artesia NM
Receive Equipment
Ship Structural Steel
Installation 95-F-4A/B Activated Carbon Beds
Receive Structural Steel
Installation 95-TK-9030 Sulfuric Acid Tank
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Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary
Page 1 of 1
TASK filter: All Activities
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12/12/13

Selenium

Treatment Options for Removal from Navajo Refinery Waste Water

Selenium in Refinery Wastewater

- Selenium is naturally occurring in crude
- Behaves similar to Sulfur in refining processes
  - Se concentration increases with crude fraction
    - VTB and Gas Oil fractions are primary Se carriers
  - Forms similar compounds
    - H2Se (Hydrogen Selenide) – SeCN (Selenocyanate)
      - Formation in process units via same mechanisms as sulfur
  - Has various oxidation states when exposed to O2
    - SeO3 (Selenite) – SeO4 (Selenate)
      - Formed in wastewater during aerobic bio treatment
  - Has Water Solubility

Selenium in Refinery Wastewater

- H2Se and SeCN are made in refinery processes
  - HDS, Coker, FCCU
- A portion of these dissolve in water
- Leave process units in Sour Water streams
  - H2Se believed to strip out in Sour Water Stripper
  - SeCN known to concentrate in SWS Bottoms
- Stripped sour water is primary origin for Se in Wastewater

Se Treatment Options

- Absorptive Processes
  - SeRT (Carbon)
  - MAR (Alumina)
- Biological Processes
  - Anoxic Reduction to Elemental Se
- Chemical Processes
  - Siemens: Reduction to Elemental Se via chemical contact
  - Ferric Chloride Injection to bind Se and other heavy metals in wastewater solids

- All but SeRT work on oxidized forms of Se

Se Treatment Options

- Navajo Short Term Treatment Options
  - Ferric Chloride Injection (ICP)
  - SeRT
- Other potential future (longer term) options
  - MAR, Siemens
    - Not proven in refinery
    - Not fully developed technologies
  - Biological Processes
    - Unfavorable contingency choices for WWTP upsets

Se Treatment Options

- Ferric Chloride Injection
  - Selenium and other heavy metals are oxidized in WWTP during aeration process.
  - In the presence of water and ferric iron a Selenium-Iron solid complex is formed.
  - At WWTP conditions, the Se-Fe solid complex coagulates and joins other solid compounds that can be removed via mechanical means.
  - Bench test results have shown >50% Se removal
  - Navajo is in the pilot testing phase to determine optimal ferric chloride dose relative to overall waste water chemistry.

Se Treatment Options

- SeRT - Phillips 66 process
  - Absorbs SCN from Stripped Sour Water with treated carbon media
    - Navajo Bench Test results – 98% removal:
  - Advantages
    - Navajo Stripped Sour Water System configuration simplifies installation.
    - Has been utilized at several refineries
  - Disadvantages
    - Very corrosive due to Operation at low pH
  - Navajo has purchased a used unit and has begun engineering and construction.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, December 12, 2013 7:29 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Final Se Results for Monday, 12/9/13
Attachments: Rpt_1312316_Final_v1.pdf

Scott/Carl – attached are the final laboratory analytical reports for Total and TCLP selenium results for Monday, 12/9/2013. Per the report, selenium = 0.38 mg/L via the TCLP method. These results were received Wednesday, 12/11/2013; Condition 4 of the Order requires their reporting to OCD within 3 business days of receipt. Per Condition 1.a of Exhibit A of the Amended and Supplemental Agreed Order (the "Order") between NRC & OCD (Dated November 14, 2013), this marks the fourth consecutive week that selenium levels have remained below 1.0 mg/L (i.e., samples collected 11/18/13 – 0.78 mg/L; 11/25/13 – 0.75 mg/L; 12/2/13 – 0.88 mg/L; and 12/9/13 – 0.38 mg/L are all below the limit of 1.0 mg/L). Per Condition 1.b of Exhibit A, samples will be collected monthly and submitted in accordance with Condition 4 of Exhibit A. This submittal fulfills the requirements of the afore-mentioned Conditions. If you have any questions, please do not hesitate to contact me at (575) 746-5487. Thank you for your assistance.

Regards,
Mike Holder

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you
received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312316

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/9/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312316**
Date: **12/11/2013**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

All samples, excluding Hg, digested using EPA Method 3010.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312316-001 **Matrix:** AQUEOUS

Client Sample ID: WWTP 801 Effluent to Wells
Collection Date: 12/9/2013 6:00:00 AM
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/10/2013 4:25:22 PM	10723
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Arsenic	0.031	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Barium	0.022	0.020		mg/L	1	12/11/2013 10:15:00 AM	10734
Cadmium	ND	0.0020		mg/L	1	12/11/2013 10:15:00 AM	10734
Chromium	ND	0.0060		mg/L	1	12/11/2013 10:15:00 AM	10734
Lead	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734
Selenium	0.37	0.050		mg/L	1	12/11/2013 10:15:00 AM	10734
Silver	ND	0.0050		mg/L	1	12/11/2013 10:15:00 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312316-002 **Matrix:** AQUEOUS

Client Sample ID: WWTP 801 Effluent to Wells T
Collection Date: 12/9/2013 6:00:00 AM
Received Date: 12/9/2013 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	12/10/2013 4:59:51 PM	10731
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Barium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Cadmium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Chromium	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Lead	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Selenium	0.38	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734
Silver	ND	0.10		mg/L	1	12/11/2013 10:21:59 AM	10734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10723**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **10723**	RunNo: **15396**
Prep Date: **12/9/2013**	Analysis Date: **12/10/2013**	SeqNo: **443477** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-10723**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **10723**	RunNo: **15396**
Prep Date: **12/9/2013**	Analysis Date: **12/10/2013**	SeqNo: **443478** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.8	80	120			

Sample ID **1312297-001GMS**	SampType: **MS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **BatchQC**	Batch ID: **10723**	RunNo: **15396**
Prep Date: **12/9/2013**	Analysis Date: **12/10/2013**	SeqNo: **443481** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	75	125			

Sample ID **1312297-001GMSD**	SampType: **MSD**	TestCode: **EPA Method 7470: Mercury**
Client ID: **BatchQC**	Batch ID: **10723**	RunNo: **15396**
Prep Date: **12/9/2013**	Analysis Date: **12/10/2013**	SeqNo: **443482** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.3	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10731**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **10731**	RunNo: **15397**
Prep Date: **12/10/2013**	Analysis Date: **12/10/2013**	SeqNo: **443489** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-10731**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **10731**	RunNo: **15397**
Prep Date: **12/10/2013**	Analysis Date: **12/10/2013**	SeqNo: **443490** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Sample ID **1312287-001AMS**	SampType: **MS**	TestCode: **MERCURY, TCLP**
Client ID: **BatchQC**	Batch ID: **10731**	RunNo: **15397**
Prep Date: **12/10/2013**	Analysis Date: **12/10/2013**	SeqNo: **443493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	75	125			

Sample ID **1312287-001AMSD**	SampType: **MSD**	TestCode: **MERCURY, TCLP**
Client ID: **BatchQC**	Batch ID: **10731**	RunNo: **15397**
Prep Date: **12/10/2013**	Analysis Date: **12/10/2013**	SeqNo: **443494** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10734**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10734**	RunNo: **15419**
Prep Date: **12/10/2013**	Analysis Date: **12/11/2013**	SeqNo: **444229** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10734**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10734**	RunNo: **15419**
Prep Date: **12/10/2013**	Analysis Date: **12/11/2013**	SeqNo: **444230** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	91.5	80	120			
Barium	ND	100	0.5000	0	87.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.6	80	120			
Chromium	ND	5.0	0.5000	0	88.8	80	120			
Lead	ND	5.0	0.5000	0	88.1	80	120			
Selenium	ND	1.0	0.5000	0	88.2	80	120			
Silver	ND	5.0	0.1000	0	97.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312316**

11-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10734**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **10734**	RunNo: **15419**
Prep Date: **12/10/2013**	Analysis Date: **12/11/2013**	SeqNo: **444166** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-10734**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **10734**	RunNo: **15419**
Prep Date: **12/10/2013**	Analysis Date: **12/11/2013**	SeqNo: **444167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.5	80	120			
Barium	0.44	0.020	0.5000	0	87.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.6	80	120			
Chromium	0.44	0.0060	0.5000	0	88.8	80	120			
Lead	0.44	0.0050	0.5000	0	88.1	80	120			
Selenium	0.44	0.050	0.5000	0	88.2	80	120			
Silver	0.098	0.0050	0.1000	0	97.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312316 RcptNo: 1

Received by/date: MJ 12/09/13

Logged By: Michelle Garcia 12/9/2013 1:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/9/2013 2:30:49 PM Michelle Garcia

Reviewed By: 12/09/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes	No ✔	
9. Was preservative added to bottles?	Yes ✔	No ☐	NA ☐
	Added 1 mL HNO3 to 001A for acceptable pH.		
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? YES
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: MJ

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

☐ Standar ☑ Rush Next Day

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

[redacted]

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	Total Selenium 200.8	TCLP Selenium 1311/6010	(1) Total RCRA 8 Metals	(2) TCLP RCRA 8 Metals
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	HNO3	001			X	
12/9/13	6:00	Liquid	WWTP 801 Effluent to Wells	1 Plastic	Neat	002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/9/13	10:00	Jerry Sosa	[signature]	12/09/13	1330
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

(1) Totals method 6010
(2) TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, December 11, 2013 2:38 PM
To: Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD
Cc: Brancard, Bill, EMNRD; Wade, Gabriel, EMNRD
Subject: RE: Amended Order Pursuant to Para. 11 of Exhibit A Letter Dated 12/4/2013

FYI: A couple more considerations for EPA Method 6010B to be aware of are:

1) Exhibit A No. 1 (e) requires: Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarify, other samples taken by Navajo may be analyzed using any method.

   It would appear based on this provision of the amended Order, the operator cannot deviate from EPA Method 1311 while demonstrating the weekly, monthly and quarterly samples do not exceed 1 ppm Se. Thereafter, it may be changed.

2) EPA 6010B Table 1 include metals in solution with instrument detection limits with actual method detection limits are sample dependent and may vary as the sample matrix varies.

   Consequently, OCD may approve the above method as long as environmental analytical detection limits (DLs) are less than the OCD's regulatory limit, otherwise the DL does not satisfy the OCD Data Quality Objectives (DQOs). The instrument detection limits for metals appear to be well below OCD regulatory limits, but there may be rare instances where the sample matrix may result in the DL being greater than the OCD Regulatory limit making the analysis invalid.

Please consider this for tomorrow's meeting with the operator. I notice in the operator's December 2, 2013 Nov. Progress Report Letter Page 2 Table 1 that the operator may already be using EPA Method 6010B, which they are not supposed to be using during the demonstration period of the Amended Order Exhibit A No. 1. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Chavez, Carl J, EMNRD
Sent: Wednesday, December 11, 2013 10:12 AM
To: Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD
Cc: Brancard, Bill, EMNRD; Wade, Gabriel, EMNRD
Subject: Amended Order Pursuant to Para. 11 of Exhibit A Letter Dated 12/4/2013

Gentlemen:

I have reviewed the above subject operator letter received on 12/10. The operator is seeking approval to conduct Total and TCLP Se analyses using EPA Method 6010B with recommendations. The recommendations appear to apply when more than one lab is conducting the analyses under perhaps a split-sample scenario. For one lab, it is not as complex to coordinate the analyses under ICP EPA Method 6010B.

My thoughts and/or recommendations are:

1) EPA ICP Method 6010B is ok to use.
2) The recommendation to make the % acid similar between Total and TCLP analyses and/or in addition to a multiple lab analyses scenario may not be practicable based on the method requirements (see EPA Q/A below).

Summary: Carl received on 12/10 and reviewed on 12/11 the HollyFrontier letter dated 12/4 regarding amended order requirement to advise OCD of results of further review of Se sampling data and address any anomalies and discrepancies. Operator believes acid preservative strength causes more TCLP Se to leach out than Total Se and is proposing ICP EPA Method 6010B with uniform % acid used for Total and TCLP Se Analyses (one lab vs. multiple labs). Carl researched the method. OCD noticed that RPD between Hall and ALS Labs was greater than 20% for Total and TCLP Analyses, which verify the unacceptable incongruities between the two different labs (Hall vs. ALS) and % acid used, but retesting would be required to confirm conclusions of operator (not required by OCD). EPA Method 6010B is ok with OCD and analytical recommendations posted in operator's letter with exception that the recommended similarity of % acid used may pose a problem to different labs, etc. The letter references a Table 6, which was not included in the letter, but may have meant Table 4. The Page 5 paragraph referencing Table 6 with Table 4 displayed below does not support the operator's statement: "Generally, the concentrations of Se are trending lower for most of the sampling locations."

EPA TCLP Q&A:

TCLP Preservation Requirements
Question: What are the preservation requirements for the leachates in Method 1311?
Answer: As noted in Secs. 6.3 and 6.4 of the method, chemical preservatives must *not* be added to the original samples *before* leaching. However, the samples may be refrigerated, unless refrigeration will result in irreversible physical changes to the waste.
According to Sec. 6.6, once leached, the portion of the leachate for the metals analyses must be acidified with nitric acid to a pH < 2, unless precipitation occurs, in which case, consult Sec. 7.2.14 of the method for instructions.
The portions of the leachate to be analyzed for the organics must be preserved as described in the individual determinative methods. For volatiles, there is generally *no* need for further acidification, since the leachate is already at a pH below 7, which should retard any biological activity in the leachate. The portions of the leachate for volatiles, semivolatiles, and herbicides analyses must be stored with minimal headspace at 4 degrees C.

TCLP Duplicate Analysis
Question: Are we required to prepare a duplicate TCLP sample that is tumbled at the same time as the original sample?
Answer: Method 1311 does not address the need for a duplicate sample. The need for a duplicate sample could be specified in a quality assurance project plan (QAPP) or sampling and analysis plan (SAP) for any given project, but it is not a required part of the method *per se*.

Changing the Acid Strength in the TCLP

Question: I work for the environmental regulatory agency in *[insert the name of a foreign country]* and we believe that the strength of the acid solution in Method 1311 should be increased in order to leach more of the contaminants from the sample. We also want to use it to test additional analytes. Are we allowed to do that?

Answer: First and foremost, since you represent an agency outside of the United States, you do not need EPA's permission or concurrence to develop or modify testing procedures for use in your country. Nevertheless, please understand that the TCLP is a method-defined parameter, which means that the results depend entirely on how the test is conducted.

The test was designed to model a theoretical scenario in which a waste is mismanaged by placing it in an unlined landfill containing municipal solid waste. The acetic acid solution in Method 1311 is designed to simulate the result of rainwater infiltrating the landfill, reacting with the municipal solid waste, and then leaching through the waste being tested. The numerical limits for the RCRA toxicity characteristic (40 CFR 261.24) were derived using the same scenario and were set at levels that would prevent the groundwater under the landfill from posing a threat to human health and the environment.

As a result, the specific details of Method 1311 and the numerical limits for the toxicity characteristic itself are linked together. Increasing the acid strength of the leaching fluid to leach a larger amount of any of the constituents changes the scenario that the test was designed to simulate. Therefore, one would have to consider changing the numerical limits for the constituents listed in the toxicity characteristic too. Similarly, if one adds constituents to the list of those to be tested, one would have to develop numerical limits for them using the same sort of model that EPA used for the toxicity characteristic.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, December 11, 2013 10:12 AM
To: Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD
Cc: Brancard, Bill, EMNRD; Wade, Gabriel, EMNRD
Subject: Amended Order Pursuant to Para. 11 of Exhibit A Letter Dated 12/4/2013

Gentlemen:

I have reviewed the above subject operator letter received on 12/10. The operator is seeking approval to conduct Total and TCLP Se analyses using EPA Method 6010B with recommendations. The recommendations appear to apply when more than one lab is conducting the analyses under perhaps a split-sample scenario. For one lab, it is not as complex to coordinate the analyses under ICP EPA Method 6010B.

My thoughts and/or recommendations are:

1) EPA ICP Method 6010B is ok to use.
2) The recommendation to make the % acid similar between Total and TCLP analyses and/or in addition to a multiple lab analyses scenario may not be practicable based on the method requirements (see EPA Q/A below).

Summary: Carl received on 12/10 and reviewed on 12/11 the HollyFrontier letter dated 12/4 regarding amended order requirement to advise OCD of results of further review of Se sampling data and address any anomalies and discrepancies. Operator believes acid preservative strength causes more TCLP Se to leach out than Total Se and is proposing ICP EPA Method 6010B with uniform % acid used for Total and TCLP Se Analyses (one lab vs. multiple labs). Carl researched the method. OCD noticed that RPD between Hall and ALS Labs was greater than 20% for Total and TCLP Analyses, which verify the unacceptable incongruities between the two different labs (Hall vs. ALS) and % acid used, but retesting would be required to confirm conclusions of operator (not required by OCD). EPA Method 6010B is ok with OCD and analytical recommendations posted in operator's letter with exception that the recommended similarity of % acid used may pose a problem to different labs, etc. The letter references a Table 6, which was not included in the letter, but may have meant Table 4. The Page 5 paragraph referencing Table 6 with Table 4 displayed below does not support the operator's statement: "Generally, the concentrations of Se are trending lower for most of the sampling locations."

EPA TCLP Q&A:

TCLP Preservation Requirements
Question: What are the preservation requirements for the leachates in Method 1311?
Answer: As noted in Secs. 6.3 and 6.4 of the method, chemical preservatives must *not* be added to the original samples *before* leaching. However, the samples may be refrigerated, unless refrigeration will result in irreversible physical changes to the waste.
According to Sec. 6.6, once leached, the portion of the leachate for the metals analyses must be acidified with nitric acid to a pH < 2, unless precipitation occurs, in which case, consult Sec. 7.2.14 of the method for instructions.
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Changing the Acid Strength in the TCLP
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The test was designed to model a theoretical scenario in which a waste is mismanaged by placing it in an unlined landfill containing municipal solid waste. The acetic acid solution in Method 1311 is designed to simulate the result of rainwater infiltrating the landfill, reacting with the municipal solid waste, and then leaching through the waste being tested. The numerical limits for the RCRA toxicity characteristic (40 CFR 261.24) were derived using the same scenario and were set at levels that would prevent the groundwater under the landfill from posing a threat to human health and the environment.
As a result, the specific details of Method 1311 and the numerical limits for the toxicity characteristic itself are linked together. Increasing the acid strength of the leaching fluid to leach a larger amount of any of the constituents changes the scenario that the test was designed to simulate. Therefore, one would have to consider changing the numerical limits for the constituents listed in the toxicity characteristic too. Similarly, if one adds constituents to the list of those to be tested, one would have to develop numerical limits for them using the same sort of model that EPA used for the toxicity characteristic.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
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METHOD 6010B

INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY

1.0 SCOPE AND APPLICATION

1.1 Inductively coupled plasma-atomic emission spectrometry (ICP-AES) determines trace elements, including metals, in solution. The method is applicable to all of the elements listed in Table 1. All matrices, excluding filtered groundwater samples but including ground water, aqueous samples, TCLP and EP extracts, industrial and organic wastes, soils, sludges, sediments, and other solid wastes, require digestion prior to analysis. Groundwater samples that have been prefiltered and acidified will not need acid digestion. Samples which are not digested must either use an internal standard or be matrix matched with the standards. Refer to Chapter Three for the appropriate digestion procedures.

1.2 Table 1 lists the elements for which this method is applicable. Detection limits, sensitivity, and the optimum and linear concentration ranges of the elements can vary with the wavelength, spectrometer, matrix and operating conditions. Table 1 lists the recommended analytical wavelengths and estimated instrumental detection limits for the elements in clean aqueous matrices. The instrument detection limit data may be used to estimate instrument and method performance for other sample matrices. Elements and matrices other than those listed in Table 1 may be analyzed by this method if performance at the concentration levels of interest (see Section 8.0) is demonstrated.

1.3 Users of the method should state the data quality objectives prior to analysis and must document and have on file the required initial demonstration performance data described in the following sections prior to using the method for analysis.

1.4 Use of this method is restricted to spectroscopists who are knowledgeable in the correction of spectral, chemical, and physical interferences described in this method.

2.0 SUMMARY OF METHOD

2.1 Prior to analysis, samples must be solubilized or digested using appropriate Sample Preparation Methods (e.g. Chapter Three). When analyzing groundwater samples for dissolved constituents, acid digestion is not necessary if the samples are filtered and acid preserved prior to analysis.

2.2 This method describes multielemental determinations by ICP-AES using sequential or simultaneous optical systems and axial or radial viewing of the plasma. The instrument measures characteristic emission spectra by optical spectrometry. Samples are nebulized and the resulting aerosol is transported to the plasma torch. Element-specific emission spectra are produced by a radio-frequency inductively coupled plasma. The spectra are dispersed by a grating spectrometer, and the intensities of the emission lines are monitored by photosensitive devices. Background correction is required for trace element determination. Background must be measured adjacent to analyte lines on samples during analysis. The position selected for the background-intensity measurement, on either or both sides of the analytical line, will be determined by the complexity of the spectrum adjacent to the analyte line. In one mode of analysis the position used should be as free as possible from spectral interference and should reflect the same change in background

intensity as occurs at the analyte wavelength measured. Background correction is not required in cases of line broadening where a background correction measurement would actually degrade the analytical result. The possibility of additional interferences named in Section 3.0 should also be recognized and appropriate corrections made; tests for their presence are described in Section 8.5. Altematively, users may choose multivariate calibration methods. In this case, point selections for background correction are superfluous since whole spectral regions are processed.

3.0 INTERFERENCES

3.1 Spectral interferences are caused by background emission from continuous or recombination phenomena, stray light from the line emission of high concentration elements, overlap of a spectral line from another element, or unresolved overlap of molecular band spectra.

3.1.1 Background emission and stray light can usually be compensated for by subtracting the background emission determined by measurements adjacent to the analyte wavelength peak. Spectral scans of samples or single element solutions in the analyte regions may indicate when alternate wavelengths are desirable because of severe spectral interference. These scans will also show whether the most appropriate estimate of the background emission is provided by an interpolation from measurements on both sides of the wavelength peak or by measured emission on only one side. The locations selected for the measurement of background intensity will be determined by the complexity of the spectrum adjacent to the wavelength peak. The locations used for routine measurement must be free of off-line spectral interference (interelement or molecular) or adequately corrected to reflect the same change in background intensity as occurs at the wavelength peak. For multivariate methods using whole spectral regions, background scans should be included in the correction algorithm. Off-line spectral interferences are handled by including spectra on interfering species in the algorithm.

3.1.2 To determine the appropriate location for off-line background correction, the user must scan the area on either side adjacent to the wavelength and record the apparent emission intensity from all other method analytes. This spectral information must be documented and kept on file. The location selected for background correction must be either free of off-line interelement spectral interference or a computer routine must be used for automatic correction on all determinations. If a wavelength other than the recommended wavelength is used, the analyst must determine and document both the overlapping and nearby spectral interference effects from all method analytes and common elements and provide for their automatic correction on all analyses. Tests to determine spectral interference must be done using analyte concentrations that will adequately describe the interference. Normally, 100 mg/L single element solutions are sufficient; however, for analytes such as iron that may be found at high concentration, a more appropriate test would be to use a concentration near the upper analytical range limit.

3.1.3 Spectral overlaps may be avoided by using an alternate wavelength or can be compensated by equations that correct for interelement contributions. Instruments that use equations for interelement correction **require** the interfering elements be analyzed at the same time as the element of interest. When operative and uncorrected, interferences will produce false positive determinations and be reported as analyte concentrations. More extensive information on interferant effects at various wavelengths and resolutions is available in reference wavelength tables and books. Users may apply interelement

correction equations determined on their instruments with tested concentration ranges to compensate (off line or on line) for the effects of interfering elements. Some potential spectral interferences observed for the recommended wavelengths are given in Table 2. For multivariate methods using whole spectral regions, spectral interferences are handled by including spectra of the interfering elements in the algorithm. The interferences listed are only those that occur between method analytes. Only interferences of a direct overlap nature are listed. These overlaps were observed with a single instrument having a working resolution of 0.035 nm.

3.1.4 When using interelement correction equations, the interference may be expressed as analyte concentration equivalents (i.e. false analyte concentrations) arising from 100 mg/L of the interference element. For example, assume that As is to be determined (at 193.696 nm) in a sample containing approximately 10 mg/L of Al. According to Table 2, 100 mg/L of Al would yield a false signal for As equivalent to approximately 1.3 mg/L. Therefore, the presence of 10 mg/L of Al would result in a false signal for As equivalent to approximately 0.13 mg/L. The user is cautioned that other instruments may exhibit somewhat different levels of interference than those shown in Table 2. The interference effects must be evaluated for each individual instrument since the intensities will vary.

3.1.5 Interelement corrections will vary for the same emission line among instruments because of differences in resolution, as determined by the grating, the entrance and exit slit widths, and by the order of dispersion. Interelement corrections will also vary depending upon the choice of background correction points. Selecting a background correction point where an interfering emission line may appear should be avoided when practical. Interelement corrections that constitute a major portion of an emission signal may not yield accurate data. Users should not forget that some samples may contain uncommon elements that could contribute spectral interferences.

3.1.6 The interference effects must be evaluated for each individual instrument whether configured as a sequential or simultaneous instrument. For each instrument, intensities will vary not only with optical resolution but also with operating conditions (such as power, viewing height and argon flow rate). When using the recommended wavelengths, the analyst is required to determine and document for each wavelength the effect from referenced interferences (Table 2) as well as any other suspected interferences that may be specific to the instrument or matrix. The analyst is encouraged to utilize a computer routine for automatic correction on all analyses.

3.1.7 Users of sequential instruments must verify the absence of spectral interference by scanning over a range of 0.5 nm centered on the wavelength of interest for several samples. The range for lead, for example, would be from 220.6 to 220.1 nm. This procedure must be repeated whenever a new matrix is to be analyzed and when a new calibration curve using different instrumental conditions is to be prepared. Samples that show an elevated background emission across the range may be background corrected by applying a correction factor equal to the emission adjacent to the line or at two points on either side of the line and interpolating between them. An alternate wavelength that does not exhibit a background shift or spectral overlap may also be used.

3.1.8 If the correction routine is operating properly, the determined apparent analyte(s) concentration from analysis of each interference solution should fall within a specific concentration range around the calibration blank. The concentration range is calculated by multiplying the concentration of the interfering element by the value of the correction factor being tested and divided by 10. If after the subtraction of the calibration blank the apparent analyte concentration falls outside of this range in either a positive or negative direction, a change in the correction factor of more than 10% should be suspected. The cause of the change should be determined and corrected and the correction factor updated. The interference check solutions should be analyzed more than once to confirm a change has occurred. Adequate rinse time between solutions and before analysis of the calibration blank will assist in the confirmation.

3.1.9 When interelement corrections are applied, their accuracy should be verified, daily, by analyzing spectral interference check solutions. If the correction factors or multivariate correction matrices tested on a daily basis are found to be within the 20% criteria for 5 consecutive days, the required verification frequency of those factors in compliance may be extended to a weekly basis. Also, if the nature of the samples analyzed is such they do not contain concentrations of the interfering elements at ± one reporting limit from zero, daily verification is not required. All interelement spectral correction factors or multivariate correction matrices must be verified and updated every six months or when an instrumentation change, such as in the torch, nebulizer, injector, or plasma conditions occurs. Standard solution should be inspected to ensure that there is no contamination that may be perceived as a spectral interference.

3.1.10 When interelement corrections are <u>not</u> used, verification of absence of interferences is required.

3.1.10.1 One method is to use a computer software routine for comparing the determinative data to limits files for notifying the analyst when an interfering element is detected in the sample at a concentration that will produce either an apparent false positive concentration, (i.e., greater than) the analyte instrument detection limit, or false negative analyte concentration, (i.e., less than the lower control limit of the calibration blank defined for a 99% confidence interval).

3.1.10.2 Another method is to analyze an Interference Check Solution(s) which contains similar concentrations of the major components of the samples (>10 mg/L) on a continuing basis to verify the absence of effects at the wavelengths selected. These data must be kept on file with the sample analysis data. If the check solution confirms an operative interference that is $\geq$ 20% of the analyte concentration, the analyte must be determined using (1) analytical and background correction wavelengths (or spectral regions) free of the interference, (2) by an alternative wavelength, or (3) by another documented test procedure.

3.2 Physical interferences are effects associated with the sample nebulization and transport processes. Changes in viscosity and surface tension can cause significant inaccuracies, especially in samples containing high dissolved solids or high acid concentrations. If physical interferences are present, they must be reduced by diluting the sample or by using a peristaltic pump, by using an internal standard or by using a high solids nebulizer. Another problem that can occur with high dissolved solids is salt buildup at the tip of the nebulizer, affecting aerosol flow rate

and causing instrumental drift. The problem can be controlled by wetting the argon prior to nebulization, using a tip washer, using a high solids nebulizer or diluting the sample. Also, it has been reported that better control of the argon flow rate, especially to the nebulizer, improves instrument performance: this may be accomplished with the use of mass flow controllers. The test described in Section 8.5.1 will help determine if a physical interference is present.

3.3 Chemical interferences include molecular compound formation, ionization effects, and solute vaporization effects. Normally, these effects are not significant with the ICP technique, but if observed, can be minimized by careful selection of operating conditions (incident power, observation position, and so forth), by buffering of the sample, by matrix matching, and by standard addition procedures. Chemical interferences are highly dependent on matrix type and the specific analyte element.

3.4 Memory interferences result when analytes in a previous sample contribute to the signals measured in a new sample. Memory effects can result from sample deposition on the uptake tubing to the nebulizer and from the build up of sample material in the plasma torch and spray chamber. The site where these effects occur is dependent on the element and can be minimized by flushing the system with a rinse blank between samples. The possibility of memory interferences should be recognized within an analytical run and suitable rinse times should be used to reduce them. The rinse times necessary for a particular element must be estimated prior to analysis. This may be achieved by aspirating a standard containing elements at a concentration ten times the usual amount or at the top of the linear dynamic range. The aspiration time for this sample should be the same as a normal sample analysis period, followed by analysis of the rinse blank at designated intervals. The length of time required to reduce analyte signals to within a factor of two of the method detection limit should be noted. Until the required rinse time is established, this method suggests a rinse period of at least 60 seconds between samples and standards. If a memory interference is suspected, the sample must be reanalyzed after a rinse period of sufficient length. Alternate rinse times may be established by the analyst based upon their DQOs.

3.5 Users are advised that high salt concentrations can cause analyte signal suppressions and confuse interference tests. If the instrument does not display negative values, fortify the interference check solution with the elements of interest at 0.5 to 1 mg/L and measure the added standard concentration accordingly. Concentrations should be within 20% of the true spiked concentration or dilution of the samples will be necessary. In the absence of measurable analyte, overcorrection could go undetected if a negative value is reported as zero.

3.6 The dashes in Table 2 indicate that no measurable interferences were observed even at higher interferant concentrations. Generally, interferences were discernible if they produced peaks, or background shifts, corresponding to 2 to 5% of the peaks generated by the analyte concentrations.

4.0 APPARATUS AND MATERIALS

4.1 Inductively coupled argon plasma emission spectrometer:

4.1.1 Computer-controlled emission spectrometer with background correction.

4.1.2 Radio-frequency generator compliant with FCC regulations.

4.1.3 Optional mass flow controller for argon nebulizer gas supply.

4.1.4 Optional peristaltic pump.

4.1.5 Optional Autosampler.

4.1.6 Argon gas supply - high purity.

4.2 Volumetric flasks of suitable precision and accuracy.

4.3 Volumetric pipets of suitable precision and accuracy.

5.0 REAGENTS

5.1 Reagent or trace metals grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination. If the purity of a reagent is in question analyze for contamination. If the concentration of the contamination is less than the MDL then the reagent is acceptable.

5.1.1 Hydrochloric acid (conc), HCl.

5.1.2 Hydrochloric acid (1:1), HCl. Add 500 mL concentrated HCl to 400 mL water and dilute to 1 liter in an appropriately sized beaker.

5.1.3 Nitric acid (conc), HNO_3.

5.1.4 Nitric acid (1:1), HNO_3. Add 500 mL concentrated HNO_3 to 400 mL water and dilute to 1 liter in an appropriately sized beaker.

5.2 Reagent Water. All references to water in the method refer to reagent water unless otherwise specified. Reagent water will be interference free. Refer to Chapter One for a definition of reagent water.

5.3 Standard stock solutions may be purchased or prepared from ultra- high purity grade chemicals or metals (99.99% pure or greater). All salts must be dried for 1 hour at 105°C, unless otherwise specified.

Note: This section does not apply when analyzing samples that have been prepared by Method 3040.

CAUTION: Many metal salts are extremely toxic if inhaled or swallowed. Wash hands thoroughly after handling.

Typical stock solution preparation procedures follow. Concentrations are calculated based upon the weight of pure metal added, or with the use of the element fraction and the weight of the metal salt added.

For metals:

$$\text{Concentration (ppm)} = \frac{\text{weight (mg)}}{\text{volume (L)}}$$

For metal salts:

$$\text{Concentration (ppm)} = \frac{\text{weight (mg)} \times \text{mole fraction}}{\text{volume (L)}}$$

5.3.1 Aluminum solution, stock, 1 mL = 1000 µg Al: Dissolve 1.000 g of aluminum metal, weighed accurately to at least four significant figures, in an acid mixture of 4.0 mL of (1:1) HCl and 1.0 mL of concentrated $HN0_3$ in a beaker. Warm beaker slowly to effect solution. When dissolution is complete, transfer solution quantitatively to a 1-liter flask, add an additional 10.0 mL of (1:1) HCl and dilute to volume with reagent water.

NOTE: Weight of analyte is expressed to four significant figures for consistency with the weights below because rounding to two decimal places can contribute up to 4 % error for some of the compounds.

5.3.2 Antimony solution, stock, 1 mL = 1000 µg Sb: Dissolve 2.6673 g $K(SbO)C_4H_4O_6$ (element fraction Sb = 0.3749), weighed accurately to at least four significant figures, in water, add 10 mL (1:1) HCl, and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.3 Arsenic solution, stock, 1 mL = 1000 µg As: Dissolve 1.3203 g of As_2O_3 (element fraction As = 0.7574), weighed accurately to at least four significant figures, in 100 mL of water containing 0.4 g NaOH. Acidify the solution with 2 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.4 Barium solution, stock, 1 mL = 1000 µg Ba: Dissolve 1.5163 g $BaCl_2$ (element fraction Ba = 0.6595), dried at 250°C for 2 hours, weighed accurately to at least four significant figures, in 10 mL water with 1 mL (1:1) HCl. Add 10.0 mL (1:1) HCl and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.5 Beryllium solution, stock, 1 mL = 1000 µg Be: Do not dry. Dissolve 19.6463 g $BeSO_4{\cdot}4H_2O$ (element fraction Be = 0.0509), weighed accurately to at least four significant figures, in water, add 10.0 mL concentrated HNO_3, and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.6 Boron solution, stock, 1 mL = 1000 µg B: Do not dry. Dissolve 5.716 g anhydrous H_3BO_3 (B fraction = 0.1749), weighed accurately to at least four significant figures, in reagent water and dilute in a 1-L volumetric flask with reagent water. Transfer immediately after mixing in a clean polytetrafluoroethylene (PTFE) bottle to minimize any leaching of boron from the glass volumetric container. Use of a non-glass volumetric flask is recommended to avoid boron contamination from glassware.

5.3.7 Cadmium solution, stock, 1 mL = 1000 µg Cd: Dissolve 1.1423 g CdO (element fraction Cd = 0.8754), weighed accurately to at least four significant figures, in a

minimum amount of (1:1) HNO_3. Heat to increase rate of dissolution. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.8 Calcium solution, stock, 1 mL = 1000 µg Ca: Suspend 2.4969 g $CaCO_3$ (element Ca fraction = 0.4005), dried at 180°C for 1 hour before weighing, weighed accurately to at least four significant figures, in water and dissolve cautiously with a minimum amount of (1:1) HNO_3. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.9 Chromium solution, stock, 1 mL = 1000 µg Cr: Dissolve 1.9231 g CrO_3 (element fraction Cr = 0.5200), weighed accurately to at least four significant figures, in water. When solution is complete, acidify with 10 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.10 Cobalt solution, stock, 1 mL = 1000 µg Co: Dissolve 1.00 g of cobalt metal, weighed accurately to at least four significant figures, in a minimum amount of (1:1) HNO_3. Add 10.0 mL (1:1) HCl and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.11 Copper solution, stock, 1 mL = 1000 µg Cu: Dissolve 1.2564 g CuO (element fraction Cu = 0.7989), weighed accurately to at least four significant figures), in a minimum amount of (1:1) HNO_3. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.12 Iron solution, stock, 1 mL = 1000 µg Fe: Dissolve 1.4298 g Fe_2O_3 (element fraction Fe = 0.6994), weighed accurately to at least four significant figures, in a warm mixture of 20 mL (1:1) HCl and 2 mL of concentrated HNO_3. Cool, add an additional 5.0 mL of concentrated HNO_3, and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.13 Lead solution, stock, 1 mL = 1000 µg Pb: Dissolve 1.5985 g $Pb(NO_3)_2$ (element fraction Pb = 0.6256), weighed accurately to at least four significant figures, in a minimum amount of (1:1) HNO_3. Add 10 mL (1:1) HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.14 Lithium solution, stock, 1 mL = 1000 µg Li: Dissolve 5.3248 g lithium carbonate (element fraction Li = 0.1878), weighed accurately to at least four significant figures, in a minimum amount of (1:1) HCl and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.15 Magnesium solution, stock, 1 mL = 1000 µg Mg: Dissolve 1.6584 g MgO (element fraction Mg = 0.6030), weighed accurately to at least four significant figures, in a minimum amount of (1:1) HNO_3. Add 10.0 mL (1:1) concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.16 Manganese solution, stock, 1 mL = 1000 µg Mn: Dissolve 1.00 g of manganese metal, weighed accurately to at least four significant figures, in acid mixture (10 mL concentrated HCl and 1 mL concentrated HNO_3) and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.17 Mercury solution, stock, 1 mL = 1000 µg Hg: Do not dry, highly toxic element. Dissolve 1.354 g $HgCl_2$ (Hg fraction = 0.7388) in reagent water. Add 50.0 mL concentrated HNO_3 and dilute to volume in 1-L volumetric flask with reagent water.

5.3.18 Molybdenum solution, stock, 1 mL = 1000 µg Mo: Dissolve 1.7325 g $(NH_4)_6Mo_7O_{24}.4H_2O$ (element fraction Mo = 0.5772), weighed accurately to at least four significant figures, in water and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.19 Nickel solution, stock, 1 mL = 1000 µg Ni: Dissolve 1.00 g of nickel metal, weighed accurately to at least four significant figures, in 10.0 mL hot concentrated HNO_3, cool, and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.20 Phosphate solution, stock, 1 mL = 1000 µg P: Dissolve 4.3937 g anhydrous KH_2PO_4 (element fraction P = 0.2276), weighed accurately to at least four significant figures, in water. Dilute to volume in a 1,000 mL volumetric flask with water.

5.3.21 Potassium solution, stock, 1 mL = 1000 µg K: Dissolve 1.9069 g KCl (element fraction K = 0.5244) dried at 110°C, weighed accurately to at least four significant figures, in water, and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.22 Selenium solution, stock, 1 mL = 1000 µg Se: Do not dry. Dissolve 1.6332 g H_2SeO_3 (element fraction Se = 0.6123), weighed accurately to at least four significant figures, in water and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.23 Silica solution, stock, 1 mL = 1000 µg SiO_2: Do not dry. Dissolve 2.964 g NH_4SiF_6, weighed accurately to at least four significant figures, in 200 mL (1:20) HCl with heating at 85°C to effect dissolution. Let solution cool and dilute to volume in a 1-L volumetric flask with reagent water.

5.3.24 Silver solution, stock, 1 mL = 1000 µg Ag: Dissolve 1.5748 g $AgNO_3$ (element fraction Ag = 0.6350), weighed accurately to at least four significant figures, in water and 10 mL concentrated HNO_3. Dilute to volume in a 1,000 mL volumetric flask with water.

5.3.25 Sodium solution, stock, 1 mL = 1000 µg Na: Dissolve 2.5419 g NaCl (element fraction Na = 0.3934), weighed accurately to at least four significant figures, in water. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.26 Strontium solution, stock, 1 mL = 1000 µg Sr: Dissolve 2.4154 g of strontium nitrate ($Sr(NO_3)_2$) (element fraction Sr = 0.4140), weighed accurately to at least four significant figures, in a 1-liter flask containing 10 mL of concentrated HCl and 700 mL of water. Dilute to volume in a 1,000 mL volumetric flask with water.

5.3.27 Thallium solution, stock, 1 mL = 1000 µg Tl: Dissolve 1.3034 g $TlNO_3$ (element fraction Tl = 0.7672), weighed accurately to at least four significant figures, in water. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.28 Tin solution, stock, 1 mL = 1000 µg Sn: Dissolve 1.000 g Sn shot, weighed accurately to at least 4 significant figures, in 200 mL (1:1) HCl with heating to effect dissolution. Let solution cool and dilute with (1:1) HCl in a 1-L volumetric flask.

5.3.29 Vanadium solution, stock, 1 mL = 1000 µg V: Dissolve 2.2957 g NH_4VO_3 (element fraction V = 0.4356), weighed accurately to at least four significant figures, in a minimum amount of concentrated HNO_3. Heat to increase rate of dissolution. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.3.30 Zinc solution, stock, 1 mL = 1000 µg Zn: Dissolve 1.2447 g ZnO (element fraction Zn = 0.8034), weighed accurately to at least four significant figures, in a minimum amount of dilute HNO_3. Add 10.0 mL concentrated HNO_3 and dilute to volume in a 1,000 mL volumetric flask with water.

5.4 Mixed calibration standard solutions - Prepare mixed calibration standard solutions by combining appropriate volumes of the stock solutions in volumetric flasks (see Table 3). Add the appropriate types and volumes of acids so that the standards are matrix matched with the sample digestates. Prior to preparing the mixed standards, each stock solution should be analyzed separately to determine possible spectral interference or the presence of impurities. Care should be taken when preparing the mixed standards to ensure that the elements are compatible and stable together. Transfer the mixed standard solutions to FEP fluorocarbon or previously unused polyethylene or polypropylene bottles for storage. Fresh mixed standards should be prepared, as needed, with the realization that concentration can change on aging. Some typical calibration standard combinations are listed in Table 3.

NOTE: If the addition of silver to the recommended acid combination results in an initial precipitation, add 15 mL of water and warm the flask until the solution clears. Cool and dilute to 100 mL with water. For this acid combination, the silver concentration should be limited to 2 mg/L. Silver under these conditions is stable in a tap-water matrix for 30 days. Higher concentrations of silver require additional HCl.

5.5 Two types of blanks are required for the analysis for samples prepared by any method other than 3040. The calibration blank is used in establishing the analytical curve, and the method blank is used to identify possible contamination resulting from varying amounts of the acids used in the sample processing.

5.5.1 The calibration blank is prepared by acidifying reagent water to the same concentrations of the acids found in the standards and samples. Prepare a sufficient quantity to flush the system between standards and samples. The calibration blank will also be used for all initial and continuing calibration blank determinations (see Sections 7.3 and 7.4).

5.5.2 The method blank must contain all of the reagents in the same volumes as used in the processing of the samples. The method blank must be carried through the complete procedure and contain the same acid concentration in the final solution as the sample solution used for analysis.

5.6 The Initial Calibration Verification (ICV) is prepared by the analyst by combining compatible elements from a standard source different than that of the calibration standard and at concentrations within the linear working range of the instrument (see Section 8.6.1 for use).

5.7 The Continuing Calibration Verification (CCV)) should be prepared in the same acid matrix using the same standards used for calibration at a concentration near the mid-point of the calibration curve (see Section 8.6.1 for use).

5.8 The interference check solution is prepared to contain known concentrations of interfering elements that will provide an adequate test of the correction factors. Spike the sample with the elements of interest, particularly those with known interferences at 0.5 to 1 mg/L. In the absence of measurable analyte, overcorrection could go undetected because a negative value could be reported as zero. If the particular instrument will display overcorrection as a negative number, this spiking procedure will not be necessary.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 See the introductory material in Chapter Three, Inorganic Analytes, Sections 3.1 through 3.3.

7.0 PROCEDURE

7.1 Preliminary treatment of most matrices is necessary because of the complexity and variability of sample matrices. Groundwater samples which have been prefiltered and acidified will not need acid digestion. Samples which are not digested must either use an internal standard or be matrix matched with the standards. Solubilization and digestion procedures are presented in Sample Preparation Methods (Chapter Three, Inorganic Analytes).

7.2 Set up the instrument with proper operating parameters established as detailed below. The instrument must be allowed to become thermally stable before beginning (usually requiring at least 30 minutes of operation prior to calibration). Operating conditions - The analyst should follow the instructions provided by the instrument manufacturer.

7.2.1 Before using this procedure to analyze samples, there must be data available documenting initial demonstration of performance. The required data document the selection criteria of background correction points; analytical dynamic ranges, the applicable equations, and the upper limits of those ranges; the method and instrument detection limits; and the determination and verification of interelement correction equations or other routines for correcting spectral interferences. This data must be generated using the same instrument, operating conditions and calibration routine to be used for sample analysis. These documented data must be kept on file and be available for review by the data user or auditor.

7.2.2 Specific wavelengths are listed in Table 1. Other wavelengths may be substituted if they can provide the needed sensitivity and are corrected for spectral interference. Because of differences among various makes and models of spectrometers, specific instrument operating conditions cannot be provided. The instrument and operating conditions utilized for determination must be capable of providing data of acceptable quality to the program and data user. The analyst should follow the instructions provided by the instrument manufacturer unless other conditions provide similar or better performance for

a task. Operating conditions for aqueous solutions usually vary from 1100 to 1200 watts forward power, 14 to 18 mm viewing height, 15 to 19 liters/min argon coolant flow, 0.6 to 1.5 L/min argon nebulizer flow, 1 to 1.8 mL/min sample pumping rate with a 1 minute preflush time and measurement time near 1 second per wavelength peak for sequential instruments and 10 seconds per sample for simultaneous instruments. For an axial plasma, the conditions will usually vary from 1100-1500 watts forward power, 15-19 liters/min argon coolant flow, 0.6-1.5 L/min argon nebulizer flow, 1-1.8 mL/min sample pumping rate with a 1 minute preflush time and measurement time near 1 second per wavelength peak for sequential instruments and 10 seconds per sample for simultaneous instruments. Reproduction of the Cu/Mn intensity ratio at 324.754 nm and 257.610 nm respectively, by adjusting the argon aerosol flow has been recommended as a way to achieve repeatable interference correction factors.

7.2.3 The plasma operating conditions need to be optimized prior to use of the instrument. This routine is not required on a daily basis, but only when first setting up a new instrument or following a change in operating conditions. The following procedure is recommended or follow manufacturer's recommendations. The purpose of plasma optimization is to provide a maximum signal to background ratio for some of the least sensitive elements in the analytical array. The use of a mass flow controller to regulate the nebulizer gas flow or source optimization software greatly facilitates the procedure.

7.2.3.1 Ignite the radial plasma and select an appropriate incident RF power. Allow the instrument to become thermally stable before beginning, about 30 to 60 minutes of operation. While aspirating a 1000 ug/L solution of yttrium, follow the instrument manufacturer's instructions and adjust the aerosol carrier gas flow rate through the nebulizer so a definitive blue emission region of the plasma extends approximately from 5 to 20 mm above the top of the load coil. Record the nebulizer gas flow rate or pressure setting for future reference. The yttrium solution can also be used for coarse optical alignment of the torch by observing the overlay of the blue light over the entrance slit to the optical system.

7.2.3.2 After establishing the nebulizer gas flow rate, determine the solution uptake rate of the nebulizer in mL/min by aspirating a known volume of calibration blank for a period of at least three minutes. Divide the volume aspirated by the time in minutes and record the uptake rate; set the peristaltic pump to deliver the rate in a steady even flow.

7.2.3.3 Profile the instrument to align it optically as it will be used during analysis. The following procedure can be used for both horizontal and vertical optimization in the radial mode, but is written for vertical. Aspirate a solution containing 10 ug/L of several selected elements. These elements can be As, Se, Tl or Pb as the least sensitive of the elements and most needing to be optimize or others representing analytical judgement (V, Cr, Cu, Li and Mn are also used with success). Collect intensity data at the wavelength peak for each analyte at 1 mm intervals from 14 to 18 mm above the load coil. (This region of the plasma is referred to as the analytical zone.) Repeat the process using the calibration blank. Determine the net signal to blank intensity ratio for each analyte for each viewing height setting. Choose the height for viewing the plasma that provides the best net intensity ratios for the elements analyzed or the highest intensity ratio for the least

sensitive element. For optimization in the axial mode, follow the instrument manufacturer's instructions.

7.2.3.4 The instrument operating condition finally selected as being optimum should provide the lowest reliable instrument detection limits and method detection limits.

7.2.3.5 If either the instrument operating conditions, such as incident power or nebulizer gas flow rate are changed, or a new torch injector tube with a different orifice internal diameter is installed, the plasma and viewing height should be re-optimized.

7.2.3.6 After completing the initial optimization of operating conditions, but before analyzing samples, the laboratory must establish and initially verify an interelement spectral interference correction routine to be used during sample analysis. A general description concerning spectral interference and the analytical requirements for background correction in particular are discussed in the section on interferences. Criteria for determining an interelement spectral interference is an apparent positive or negative concentration for the analyte that falls within ± one reporting limit from zero. The upper control limit is the analyte instrument detection limit. Once established the entire routine must be periodically verified every six months. Only a portion of the correction routine must be verified more frequently or on a daily basis. Initial and periodic verification of the routine should be kept on file. Special cases where continual verification is required are described elsewhere.

7.2.3.7 Before daily calibration and after the instrument warmup period, the nebulizer gas flow rate must be reset to the determined optimized flow. If a mass flow controller is being used, it should be set to the recorded optimized flow rate, In order to maintain valid spectral interelement correction routines the nebulizer gas flow rate should be the same (< 2% change) from day to day.

7.2.4 For operation with organic solvents, use of the auxiliary argon inlet is recommended, as are solvent-resistant tubing, increased plasma (coolant) argon flow, decreased nebulizer flow, and increased RF power to obtain stable operation and precise measurements.

7.2.5 Sensitivity, instrumental detection limit, precision, linear dynamic range, and interference effects must be established for each individual analyte line on each particular instrument. All measurements must be within the instrument linear range where the correction equations are valid.

7.2.5.1 Method detection limits must be established for all wavelengths utilized for each type of matrix commonly analyzed. The matrix used for the MDL calculation must contain analytes of known concentrations within 3-5 times the anticipated detection limit. Refer to Chapter One for additional guidance on the performance of MDL studies.

7.2.5.2 Determination of limits using reagent water represent a best case situation and do not represent possible matrix effects of real world samples.

7.2.5.3 If additional confirmation is desired, reanalyze the seven replicate aliquots on two more non consecutive days and again calculate the method detection limit values for each day. An average of the three values for each analyte may provide for a more appropriate estimate. Successful analysis of samples with added analytes or using method of standard additions can give confidence in the method detection limit values determined in reagent water.

7.2.5.4 The upper limit of the linear dynamic range must be established for each wavelength utilized by determining the signal responses from a minimum for three, preferably five, different concentration standards across the range. One of these should be near the upper limit of the range. The ranges which may be used for the analysis of samples should be judged by the analyst from the resulting data. The data, calculations and rationale for the choice of range made should be documented and kept on file. The upper range limit should be an observed signal no more than 10% below the level extrapolated from lower standards. Determined analyte concentrations that are above the upper range limit must be diluted and reanalyzed. The analyst should also be aware that if an interelement correction from an analyte above the linear range exists, a second analyte where the interelement correction has been applied may be inaccurately reported. New dynamic ranges should be determined whenever there is a significant change in instrument response. For those analytes that periodically approach the upper limit, the range should be checked every six months. For those analytes that are known interferences, and are present at above the linear range, the analyst should ensure that the interelement correction has not been inaccurately applied.

NOTE: Many of the alkali and alkaline earth metals have non-linear response curves due to ionization and self absorption effects. These curves may be used if the instrument allows; however the effective range must be checked and the second order curve fit should have a correlation coefficient of 0.995 or better. Third order fits are not acceptable. These non-linear response curves should be revalidated and recalculated every six months. These curves are much more sensitive to changes in operating conditions than the linear lines and should be checked whenever there have been moderate equipment changes.

7.2.6 The analyst must (1) verify that the instrument configuration and operating conditions satisfy the analytical requirements and (2) maintain quality control data confirming instrument performance and analytical results.

7.3 Profile and calibrate the instrument according to the instrument manufacturer's recommended procedures, using the typical mixed calibration standard solutions described in Section 5.4. Flush the system with the calibration blank (Section 5.5.1) between each standard or as the manufacturer recommends. (Use the average intensity of multiple exposures for both standardization and sample analysis to reduce random error.) The calibration curve must consist of a minimum of a blank and a standard.

7.4 For all analytes and determinations, the laboratory must analyze an ICV (Section 5.6), a calibration blank (Section 5.5.1), and a continuing calibration verification (CCV) (Section 5.7) immediately following daily calibration. A calibration blank and either a calibration verification (CCV) or an ICV must be analyzed after every tenth sample and at the end of the sample run. Analysis of

the check standard and calibration verification must verify that the instrument is within ± 10% of calibration with relative standard deviation < 5% from replicate (minimum of two) integrations. If the calibration cannot be verified within the specified limits, the sample analysis must be discontinued, the cause determined and the instrument recalibrated. All samples following the last acceptable ICV, CCV or check standard must be reanalyzed. The analysis data of the calibration blank, check standard, and ICV or CCV must be kept on file with the sample analysis data.

7.5 Rinse the system with the calibration blank solution (Section 5.5.1) before the analysis of each sample. The rinse time will be one minute. Each laboratory may establish a reduction in this rinse time through a suitable demonstration.

7.6 Calculations: If dilutions were performed, the appropriate factors must be applied to sample values. All results should be reported with up to three significant figures.

7.7 The MSA should be used if an interference is suspected or a new matrix is encountered. When the method of standard additions is used, standards are added at one or more levels to portions of a prepared sample. This technique compensates for enhancement or depression of an analyte signal by a matrix. It will not correct for additive interferences, such as contamination, interelement interferences, or baseline shifts. This technique is valid in the linear range when the interference effect is constant over the range, the added analyte responds the same as the endogenous analyte, and the signal is corrected for additive interferences. The simplest version of this technique is the single addition method. This procedure calls for two identical aliquots of the sample solution to be taken. To the first aliquot, a small volume of standard is added; while to the second aliquot, a volume of acid blank is added equal to the standard addition. The sample concentration is calculated by: multiplying the intensity value for the unfortified aliquot by the volume (Liters) and concentration (mg/L or mg/kg) of the standard addition to make the numerator; the difference in intensities for the fortified sample and unfortified sample is multiplied by the volume (Liters) of the sample aliquot for the denominator. The quotient is the sample concentration.

For more than one fortified portion of the prepared sample, linear regression analysis can be applied using a computer or calculator program to obtain the concentration of the sample solution.

NOTE: Refer to Method 7000 for a more detailed discussion of the MSA.

7.8 An alternative to using the method of standard additions is the internal standard technique. Add one or more elements not in the samples and verified not to cause an interelement spectral interference to the samples, standards and blanks; yttrium or scandium are often used. The concentration should be sufficient for optimum precision but not so high as to alter the salt concentration of the matrix. The element intensity is used by the instrument as an internal standard to ratio the analyte intensity signals for both calibration and quantitation. This technique is very useful in overcoming matrix interferences especially in high solids matrices.

8.0 QUALITY CONTROL

8.1 All quality control data should be maintained and available for easy reference or inspection. All quality control measures described in Chapter One should be followed.

8.2 Dilute and reanalyze samples that exceed the linear calibration range or use an alternate, less sensitive line for which quality control data is already established.

8.3 Employ a minimum of one method blank per sample batch to determine if contamination or any memory effects are occurring. A method blank is a volume of reagent water carried through the same preparation process as a sample (refer to Chapter One).

8.4 Analyze matrix spiked duplicate samples at a frequency of one per matrix batch. A matrix duplicate sample is a sample brought through the entire sample preparation and analytical process in duplicate.

8.4.1.1 The relative percent difference between spiked matrix duplicate determinations is to be calculated as follows:

$$RPD = \frac{|D_1 - D_2|}{(|D_1 + D_2|)/2} \times 100$$

where:

RPD = relative percent difference.
D_1 = first sample value.
D_2 = second sample value (replicate).

(A control limit of ± 20% RPD or within the documented historical acceptance limits for each matrix shall be used for sample values greater than ten times the instrument detection limit.)

8.4.1.2 The spiked sample or spiked duplicate sample recovery is to be within ± 25% of the actual value or within the documented historical acceptance limits for each matrix.

8.5 It is recommended that whenever a new or unusual sample matrix is encountered, a series of tests be performed prior to reporting concentration data for analyte elements. These tests, as outlined in Sections 8.5.1 and 8.5.2, will ensure that neither positive nor negative interferences are operating on any of the analyte elements to distort the accuracy of the reported values.

8.5.1 Dilution Test: If the analyte concentration is sufficiently high (minimally, a factor of 10 above the instrumental detection limit after dilution), an analysis of a 1:5 dilution should agree within ± 10% of the original determination. If not, a chemical or physical interference effect should be suspected.

8.5.2 Post Digestion Spike Addition: An analyte spike added to a portion of a prepared sample, or its dilution, should be recovered to within 75% to 125% of the known value. The spike addition should produce a minimum level of 10 times and a maximum of 100 times the instrumental detection limit. If the spike is not recovered within the specified limits, a matrix effect should be suspected.

CAUTION: If spectral overlap is suspected, use of computerized compensation, an alternate wavelength, or comparison with an alternate method is recommended.

8.6 Check the instrument standardization by analyzing appropriate QC samples as follows.

8.6.1 Verify calibration with the Continuing Calibration Verification (CCV) Standard immediately following daily calibration, after every ten samples, and at the end of an analytical run. Check calibration with an ICV following the initial calibration (Section 5.6). At the laboratory's discretion, an ICV may be used in lieu of the continuing calibration verifications. If used in this manner, the ICV should be at a concentration near the mid-point of the calibration curve. Use a calibration blank (Section 5.5.1) immediately following daily calibration, after every 10 samples and at the end of the analytical run.

8.6.1.1 The results of the ICV and CCVs are to agree within 10% of the expected value; if not, terminate the analysis, correct the problem, and recalibrate the instrument.

8.6.1.2 The results of the check standard are to agree within 10% of the expected value; if not, terminate the analysis, correct the problem, and recalibrate the instrument.

8.6.1.3 The results of the calibration blank are to agree within three times the IDL. If not, repeat the analysis two more times and average the results. If the average is not within three standard deviations of the background mean, terminate the analysis, correct the problem, recalibrate, and reanalyze the previous 10 samples. If the blank is less than 1/10 the concentration of the action level of interest, and no sample is within ten percent of the action limit, analyses need not be rerun and recalibration need not be performed before continuation of the run.

8.6.2 Verify the interelement and background correction factors at the beginning of each analytical run. Do this by analyzing the interference check sample (Section 5.8). Results should be within ± 20% of the true value.

9.0 METHOD PERFORMANCE

9.1 In an EPA round-robin Phase 1 study, seven laboratories applied the ICP technique to acid-distilled water matrices that had been spiked with various metal concentrates. Table 4 lists the true values, the mean reported values, and the mean percent relative standard deviations.

9.2 Performance data for aqueous solutions and solid samples from a multilaboratory study (9) are provided in Tables 5 and 6.

10.0 REFERENCES

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TABLE 1
RECOMMENDED WAVELENGTHS AND ESTIMATED INSTRUMENTAL DETECTION LIMITS

Detection Element	Wavelength[a] (nm)	Estimated IDL[b] (µg/L)
Aluminum	308.215	30
Antimony	206.833	21
Arsenic	193.696	35
Barium	455.403	0.87
Beryllium	313.042	0.18
Boron	249.678x2	3.8
Cadmium	226.502	2.3
Calcium	317.933	6.7
Chromium	267.716	4.7
Cobalt	228.616	4.7
Copper	324.754	3.6
Iron	259.940	4.1
Lead	220.353	28
Lithium	670.784	2.8
Magnesium	279.079	20
Manganese	257.610	0.93
Mercury	194.227x2	17
Molybdenum	202.030	5.3
Nickel	231.604x2	10
Phosphorus	213.618	51
Potassium	766.491	See note c
Selenium	196.026	50
Silica (SiO_2)	251.611	17
Silver	328.068	4.7
Sodium	588.995	19
Strontium	407.771	0.28
Thallium	190.864	27
Tin	189.980x2	17
Titanium	334.941	5.0
Vanadium	292.402	5.0
Zinc	213.856x2	1.2

[a]The wavelengths listed (where x2 indicates second order) are recommended because of their sensitivity and overall acceptance. Other wavelengths may be substituted (e.g., in the case of an interference) if they can provide the needed sensitivity and are treated with the same corrective techniques for spectral interference (see Section 3.1). In time, other elements may be added as more information becomes available and as required.

[b]The estimated instrumental detection limits shown are provided as a guide for an instrumental limit. The actual method detection limits are sample dependent and may vary as the sample matrix varies.

[c]Highly dependent on operating conditions and plasma position.

TABLE 2
POTENTIAL INTERFERENCES
ANALYTE CONCENTRATION EQUIVALENTS ARISING FROM
INTERFERENCE AT THE 100-mg/L LEVEL[c]

Analyte	Wavelength (nm)	Interferant[a,b] Al	Ca	Cr	Cu	Fe	Mg	Mn	Ni	Ti	V
Aluminum	308.215	--	--	--	--	--	--	0.21	--	--	1.4
Antimony	206.833	0.47	--	2.9	--	0.08	--	--	--	0.25	0.45
Arsenic	193.696	1.3	--	0.44	--	--	--	--	--	--	1.1
Barium	455.403	--	--	--	--	--	--	--	--	--	--
Beryllium	313.042	--	--	--	--	--	--	--	--	0.04	0.05
Cadmium	226.502	--	--	--	--	0.03	--	--	0.02	--	--
Calcium	317.933	--	--	0.08	--	0.01	0.01	0.04	--	0.03	0.03
Chromium	267.716	--	--	--	--	0.003	--	0.04	--	--	0.04
Cobalt	228.616	--	--	0.03	--	0.005	--	--	0.03	0.15	--
Copper	324.754	--	--	--	--	0.003	--	--	--	0.05	0.02
Iron	259.940	--	--	--	--	--	--	0.12	--	--	--
Lead	220.353	0.17	--	--	--	--	--	--	--	--	--
Magnesium	279.079	--	0.02	0.11	--	0.13	--	0.25	--	0.07	0.12
Manganese	257.610	0.005	--	0.01	--	0.002	0.002	--	--	--	--
Molybdenum	202.030	0.05	--	--	--	0.03	--	--	--	--	--
Nickel	231.604	--	--	--	--	--	--	--	--	--	--
Selenium	196.026	0.23	--	--	--	0.09	--	--	--	--	--
Sodium	588.995	--	--	--	--	--	--	--	--	0.08	--
Thallium	190.864	0.30	--	--	--	--	--	--	--	--	--
Vanadium	292.402	--	--	0.05	--	0.005	--	--	--	0.02	--
Zinc	213.856	--	--	--	0.14	--	--	--	0.29	--	--

[a] Dashes indicate that no interference was observed even when interferents were introduced at the following levels:

Al -	1000 mg/L	Mg -	1000 mg/L
Ca -	1000 mg/L	Mn -	200 mg/L
Cr -	200 mg/L	Tl -	200 mg/L
Cu -	200 mg/L	V -	200 mg/L
Fe -	1000 mg/L		

[b] The figures recorded as analyte concentrations are not the actual observed concentrations; to obtain those figures, add the listed concentration to the interferant figure.

[c] Interferences will be affected by background choice and other interferences may be present.

TABLE 3
MIXED STANDARD SOLUTIONS

Solution	Elements
I	Be, Cd, Mn, Pb, Se and Zn
II	Ba, Co, Cu, Fe, and V
III	As, Mo
IV	Al, Ca, Cr, K, Na, Ni,Li, and Sr
V	Ag (see "NOTE" to Section 5.4), Mg, Sb, and Tl
VI	P

TABLE 4. ICP PRECISION AND ACCURACY DATA[a]

Element	Sample No. 1				Sample No. 2				Sample No. 3			
	True Conc. (ug/L)	Mean Conc. (ug/L)	RSD[b] (%)	Accuracy[d] (%)	True Conc. (ug/L)	Mean Conc. (ug/L)	RSD[b]	Accuracy[d] (%)	True Conc. (ug/L)	Mean Conc. (ug/L)	RSD[b] (%)	Accuracy[d] (%)
Be	750	733	6.2	98	20	20	9.8	100	180	176	5.2	98
Mn	350	345	2.7	99	15	15	6.7	100	100	99	3.3	99
V	750	749	1.8	100	70	69	2.9	99	170	169	1.1	99
As	200	208	7.5	104	22	19	23	86	60	63	17	105
Cr	150	149	3.8	99	10	10	18	100	50	50	3.3	100
Cu	250	235	5.1	94	11	11	40	100	70	67	7.9	96
Fe	600	594	3.0	99	20	19	15	95	180	178	6.0	99
Al	700	696	5.6	99	60	62	33	103	160	161	13	101
Cd	50	48	12	96	2.5	2.9	16	116	14	13	16	93
Co	700	512	10	73	20	20	4.1	100	120	108	21	90
Ni	250	245	5.8	98	30	28	11	93	60	55	14	92
Pb	250	236	16	94	24	30	32	125	80	80	14	100
Zn	200	201	5.6	100	16	19	45	119	80	82	9.4	102
Se[c]	40	32	21.9	80	6	8.5	42	142	10	8.5	8.3	85

[a] Not all elements were analyzed by all laboratories.
[b] RSD = relative standard deviation.
[c] Results for Se are from two laboratories.
[d] Accuracy is expressed as the mean concentration divided by the true concentration times 100.

TABLE 5

ICP-AES PRECISION AND ACCURACY FOR AQUEOUS SOLUTIONS[a]

Element	Mean Conc. (mg/L)	N[b]	RSD[b] (%)	Accuracy[c] (%)
Al	14.8	8	6.3	100
Sb	15.1	8	7.7	102
As	14.7	7	6.4	99
Ba	3.66	7	3.1	99
Be	3.78	8	5.8	102
Cd	3.61	8	7.0	97
Ca	15.0	8	7.4	101
Cr	3.75	8	8.2	101
Co	3.52	8	5.9	95
Cu	3.58	8	5.6	97
Fe	14.8	8	5.9	100
Pb	14.4	7	5.9	97
Mg	14.1	8	6.5	96
Mn	3.70	8	4.3	100
Mo	3.70	8	6.9	100
Ni	3.70	7	5.7	100
K	14.1	8	6.6	95
Se	15.3	8	7.5	104
Ag	3.69	6	9.1	100
Na	14.0	8	4.2	95
Tl	15.1	7	8.5	102
V	3.51	8	6.6	95
Zn	3.57	8	8.3	96

[a]these performance values are independent of sample preparation because the labs analyzed portions of the same solutions

[b]N = Number of measurements for mean and relative standard deviation (RSD).

[c]Accuracy is expressed as a percentage of the nominal value for each analyte in acidified, multi-element solutions.

TABLE 6

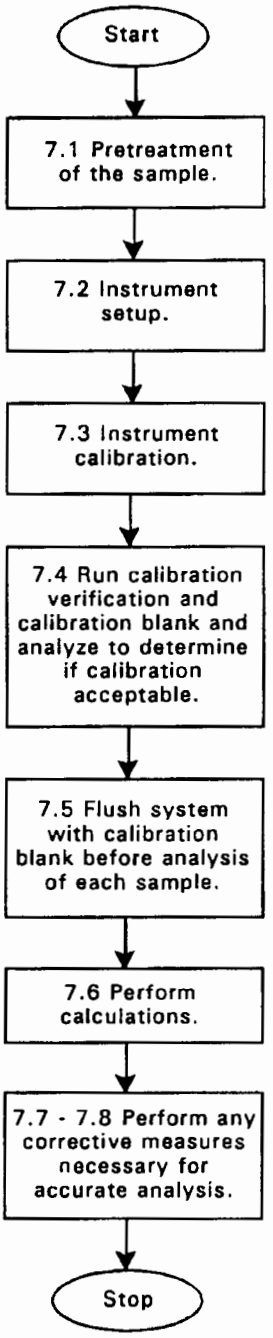
ICP-AES PRECISION AND BIAS FOR SOLID WASTE DIGESTS[a]

Element	Spiked Coal Fly Ash (NIST-SRM 1633a) Mean Conc. (mg/L)	N[b]	RSD[b] (%)	Bias[c] (%AAS)	Spiked Electroplating Sludge Mean Conc. (mg/L)	N[b]	RSD[b] (%)	Bias[c] (%AAS)
Al	330	8	16	104	127	8	13	110
Sb	3.4	6	73	96	5.3	7	24	120
As	21	8	83	270	5.2	7	8.6	87
Ba	133	8	8.7	101	1.6	8	20	58
Be	4.0	8	57	460	0.9	7	9.9	110
Cd	0.97	6	5.7	101	2.9	7	9.9	90
Ca	87	6	5.6	208	954	7	7.0	97
Cr	2.1	7	36	106	154	7	7.8	93
Co	1.2	6	21	94	1.0	7	11	85
Cu	1.9	6	9.7	118	156	8	7.8	97
Fe	602	8	8.8	102	603	7	5.6	98
Pb	4.6	7	22	94	25	7	5.6	98
Mg	15	8	15	110	35	8	20	84
Mn	1.8	7	14	104	5.9	7	9.6	95
Mo	891	8	19	105	1.4	7	36	110
Ni	1.6	6	8.1	91	9.5	7	9.6	90
K	46	8	4.2	98	51	8	5.8	82
Se	6.4	5	16	73	8.7	7	13	101
Ag	1.4	3	17	140	0.75	7	19	270
Na	20	8	49	130	1380	8	9.8	95
Tl	6.7	4	22	260	5.0	7	20	180
V	1010	5	7.5	100	1.2	6	11	80
Zn	2.2	6	7.6	93	266	7	2.5	101

[a]These performance values are independent of sample preparation because the labs analyzed portions of the same digests.

[b]N = Number of measurements for mean and relative standard deviation (RSD).

[c]Bias for the ICP-AES data is expressed as a percentage of atomic absorption spectroscopy (AA) data for the same digests.


Start
7.1 Pretreatment of the sample.
7.2 Instrument setup.
7.3 Instrument calibration.
7.4 Run calibration verification and calibration blank and analyze to determine if calibration acceptable.
7.5 Flush system with calibration blank before analysis of each sample.
7.6 Perform calculations.
7.7 - 7.8 Perform any corrective measures necessary for accurate analysis.
Stop

HOLLYFRONTIER.

RECEIVED OCD
2013 DEC 10 P 3:31

December 4, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0896

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
Review of Selenium Sampling Data
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This document is submitted pursuant to Paragraph 11 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001 with the Oil Conservation Division (OCD), dated November 14, 2013 (the "Order"). Paragraph 11 requires that Navajo advise the OCD of the results of its further review of the selenium sampling data and address any anomalies and discrepancies.

This document provides a summary of Navajo's review of the analytical data obtained and analytical methods followed in the Artesia Refinery's recent selenium sampling. To assist Navajo and provide expertise on selenium testing, Navajo retained CH2M HILL, who provided a senior chemist and subject matter expert to conduct the analytical data review.

Summary of Review

CH2M HILL's review resulted in recommendations for sample preparation and selenium analysis by Navajo's contract laboratories, presented in greater detail later in this report. In brief, CH2M HILL pointed out that differences in sample digestion protocols, analytical instrument methods, and instrument types or configurations can affect the analytical results. The concentration of acids used in these processes may have an impact on the selenium testing results, and may provide an explanation as to why total selenium results have been found to be lower than TCLP selenium results. CH2M HILL also recommended that TCLP selenium and total selenium be tested following EPA method SW6010B (inductively coupled plasma (ICP) spectroscopy), rather than by EPA method 200.8 (inductively coupled plasma – mass spectromentry (ICPMS)), due to the fact that the contract laboratories do not have the correct accessories for their ICPMS instruments to minimize potential interferences with the selenium analysis.

Details of the review conducted by CH2M HILL are presented below and include the following components:

- Review of analytical results provided by multiple contracted laboratories from 9/27/2013 through 11/8/2013.
- Review of analytical methodologies utilized by two of the contract laboratories
- Analysis of split samples sent to CH2M HILL and Hall Laboratory
- Review of analytical results from Hall Laboratory 11/9/2013 through 11/21/2013.

Analytical data through 11/8/2013

Samples collected on 9/27/2013 and 10/15/2013 were analyzed by ALS Environmental, Houston, TX. The extraction method, in which samples are prepared for analysis, was by the required EPA method 1311 (TCLP). The resulting selenium concentration for each of the samples was reported to be 1.24 mg/L.

Beginning 10/20/2013, Navajo began collecting samples from points T-801 Effluent and T-836 Effluent in addition to the Injection Well Effluent sampling point (when injecting). Multiple other samples were collected and analyzed from various sampling points at the Artesia Refinery. Samples were sent to Hall Environmental Analysis Laboratory, Albuquerque, NM, with a number of samples split to ALS or Cardinal Laboratories, Hobbs, NM. In addition to the TCLP analysis for selenium required under the Order, samples were also analyzed for total selenium for informational purposes. Total selenium concentrations should include any soluble forms of selenium as well as particulates that contain selenium that would be filtered out by the required TCLP procedure. A summary of the TCLP data reported for samples collected from 9/27/13 through 11/8/2013 is provided in Tables 1 and 2.

Table 1- Summary of TCLP Selenium Data through 11/8/2013

		No. Samples	Average Se (mg/L)
Hall Laboratory:	Injection Well	3	1.17
EPA 1311/SW6010 ICP	T-801 Effluent	16	0.87
	T-836 Effluent	16	0.88
ALS Laboratory:	Injection Well	0	NA
EPA 1311/SW6020 ICPMS	T-801 Effluent	4	0.79
	T-836 Effluent	4	0.80
Cardinal Laboratories:	Injection Well	0	NA
EPA 1311/SW6010 ICP	T-801 Effluent	4	0.97
	T-836 Effluent	4	1.07

Table 2 - Additional Samples for TCLP Selenium through 11/8/2013

	No. Samples	Average* Se (mg/L)
SWS Bottoms (W-634)	23	4.18
SWS Bottoms (W-20)	15	3.71
Desalter Effluent (W-7)	18	1.16
Wet Gas Scrubber Purge (D-250)	20	7.15
API-Inlet	18	0.45
API Outlet	2	0.42
Storm Tank (T-830)	18	0.40
Unit #45 Sour Water (W-2421)	6	2.13
Unit #34 MHC Cold Separator	6	2.75
DAF Bin#S. Brotheres 24	2	0.28
RO Reject	1	ND

* 1/2 detection limit used for non-detected results

Review of Analytical Methodologies

After obtaining a number of data points from three different laboratories (Hall Laboratory, Cardinal Laboratories, and ALS Laboratory), questions arose about why there was significant variability in the TCLP results and the total selenium results between laboratories. In many cases, the total selenium concentration was actually less than the TCLP (filtered) selenium concentration. On November 8, 2013, Navajo and CH2M HILL conducted phone interviews with the Laboratory Directors and Metals Supervisors of Hall Laboratory and Cardinal Laboratories to obtain additional detail on the analytical methods in use.

It was determined that both Hall and Cardinal Laboratories were correctly following EPA Method 1311 TCLP procedure. However, variations were noted in the way the laboratories were preparing (digesting) the samples prior to analysis, particularly in the strengths of acids used for the sample digestion. There were additional variations noted in the analytical instrumentation configurations.

Following the TCLP filtering, and sample digestion, TCLP samples were analyzed by inductively coupled plasma, or "ICP," spectroscopy following EPA method SW6010B. This method typically requires the addition of a rare earth metal to the sample as an "internal standard" for the analytical method. An internal standard is used to verify that the sample is introduced into the instrument and generates a result for the internal standard within established limits. Hall uses the element yttrium as their internal standard, although Hall noted that yttrium has been found natively within some of the samples, which would affect the reported result for selenium (the instrument corrects the analytical result based on internal standard performance). Typically if an internal standard is found natively in a

sample, an alternate internal standard element, such as scandium, would be selected. Cardinal was not using an internal standard, which is considered atypical for this method.

For the total selenium analyses, the sample preparation methods and concentrations of acids used were again inconsistent variables. Both laboratories utilized EPA method 200.8 and an inductively coupled plasma mass spectroscopy ("ICPMS") instrument that was not configured to correct for potential interferences that are commonly found with these types of refinery samples.

CH2M HILL thereafter provided Navajo with a recommendation that it request its contract laboratories to discontinue the use of ICPMS analysis by EPA method 200.8 for total selenium analysis and, for consistency, that it request its contract laboratories to use another, accepted EPA method, SW6010B, for both total selenium and TCLP selenium analysis.

Split Samples with CH2MHILL Laboratory

On CH2M HILL's recommendation to Navajo, Hall Laboratory began using EPA method SW6010B (inductively coupled plasma, or "ICP," spectroscopy) for the analysis of total selenium beginning November 16, 2013. One set of samples was split between CH2M HILL's Applied Sciences Laboratory and Hall Laboratory for samples collected on November 18, 2013. Navajo understands that, for these samples, CH2M HILL and Hall Laboratory followed the same analytical procedures. TCLP selenium was determined by EPA extraction method 1311, sample digestion method SW3010, and analytical method SW6010B. Total selenium was determined by sample digestion method SW3005 (Hall) or SW3010 (CH2M HILL), and analytical method SW6010B. Results of the analytical comparison are as follows:

Table 3 - Comparison of Samples Collected 11/18/2013

	Hall Laboratory		CH2M HILL ASL			
	Total Se (mg/L)	TCLP Se (mg/L)	Total Se (mg/L)	TCLP Se (mg/L)	RPD % Total Se	RPD % TCLP Se
WWTP Effluent	0.59	0.78	0.79	0.75	29	3.9
W-20	2.80	3.40	2.45	2.14	13	45.5
WWTP 634	2.70	3.40	2.42	2.31	11	38.2
API	0.43	0.51	0.56	0.54	26.7	5.7
WWTP 836	0.72	1.00	1.18	1.08	48.4	7.7

CH2M HILL digested the samples for both TCLP selenium and total selenium using the same sample preparation (digestion) procedure. Samples were prepared and analyzed together as a single analytical batch, thereby reducing any variability due to time between sample preparation and analysis, or instrument calibration. The CH2M HILL analytical results indicate that total selenium concentrations are slightly higher than the TCLP selenium data. This is the expected outcome. The analytical data from Hall Laboratory, on the other hand, still indicates total selenium concentrations that are less than TCLP selenium concentrations. Although both labs used the same analytical procedures for these samples, follow-up discussions with Hall Laboratory revealed that Hall is using

two different sample digestion methods for its total selenium and TCLP selenium analyses. Specifically, Hall is using 10% nitric acid for TCLP selenium digestion, which is a stronger acid than the 6% nitric acid the laboratory is using for total selenium digestion. As a comparison, CH2M HILL uses 5% nitric acid for both digestions. While not confirmed, Hall's use of varying acid concentrations is likely responsible for its reported discrepancies in total selenium and TCLP selenium concentrations.

Analytical data through 11/21/2013

Additional analytical data for samples collected from November 9, 2013 through November 21, 2013 and analyzed by Hall Laboratory are summarized in Table 6. Generally, the concentrations of selenium are trending lower for most of the sampling locations. Total selenium concentrations are still slightly less than TCLP selenium concentrations; however, as explained above, this is likely due to variations in the sample preparation methodologies.

Table 4 – Summary of Hall Laboratory data 11/9/2013 to 11/21/2013

	Total Selenium		TCLP Selenium	
	No. Samples	Average* (mg/L)	No. Samples	Average* (mg/L)
Injection Well	7	0.55	7	0.62
T-801 Effluent	1	0.65	1	0.63
T-836 Effluent	6	0.93	6	1.03
SWS Bottoms (W-634)	6	2.20	6	3.25
SWS Bottoms (W-20)	5	2.24	5	3.38
API-Inlet	1	0.36	1	0.43
API Outlet	5	0.20	5	0.31
Storm Tank (T-830)	1	0.22	1	0.41
T-829	1	0.38	1	0.74

* 1/2 detection limit used for non-detected results

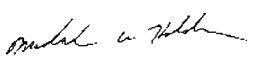
Analytical Recommendations

Based on these reviews, CH2M HILL has provided the following recommendations for sample preparation and analysis by Navajo's contract laboratories:

- Prepare all samples for TCLP selenium and total selenium analyses using the same sample digestion method, and the same concentrations of acids.
- Prepare all instrument calibration standards and quality control standards using the same acid concentrations as is used for the samples.
- Analyze for TCLP selenium or total selenium following EPA method SW6010B, ICP.
- Use an internal standard such as yttrium or scandium for analysis by ICP. Verify that the samples do not contain native concentrations of these elements, and if they do, select an alternate internal standard.
- Review ICP spectra to verify that spectral interferences are not affecting the sample results.
- Prepare and analyze TCLP selenium and total selenium samples at the same time and in the same analytical batch to minimize variances due to instrument calibration, instrument drift, or sample digestate age.
- Do not analyze samples for selenium by EPA method 200.8 ICPMS, unless the ICPMS instrument is equipped with "collision cell" technology to reduce potential interferences that are common in refinery samples.
- When splitting samples, it is critical that each of the laboratories use the same acid digestion method and the same analytical method. Minor differences such as whether or not a laboratory uses an internal standard may also have significant impacts on data comparability.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,



Mike Holder
Environmental Manager, NRC

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, December 05, 2013 3:29 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Final Se Results for Monday, 12/2/13
Attachments: Rpt_1312047_v1.pdf; Rpt_1312047_v2.pdf

Scott/Carl – attached are the final laboratory analytical reports for Total and TCLP selenium results for Monday, 12/2/2013. Per the report, selenium = 0.88 mg/L via the TCLP method. These results were received Thursday, 12/5/2013, and are required to be taken weekly on the first business day of the week per Condition 1.a of Exhibit A of the Amended and Supplemental Agreed Order (the "Order") between NRC & OCD (Dated November 14, 2013). Condition 4 of the Order requires their reporting to OCD within 3 business days of receipt. This submittal fulfills the requirements of the afore-mentioned Conditions. If you have any questions, please do not hesitate to contact me at (575) 746-5487. Thank you for your assistance.

Regards,
Mike Holder

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received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312047-001 **Matrix:** AQUEOUS

Client Sample ID: WWTP 836 Effluent to Wells
Collection Date: 12/2/2013 6:15:00 AM
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	12/4/2013 6:54:13 PM	10631
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.051	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Barium	0.032	0.020		mg/L	1	12/3/2013 3:05:00 PM	10606
Cadmium	ND	0.0020		mg/L	1	12/3/2013 3:05:00 PM	10606
Chromium	ND	0.0060		mg/L	1	12/3/2013 3:05:00 PM	10606
Lead	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606
Selenium	0.77	0.050		mg/L	1	12/3/2013 3:05:00 PM	10606
Silver	ND	0.0050		mg/L	1	12/3/2013 3:05:00 PM	10606

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10631**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **10631**	RunNo: **15237**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439377** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-10631**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **10631**	RunNo: **15237**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439378** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10606**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **10606**	RunNo: **15198**
Prep Date: **12/3/2013**	Analysis Date: **12/3/2013**	SeqNo: **438128** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-10606**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **10606**	RunNo: **15198**
Prep Date: **12/3/2013**	Analysis Date: **12/3/2013**	SeqNo: **438129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.50	0.020	0.5000	0	99.6	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Selenium	0.50	0.050	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ✔	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)	Mike Holder
☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1312013	Total Selenium 200.8	TCLP Selenium 1311/6010	① Total RCRA 8 metals	② TCLP RCRA 8 metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00			12/2/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1312047

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1312047**
Date Reported: **12/5/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1312047-002 **Matrix:** AQUEOUS

Client Sample ID: WWTP 836 Effluent to Wells T
Collection Date: 12/2/2013 6:15:00 AM
Received Date: 12/2/2013 2:43:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY, TCLP						Analyst: **JML**
Mercury	ND	0.020		mg/L	1	12/4/2013 7:36:06 PM
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**
Arsenic	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Barium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Cadmium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Chromium	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Lead	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM
Selenium	0.88	0.10		mg/L	1	12/4/2013 11:20:03 AM
Silver	ND	0.10		mg/L	1	12/4/2013 11:20:03 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10632**	SampType: **MBLK**			TestCode: **MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID: **10632**			RunNo: **15238**					
Prep Date:	**12/3/2013**	Analysis Date: **12/4/2013**			SeqNo: **439384**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10632**	SampType: **LCS**			TestCode: **MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID: **10632**			RunNo: **15238**					
Prep Date:	**12/3/2013**	Analysis Date: **12/4/2013**			SeqNo: **439385**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

Sample ID	**1312047-002AMS**	SampType: **MS**			TestCode: **MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID: **10632**			RunNo: **15238**					
Prep Date:	**12/3/2013**	Analysis Date: **12/4/2013**			SeqNo: **439387**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	94.7	75	125			

Sample ID	**1312047-002AMSD**	SampType: **MSD**			TestCode: **MERCURY, TCLP**					
Client ID:	**WWTP 836 Effluent**	Batch ID: **10632**			RunNo: **15238**					
Prep Date:	**12/3/2013**	Analysis Date: **12/4/2013**			SeqNo: **439388**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	93.6	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10620**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439004** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10620**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	105	80	120			
Barium	ND	100	0.5000	0	94.2	80	120			
Cadmium	ND	1.0	0.5000	0	104	80	120			
Chromium	ND	5.0	0.5000	0	95.6	80	120			
Lead	ND	5.0	0.5000	0	95.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	108	80	120			

Sample ID **1312047-002AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.10	0.5000	0.04824	101	75	125			
Barium	0.52	0.10	0.5000	0.07379	89.8	75	125			
Cadmium	0.50	0.10	0.5000	0	100	75	125			
Chromium	0.45	0.10	0.5000	0	90.8	75	125			
Lead	0.45	0.10	0.5000	0	90.1	75	125			
Silver	0.10	0.10	0.1000	0	103	75	125			

Sample ID **1312047-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.10	0.5000	0.04824	95.1	75	125	5.40	20	
Barium	0.50	0.10	0.5000	0.07379	84.8	75	125	4.83	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312047**

05-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **1312047-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WWTP 836 Effluent**	Batch ID: **10620**	RunNo: **15224**
Prep Date: **12/3/2013**	Analysis Date: **12/4/2013**	SeqNo: **439018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.10	0.5000	0	95.2	75	125	5.31	20	
Chromium	0.43	0.10	0.5000	0	86.1	75	125	5.28	20	
Lead	0.43	0.10	0.5000	0	85.3	75	125	5.47	20	
Silver	ND	0.10	0.1000	0	98.1	75	125	200	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1312047 RcptNo: 1

Received by/date: MG 12/02/13

Logged By: Michelle Garcia 12/2/2013 2:43:00 PM Michelle Garcia

Completed By: Michelle Garcia 12/2/2013 3:46:00 PM Michelle Garcia

Reviewed By: 12/02/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No ☐	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ✔	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ✔	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	
☐ Standard ☐ Level 4 (Full Validation)	Mike Holder
☐ Other	Sampler: ~~Aaron Strange~~ Kevin Newton
☐ EDD (Type)	On Ice: ☒ Yes ☐ No
	Sample Temperature: 4.0

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Total Selenium 200.8	TCLP Selenium 1311/6010	① TCLP Hg & metals	② TCLP Hg & metals
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	HNO3	-001			X	
12/2/13	6:15	Liquid	WWTP 836 Effluent to wells	plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/13	10:00	J C Anthony	[signature]	12/02/13	1443
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Wednesday, December 04, 2013 4:12 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Analytical Review Report - 12/4/2013
Attachments: OCD Order Analytical Report 12-4-13.pdf

Scott/Carl – please find attached a copy of the analytical review report required by Condition 11 of Exhibit A of the Amended and Supplemental Agreed Order between NRC & OCD (Dated November 14, 2013). The original hardcopy is going out to today via certified mail. Please don't hesitate to call me with any questions and thanks for your assistance in this matter.

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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HOLLYFRONTIER.

December 4, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0896

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
Review of Selenium Sampling Data
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This document is submitted pursuant to Paragraph 11 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001 with the Oil Conservation Division (OCD), dated November 14, 2013 (the "Order"). Paragraph 11 requires that Navajo advise the OCD of the results of its further review of the selenium sampling data and address any anomalies and discrepancies.

This document provides a summary of Navajo's review of the analytical data obtained and analytical methods followed in the Artesia Refinery's recent selenium sampling. To assist Navajo and provide expertise on selenium testing, Navajo retained CH2M HILL, who provided a senior chemist and subject matter expert to conduct the analytical data review.

Summary of Review

CH2M HILL's review resulted in recommendations for sample preparation and selenium analysis by Navajo's contract laboratories, presented in greater detail later in this report. In brief, CH2M HILL pointed out that differences in sample digestion protocols, analytical instrument methods, and instrument types or configurations can affect the analytical results. The concentration of acids used in these processes may have an impact on the selenium testing results, and may provide an explanation as to why total selenium results have been found to be lower than TCLP selenium results. CH2M HILL also recommended that TCLP selenium and total selenium be tested following EPA method SW6010B (inductively coupled plasma (ICP) spectroscopy), rather than by EPA method 200.8 (inductively coupled plasma – mass spectromentry (ICPMS)), due to the fact that the contract laboratories do not have the correct accessories for their ICPMS instruments to minimize potential interferences with the selenium analysis.

Details of the review conducted by CH2M HILL are presented below and include the following components:

- Review of analytical results provided by multiple contracted laboratories from 9/27/2013 through 11/8/2013.
- Review of analytical methodologies utilized by two of the contract laboratories
- Analysis of split samples sent to CH2M HILL and Hall Laboratory
- Review of analytical results from Hall Laboratory 11/9/2013 through 11/21/2013.

Analytical data through 11/8/2013

Samples collected on 9/27/2013 and 10/15/2013 were analyzed by ALS Environmental, Houston, TX. The extraction method, in which samples are prepared for analysis, was by the required EPA method 1311 (TCLP). The resulting selenium concentration for each of the samples was reported to be 1.24 mg/L.

Beginning 10/20/2013, Navajo began collecting samples from points T-801 Effluent and T-836 Effluent in addition to the Injection Well Effluent sampling point (when injecting). Multiple other samples were collected and analyzed from various sampling points at the Artesia Refinery. Samples were sent to Hall Environmental Analysis Laboratory, Albuquerque, NM, with a number of samples split to ALS or Cardinal Laboratories, Hobbs, NM. In addition to the TCLP analysis for selenium required under the Order, samples were also analyzed for total selenium for informational purposes. Total selenium concentrations should include any soluble forms of selenium as well as particulates that contain selenium that would be filtered out by the required TCLP procedure. A summary of the TCLP data reported for samples collected from 9/27/13 through 11/8/2013 is provided in Tables 1 and 2.

Table 1- Summary of TCLP Selenium Data through 11/8/2013

		No. Samples	Average Se (mg/L)
Hall Laboratory:	Injection Well	3	1.17
EPA 1311/SW6010 ICP	T-801 Effluent	16	0.87
	T-836 Effluent	16	0.88
ALS Laboratory:	Injection Well	0	NA
EPA 1311/SW6020 ICPMS	T-801 Effluent	4	0.79
	T-836 Effluent	4	0.80
Cardinal Laboratories:	Injection Well	0	NA
EPA 1311/SW6010 ICP	T-801 Effluent	4	0.97
	T-836 Effluent	4	1.07

Table 2 - Additional Samples for TCLP Selenium through 11/8/2013

	No. Samples	Average* Se (mg/L)
SWS Bottoms (W-634)	23	4.18
SWS Bottoms (W-20)	15	3.71
Desalter Effluent (W-7)	18	1.16
Wet Gas Scrubber Purge (D-250)	20	7.15
API-Inlet	18	0.45
API Outlet	2	0.42
Storm Tank (T-830)	18	0.40
Unit #45 Sour Water (W-2421)	6	2.13
Unit #34 MHC Cold Separator	6	2.75
DAF Bin#S. Brotheres 24	2	0.28
RO Reject	1	ND

* 1/2 detection limit used for non-detected results

Review of Analytical Methodologies

After obtaining a number of data points from three different laboratories (Hall Laboratory, Cardinal Laboratories, and ALS Laboratory), questions arose about why there was significant variability in the TCLP results and the total selenium results between laboratories. In many cases, the total selenium concentration was actually less than the TCLP (filtered) selenium concentration. On November 8, 2013, Navajo and CH2M HILL conducted phone interviews with the Laboratory Directors and Metals Supervisors of Hall Laboratory and Cardinal Laboratories to obtain additional detail on the analytical methods in use.

It was determined that both Hall and Cardinal Laboratories were correctly following EPA Method 1311 TCLP procedure. However, variations were noted in the way the laboratories were preparing (digesting) the samples prior to analysis, particularly in the strengths of acids used for the sample digestion. There were additional variations noted in the analytical instrumentation configurations.

Following the TCLP filtering, and sample digestion, TCLP samples were analyzed by inductively coupled plasma, or "ICP," spectroscopy following EPA method SW6010B. This method typically requires the addition of a rare earth metal to the sample as an "internal standard" for the analytical method. An internal standard is used to verify that the sample is introduced into the instrument and generates a result for the internal standard within established limits. Hall uses the element yttrium as their internal standard, although Hall noted that yttrium has been found natively within some of the samples, which would affect the reported result for selenium (the instrument corrects the analytical result based on internal standard performance). Typically if an internal standard is found natively in a

sample, an alternate internal standard element, such as scandium, would be selected. Cardinal was not using an internal standard, which is considered atypical for this method.

For the total selenium analyses, the sample preparation methods and concentrations of acids used were again inconsistent variables. Both laboratories utilized EPA method 200.8 and an inductively coupled plasma mass spectroscopy ("ICPMS") instrument that was not configured to correct for potential interferences that are commonly found with these types of refinery samples.

CH2M HILL thereafter provided Navajo with a recommendation that it request its contract laboratories to discontinue the use of ICPMS analysis by EPA method 200.8 for total selenium analysis and, for consistency, that it request its contract laboratories to use another, accepted EPA method, SW6010B, for both total selenium and TCLP selenium analysis.

Split Samples with CH2MHILL Laboratory

On CH2M HILL's recommendation to Navajo, Hall Laboratory began using EPA method SW6010B (inductively coupled plasma, or "ICP," spectroscopy) for the analysis of total selenium beginning November 16, 2013. One set of samples was split between CH2M HILL's Applied Sciences Laboratory and Hall Laboratory for samples collected on November 18, 2013. Navajo understands that, for these samples, CH2M HILL and Hall Laboratory followed the same analytical procedures. TCLP selenium was determined by EPA extraction method 1311, sample digestion method SW3010, and analytical method SW6010B. Total selenium was determined by sample digestion method SW3005 (Hall) or SW3010 (CH2M HILL), and analytical method SW6010B. Results of the analytical comparison are as follows:

Table 3 - Comparison of Samples Collected 11/18/2013

	Hall Laboratory		CH2M HILL ASL	
	Total Se (mg/L)	TCLP Se (mg/L)	Total Se (mg/L)	TCLP Se (mg/L)
WWTP Effluent	0.59	0.78	0.79	0.75
W-20	2.80	3.40	2.45	2.14
WWTP 634	2.70	3.40	2.42	2.31
API	0.43	0.51	0.56	0.54
WWTP 836	0.72	1.00	1.18	1.08

CH2M HILL digested the samples for both TCLP selenium and total selenium using the same sample preparation (digestion) procedure. Samples were prepared and analyzed together as a single analytical batch, thereby reducing any variability due to time between sample preparation and analysis, or instrument calibration. The CH2M HILL analytical results indicate that total selenium concentrations are slightly higher than the TCLP selenium data. This is the expected outcome. The analytical data from Hall Laboratory, on the other hand, still indicates total selenium concentrations that are less than TCLP selenium concentrations. Although both labs used the same analytical procedures for these samples, follow-up discussions with Hall Laboratory revealed that Hall is using

two different sample digestion methods for its total selenium and TCLP selenium analyses. Specifically, Hall is using 10% nitric acid for TCLP selenium digestion, which is a stronger acid than the 6% nitric acid the laboratory is using for total selenium digestion. As a comparison, CH2M HILL uses 5% nitric acid for both digestions. While not confirmed, Hall's use of varying acid concentrations is likely responsible for its reported discrepancies in total selenium and TCLP selenium concentrations.

Analytical data through 11/21/2013

Additional analytical data for samples collected from November 9, 2013 through November 21, 2013 and analyzed by Hall Laboratory are summarized in Table 6. Generally, the concentrations of selenium are trending lower for most of the sampling locations. Total selenium concentrations are still slightly less than TCLP selenium concentrations; however, as explained above, this is likely due to variations in the sample preparation methodologies.

Table 4 – Summary of Hall Laboratory data 11/9/2013 to 11/21/2013

	Total Selenium		TCLP Selenium	
	No. Samples	Average* (mg/L)	No. Samples	Average* (mg/L)
Injection Well	7	0.55	7	0.62
T-801 Effluent	1	0.65	1	0.63
T-836 Effluent	6	0.93	6	1.03
SWS Bottoms (W-634)	6	2.20	6	3.25
SWS Bottoms (W-20)	5	2.24	5	3.38
API-Inlet	1	0.36	1	0.43
API Outlet	5	0.20	5	0.31
Storm Tank (T-830)	1	0.22	1	0.41
T-829	1	0.38	1	0.74

* 1/2 detection limit used for non-detected results

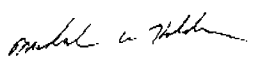
Analytical Recommendations

Based on these reviews, CH2M HILL has provided the following recommendations for sample preparation and analysis by Navajo's contract laboratories:

- Prepare all samples for TCLP selenium and total selenium analyses using the same sample digestion method, and the same concentrations of acids.
- Prepare all instrument calibration standards and quality control standards using the same acid concentrations as is used for the samples.
- Analyze for TCLP selenium or total selenium following EPA method SW6010B, ICP.
- Use an internal standard such as yttrium or scandium for analysis by ICP. Verify that the samples do not contain native concentrations of these elements, and if they do, select an alternate internal standard.
- Review ICP spectra to verify that spectral interferences are not affecting the sample results.
- Prepare and analyze TCLP selenium and total selenium samples at the same time and in the same analytical batch to minimize variances due to instrument calibration, instrument drift, or sample digestate age.
- Do not analyze samples for selenium by EPA method 200.8 ICPMS, unless the ICPMS instrument is equipped with "collision cell" technology to reduce potential interferences that are common in refinery samples.
- When splitting samples, it is critical that each of the laboratories use the same acid digestion method and the same analytical method. Minor differences such as whether or not a laboratory uses an internal standard may also have significant impacts on data comparability.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,



Mike Holder
Environmental Manager, NRC

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, December 04, 2013 8:32 AM
To: 'Holder, Mike'
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Brancard, Bill, EMNRD
Subject: RE: Injection Well Historical Data for Effluent Analyses

Mike:

Good morning. OCD has reviewed your e-mails of: 12/3 below with quarterly sampling inquiry, and your e-mail of 11/18 below with recommended quarterly monitoring parameters.

OCD understands the basis for your 11/18 proposal. OCD notices under bullet 3 that the environmental laboratory testing is limited to Selenium. OCD does not concur based on the new technological remedies, current status of the OCD Order (as amended) with monitoring requirements, and OCD's plans for issuance of final discharge permits for WDWs 1 and 2.

OCD expects to issue the discharge permits for WDWs 1 and 2 in the near future that reflect the monitoring requirements below (OCD 10/30/13 e-mail) and in consideration of the above. OCD expects based on the OCD Order and continued monitoring (especially after the remedies have been constructed and are operational), the operator may request a modification to the WDW permits for reduced monitoring based on compliance with the OCD Order and new environmental monitoring data supporting such a request.

Please contact me if you have questions. Thank you.

****

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, October 30, 2013 7:56 AM
To: Holder, Mike
Subject: FW: Affidavit of Publication WDWs 1 & 2 Quarterly Monitoring Section

Mike:

Good morning! Pending any public comments and/or protests, in addition to making the depth to fresh water revisions in the final issued permits, OCD plans to include (see below) the following monitoring requirements in the quarterly monitoring section of the permit.

The Permittee shall analyze the injected fluids quarterly for the following characteristics:

- General water chemistry (Method 40 CFR 136.3) to include: cation/anion balance, bromide, calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, fluoride, sulfate, specific conductivity, temperature, total dissolved solids (TDS), Eh and pH
- Aromatic and halogenated volatile hydrocarbons scan by EPA Method 8260C GC/MS
- Semi-volatile Organics scan by EPA Method 8270B GC/MS (including 1 and 2-methylnaphthalene)
- Heavy metals scan by EPA Method 6010 ICP (including Arsenic and Mercury by EPA Methods 7060 and 7470 AA)
- EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity (40 CFR part 261 Subpart C Sections 261.21 – 261.23, July 1, 1992).

Historical Permit Monitoring Example:

Chemical Analysis of Injection Fluids: The following analyses of injection fluids will be conducted on a quarterly basis:

a. Aromatic and halogenated volatile hydrocarbon scan by EPA method 8260C GC/MS including MTBE. Semi-Volatile Organics GC/MS EPA method 8270B including 1 and 2-methylnaphthalene.

b. General water chemistry to include calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, sulfate total dissolved solids (TDS), pH, and conductivity.

c. Total heavy metals using the ICAP scan (EPA method 6010/ICPMS) and Mercury using Cold Vapor (EPA method 7470).

d. EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity.

Records of all analyses will be maintained at Navajo for the life of the well.

****

Please let me know if you have any suggestions or recommendations. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Tuesday, December 03, 2013 1:59 PM
To: Chavez, Carl J, EMNRD; Holder, Mike
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Brancard, Bill, EMNRD
Subject: RE: Injection Well Historical Data for Effluent Analyses

Carl – the wastes produced by the SeRT & Iron CoPrecipitation technologies will not be introduced to the wells. The SeRT technology involves using a carbon adsorptive media that the water will be passed through and then reintroduced to refinery processes. The media will be periodically removed (we anticipate twice-per-year), characterized, and sent off-site for appropriate disposal. Caustic and acid will be used for pH adjustments associated with this process but we are not introducing anything that would have an impact on the wells (e.g., metals or chlorinated compounds). The same is true for the Iron CoPrecipitation – we are introducing three chemicals (MSDSs attached) – two polymers and the FeCl; but they will not contribute hazardous chemicals to the wells. The primary purpose of these materials is to precipitate out metals (including selenium) and the precipitate will be removed from the effluent going to the wells, characterized, & disposed of appropriately. Please don't hesitate to contact me with any questions and, if you think beneficial, I can set up a call with our engineers to discuss.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, December 03, 2013 10:47 AM
To: Holder, Mike
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Brancard, Bill, EMNRD
Subject: RE: Injection Well Historical Data for Effluent Analyses

Mike:

In consideration of your inquiry below, I have just completed my review of the ACOW-6 treatment technologies (Fe Coprecipitation and Phillips 66 SeRT) proposed by HollyFrontier and have a few questions: What are the derivative waste products from the treatment technologies proposed (i.e., arsenic, other trace metals); and do the treatment technologies introduce any derivative hazardous chemicals into the waste effluent disposed in the UIC Class I (NH) Disposal Wells (i.e., arsenic and chlorinated compounds, etc.)?

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental
1) What are derivative waste product(s) from the treatment technologies (i.e., arsenic, other trace metals; and 2) Does the treatment introduce any derivative hazardous chemicals into the waste effluent disposed in the UIC Class I (NH) Disposal Wells, i.e., arsenic and chlorinated compounds?

From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Tuesday, December 03, 2013 10:30 AM
To: Chavez, Carl J, EMNRD; Holder, Mike
Subject: RE: Injection Well Historical Data for Effluent Analyses

Carl – just checking in on this to see if you had any questions and to see what timeline is for new permit issuance. We need to do the quarterly sampling pretty quick but was holding off to see if any changes – should we go ahead and do for what is currently in permits for the wells?

Thanks,
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, November 22, 2013 4:43 PM
To: Holder, Mike
Subject: RE: Injection Well Historical Data for Effluent Analyses

Received. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Holder, Mike [mailto:Michael.Holder@hollyfrontier.com]
Sent: Monday, November 18, 2013 4:52 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Injection Well Historical Data for Effluent Analyses

Carl,

Per our previous e-mail correspondence, Navajo Refining Company, LLC (Navajo) is proposing that the required analyses of the injected water disposed in injection wells WDW-1, WDW-2 and WDW-3 for hazardous characteristics be based on a review of historical data for TCLP/ICR constituents. This provides a scientific basis for the required analysis that focuses on what could cause the effluent stream to be hazardous.

We have performed the historical analysis of the TCLP list in 40 CFR 261.24, compiling data collected since 2006. As a result, these are the analytical requirements we propose:

- General water chemistry (Method 40 CFR 136.3) to include: cation/anion balance, bromide, calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, fluoride, sulfate, specific conductivity, temperature, total dissolved solids (TDS), Eh, and pH.
- Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Characteristics for Ignitability, Corrosivity and Reactivity (40 CFR Part 261 Subpart C Sections 261.21 – 261.23, July 1, 1992).
- EPA RCRA TCLP analysis (40 CFR Part 261 Subpart C Section 261.24) for selenium.

In support of this proposal, attached are graphs showing the historical totals samples for each of the TCLP constituents that have ever been detected, including 2-butanone (methyl ethyl ketone [MEK]), 2-methylphenol (o-cresol), 3 & 4-methylphenol (m & p-cresol), benzene, arsenic, barium, chromium, and selenium. Each graph shows the trend of the concentration, as compared to the hazardous waste value. Since the concentration levels are almost indiscernible for most constituents with these graphs, we are also providing a graph for each constituent with a logarithmic scale on the y-axis, in order to exaggerate the values and make the comparison more clear. With the exception of selenium, the maximum concentration ever detected for each of these constituents is well below the hazardous characteristic (i.e., TCLP) value. In addition, most of the analytes have only been rarely detected since 2006 (see attached Table 1 – Injection Well Historical Data Summary, and Table 2 – Injection Well Detections).

We did take TCLP samples in April of 2013, and there were three detections, all below the hazardous characteristic value:

Constituent	Concentration (mg/L)	Hazardous waste value (mg/L)
Arsenic - TCLP	0.03880	5
Barium - TCLP	0.08100	100
Selenium - TCLP	0.68200	1

Please do not hesitate to contact me at (575) 746-5487 if you have any questions. I would be happy to set up a call with our consultant as well if you would like to review the data evaluation.

Thanks,
Mike

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, December 04, 2013 7:24 AM
To: 'McKee, Michael'; Dawson, Scott, EMNRD
Cc: McWatters, Denise; Brancard, Bill, EMNRD; Holder, Mike; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: RE: Navajo Refining Company, LLC ("Navajo") / Artesia Refinery / Update on Short-Term Remedy for Selenium Reduction / OCD Order No. WQA-OCD-CO-2013-001

Mr. McKee:

The New Mexico Oil Conservation Division (OCD) has reviewed the Iron Coprecipitation and Phillips 66 SeRT™ Technologies as described in your e-mail of November 27, 2013 below. You requested that OCD approve these remedies under Section 13 of Exhibit A of the Amended and Supplemental Agreed Compliance Order.

OCD hereby provides an interim approval of the "remedies" selected under Section 13 of the Order Exhibit A. Navajo may proceed with implementation of the remedies. The final approval of the remedies is subject to OCD's review and approval of Navajo's technical evaluation and proposed milestones and deadlines to be provided by Navajo in accordance with Section 12 of Order Exhibit A. Upon final approval, in accordance with Section 14, OCD and Navajo shall amend Exhibit A to establish milestones and deadlines for the construction and completion of the Remediation Project.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/ "Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

-----Original Message-----
From: McKee, Michael [mailto:Michael.McKee@hollyfrontier.com]
Sent: Thursday, November 28, 2013 6:44 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: McWatters, Denise; Brancard, Bill, EMNRD; Holder, Mike
Subject: RE: Navajo Refining Company, LLC ("Navajo") / Artesia Refinery / Update on Short-Term Remedy for Selenium Reduction / OCD Order No. WQA-OCD-CO-2013-001

Please accept my apologies for not including the attachments in my original message. They are included now. Have a GREAT Thanksgiving !

Michael G. McKee
VP-Refinery Manager Navajo Refining Company The Holly Frontier Companies P.O. Box 159
501 E. Main St.
Artesia, NM 88211-0159
Office (575) 746-5361
FAX (575) 746-5421

From: McKee, Michael
Sent: Wednesday, November 27, 2013 4:04 PM
To: Scott Dawson (Scott.Dawson@state.nm.us); Carl J. Chavez (CarlJ.Chavez@state.nm.us)
Cc: McWatters, Denise; Bill Brancard (bill.brancard@state.nm.us); Holder, Mike
Subject: Navajo Refining Company, LLC ("Navajo") / Artesia Refinery / Update on Short-Term Remedy for Selenium Reduction / OCD Order No. WQA-OCD-CO-2013-001

Carl and Scott:

This is a brief update on the progress that Navajo is making toward implementing the iron co-precipitation, short-term remedy to reduce selenium in Refinery wastewater under the above Amended and Supplemental Agreed Compliance Order with OCD (the "Order"). Mike Holder is traveling today for the holiday and has only limited access to e-mail and cell phone, and I am sending this on his behalf.

As Navajo discussed with OCD previously, we have been moving aggressively to assess the viability of iron co-precipitation technology, and, to date, we are pleased to report that the technology appears promising. As a result, Navajo is moving forward more quickly with this approach than initially anticipated. As described in our November 21, 2013 Interim Progress Report, Navajo conducted iron co-precipitation speciation testing and feasibility (jar testing) studies earlier in November. Based on the results of those studies, Navajo completed engineering for iron (ferric chloride) injection during November 19-22, 2013, and on November 26, 2013, Navajo completed installation of the equipment necessary to conduct a scale-up trial of the iron co-precipitation process at the Refinery's wastewater treatment plant. Navajo expects to commence ferric chloride injection today, November 27, 2013. This will mark the beginning of the trial period to assess efficacy of selenium removal under actual Refinery operating conditions. These steps will be described in the Monthly Interim Progress Report required pursuant to Paragraph 9 of Exhibit A to the Order, which will be submitted on Monday, December 2, 2013. In addition, we are also attaching to this e-mail two schematics pertaining to the iron co-precipitation process and certain graphics depicting the outcome of the jar test studies.

We are also moving forward expeditiously with evaluation, feasibility testing, and potential installation of the Phillips 66, SeRT® technology as part of our short-term remedy for selenium reduction. As with the iron co-precipitation process, we have expedited the schedule for these measures, and have located a SeRT® unit that we plan to install in December for trial stream treatment. We plan to begin installation of a foundation for this unit next week. Depending on the performance of this unit, Navajo will advise OCD of its plans regarding the use of this technology.

Pursuant to Paragraph 13 of Exhibit A to the OCD Order, we also at this time request OCD's approval of the iron co-precipitation and SeRT® technologies, subject to OCD's further review and approval of (a) Navajo's technical evaluation of the iron co-precipitation process and (b) Navajo's technical evaluation and proposed milestones and deadlines for the SeRT® technology. These evaluations and proposed milestones/deadlines will be included in Navajo's December 13, 2013 short-term remedy report under Paragraph 12 of Exhibit A to the Order.

Please let us know if you have any questions regarding the commencement of ferric-chloride injection trials or the planned installation of a SeRT® unit in December. Should you want to discuss this, Mike Holder (Cell: 575-308-1115) is traveling and may have only limited cell phone access. Alternatively, Bill Brancard or others in your office are welcome to call Denise McWatters (Office: 214-871-3480 or cell: 214-634-9980) for any follow-up.

We appreciate your time and consideration.

Michael G. McKee
VP-Refinery Manager Navajo Refining Company The Holly Frontier Companies P.O. Box 159
501 E. Main St.
Artesia, NM 88211-0159
Office (575) 746-5361

FAX (575) 746-5421

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Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Tuesday, December 03, 2013 2:15 PM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Brancard, Bill, EMNRD; McWatters, Denise; McKee, Michael; Holder, Mike
Subject: Final TCLP Se Results for 11/25/13
Attachments: Rpt_1311B06_Final_v1.pdf

Scott/Carl – attached is the final laboratory analytical report for TCLP selenium results for Monday, 11/25/2013. Per the report, selenium = 0.75 mg/L via the TCLP method. These results were received Tuesday, 12/3/2013, and are required to be taken weekly on the first business day of the week per Condition 1.a of Exhibit A of the Amended and Supplemental Agreed Order (the "Order") between NRC & OCD (Dated November 14, 2013). Condition 4 of the Order requires their reporting to OCD within 3 business days of receipt. This submittal fulfills the requirements of the afore-mentioned Conditions. If you have any questions, please do not hesitate to contact me at (575) 746-5487. Thank you for your assistance.

Regards,
Mike Holder

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 03, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1311B06

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 4 sample(s) on 11/25/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311B06**
Date Reported: **12/3/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311B06-001 **Matrix:** AQUEOUS

Client Sample ID: 836 Effluent to Wells
Collection Date: 11/24/2013 6:00:00 AM
Received Date: 11/25/2013 3:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	11/27/2013 2:00:22 PM	10551
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.056	0.020		mg/L	1	11/26/2013 3:18:06 PM	10527
Barium	0.025	0.020		mg/L	1	11/26/2013 3:18:06 PM	10527
Cadmium	ND	0.0020		mg/L	1	11/26/2013 3:18:06 PM	10527
Chromium	ND	0.0060		mg/L	1	11/26/2013 3:18:06 PM	10527
Lead	ND	0.0050		mg/L	1	11/26/2013 3:18:06 PM	10527
Selenium	0.67	0.050		mg/L	1	11/26/2013 3:18:06 PM	10527
Silver	ND	0.0050		mg/L	1	11/26/2013 3:18:06 PM	10527

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311B06-002 **Matrix:** AQUEOUS

Client Sample ID: 836 Effluent to Wells TCLP
Collection Date: 11/24/2013 6:00:00 AM
Received Date: 11/25/2013 3:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	11/27/2013 2:45:51 PM	10552
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545
Barium	ND	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545
Cadmium	ND	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545
Chromium	ND	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545
Lead	ND	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545
Selenium	0.84	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545
Silver	ND	0.10		mg/L	1	11/27/2013 7:43:08 AM	10545

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1311B06**
Date Reported: **12/3/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311B06-003 **Matrix:** AQUEOUS

Client Sample ID: 801 Effluent to Wells
Collection Date: 11/25/2013 6:00:00 AM
Received Date: 11/25/2013 3:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	11/27/2013 2:05:41 PM	10551
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	0.064	0.020		mg/L	1	11/26/2013 3:31:50 PM	10527
Barium	0.028	0.020		mg/L	1	11/26/2013 3:31:50 PM	10527
Cadmium	ND	0.0020		mg/L	1	11/26/2013 3:31:50 PM	10527
Chromium	ND	0.0060		mg/L	1	11/26/2013 3:31:50 PM	10527
Lead	ND	0.0050		mg/L	1	11/26/2013 3:31:50 PM	10527
Selenium	0.59	0.050		mg/L	1	11/26/2013 3:31:50 PM	10527
Silver	ND	0.0050		mg/L	1	11/26/2013 3:31:50 PM	10527

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311B06-004 **Matrix:** AQUEOUS

Client Sample ID: 801 Effluent to Wells TCLP
Collection Date: 11/25/2013 6:00:00 AM
Received Date: 11/25/2013 3:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	11/27/2013 2:47:37 PM	10552
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545
Barium	0.33	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545
Cadmium	ND	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545
Chromium	ND	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545
Lead	ND	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545
Selenium	0.75	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545
Silver	ND	0.10		mg/L	1	11/27/2013 7:45:27 AM	10545

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311B06**

03-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	MB-10551	SampType:	MBLK		TestCode:	EPA Method 7470: Mercury				
Client ID:	PBW	Batch ID:	10551		RunNo:	15127				
Prep Date:	11/26/2013	Analysis Date:	11/27/2013		SeqNo:	436526	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-10551	SampType:	LCS		TestCode:	EPA Method 7470: Mercury				
Client ID:	LCSW	Batch ID:	10551		RunNo:	15127				
Prep Date:	11/26/2013	Analysis Date:	11/27/2013		SeqNo:	436527	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.4	80	120			

Sample ID	1311B06-001AMS	SampType:	MS		TestCode:	EPA Method 7470: Mercury				
Client ID:	836 Effluent to Well	Batch ID:	10551		RunNo:	15127				
Prep Date:	11/26/2013	Analysis Date:	11/27/2013		SeqNo:	436529	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	91.4	75	125			

Sample ID	1311B06-001AMSD	SampType:	MSD		TestCode:	EPA Method 7470: Mercury				
Client ID:	836 Effluent to Well	Batch ID:	10551		RunNo:	15127				
Prep Date:	11/26/2013	Analysis Date:	11/27/2013		SeqNo:	436530	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	91.8	75	125	0.455	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311B06**

03-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**MB-10552**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**10552**	RunNo:	**15135**					
Prep Date:	**11/26/2013**	Analysis Date:	**11/27/2013**	SeqNo:	**436661**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-10552**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**10552**	RunNo:	**15135**					
Prep Date:	**11/26/2013**	Analysis Date:	**11/27/2013**	SeqNo:	**436662**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311B06**

03-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10545**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10545**	RunNo: **15107**
Prep Date: **11/26/2013**	Analysis Date: **11/27/2013**	SeqNo: **435901** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10545**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10545**	RunNo: **15107**
Prep Date: **11/26/2013**	Analysis Date: **11/27/2013**	SeqNo: **435902** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	110	80	120			
Barium	ND	100	0.5000	0	98.1	80	120			
Cadmium	ND	1.0	0.5000	0	108	80	120			
Chromium	ND	5.0	0.5000	0	98.9	80	120			
Lead	ND	5.0	0.5000	0	99.6	80	120			
Selenium	ND	1.0	0.5000	0	114	80	120			
Silver	ND	5.0	0.1000	0	113	80	120			

Sample ID **1311B06-004AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **801 Effluent to Well**	Batch ID: **10545**	RunNo: **15107**
Prep Date: **11/26/2013**	Analysis Date: **11/27/2013**	SeqNo: **435913** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.60	0.10	0.5000	0.06144	108	75	125			
Barium	0.80	0.10	0.5000	0.3251	95.3	75	125			
Cadmium	0.54	0.10	0.5000	0	108	75	125			
Chromium	0.48	0.10	0.5000	0.001610	96.6	75	125			
Lead	0.49	0.10	0.5000	0	97.8	75	125			
Silver	0.11	0.10	0.1000	0	110	75	125			

Sample ID **1311B06-004AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **801 Effluent to Well**	Batch ID: **10545**	RunNo: **15107**
Prep Date: **11/26/2013**	Analysis Date: **11/27/2013**	SeqNo: **435914** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.62	0.10	0.5000	0.06144	111	75	125	1.95	20	
Barium	0.81	0.10	0.5000	0.3251	97.1	75	125	1.16	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311B06**

03-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**1311B06-004AMSD**	SampType: **MSD**		TestCode: **EPA Method 6010B: TCLP Metals**					
Client ID:	**801 Effluent to Well**	Batch ID: **10545**		RunNo: **15107**					
Prep Date:	**11/26/2013**	Analysis Date: **11/27/2013**		SeqNo: **435914**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.54	0.10	0.5000	0	108	75	125	0.830	20	
Chromium	0.49	0.10	0.5000	0.001610	97.6	75	125	1.03	20	
Lead	0.49	0.10	0.5000	0	98.5	75	125	0.711	20	
Silver	0.11	0.10	0.1000	0	110	75	125	0.263	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311B06**

03-Dec-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10527**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **10527**	RunNo: **15086**
Prep Date: **11/26/2013**	Analysis Date: **11/26/2013**	SeqNo: **435194** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-10527**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **10527**	RunNo: **15086**
Prep Date: **11/26/2013**	Analysis Date: **11/26/2013**	SeqNo: **435195** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.54	0.020	0.5000	0	107	80	120			
Barium	0.50	0.020	0.5000	0	99.9	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.50	0.0060	0.5000	0	100	80	120			
Lead	0.50	0.0050	0.5000	0	101	80	120			
Selenium	0.51	0.050	0.5000	0	102	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1311B06 RcptNo: 1

Received by/date: LM 11/25/13

Logged By: Michelle Garcia 11/25/2013 3:45:00 PM Michelle Garcia

Completed By: Michelle Garcia 11/25/2013 4:52:49 PM Michelle Garcia

Reviewed By: IO 11/25/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑ Not required	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ Not required	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 2 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? No
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: mg

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.6	Good	Yes			

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	
☐ Standard ☐ Level 4 (Full Validation)	Mike Holder
☐ Other _____	Sampler: ~~Aaron Strange~~ Kevin Newton
☐ EDD (Type) _____	On Ice: ☒ Yes ☐ No
	Sample Temperature: 2.0

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Total Selenium 200.8	TCLP Selenium 1311/6010	① Total Metals & metals	② TCLP Metals & metals
11/24/13	6:00	Liquid	836 Effluent to wells	plastic-1	HNO3	-001			X	
11/25/13	6:00	Liquid	836 Effluent to wells	plastic-1	NEAT	-002				X
11/25/13	6:00	Liquid	801 Effluent to wells	plastic-1	HNO3	-003			X	
11/25/13	6:00	Liquid	801 Effluent to wells	plastic-1	NEAT	-004				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/25/13	10:00	Anthony Widman		11/25/13	1545
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

RECEIVED OCD

HOLLYFRONTIER

2013 DEC -6 P 2:34

December 2, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0841

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
November 2013 Monthly Interim Progress Report
OCD Order No. WQA-OCD-CO-2013-001

Dear Sirs:

This monthly progress report is submitted pursuant to Paragraph 9 of Exhibit A to the Amended and Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001 with the Oil Conservation Division (OCD), dated November 14, 2013 (the "Order"). Specifically, Paragraph 9 requires that Navajo provide to the OCD a monthly interim progress report detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) A summary of all the results of sampling required pursuant to Paragraph 1 of Exhibit A to the Order, and copies of all supporting laboratory data;
b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request; and
c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

This is the November 2013 monthly progress report, detailing the actions taken during the preceding calendar month of October 2013, and due on the first business day of the following month (i.e., December 2, 2013). This report also includes the final analytical results as of November 23, 2013, and the actions taken through approximately November 27, 2013.

Status and Timeline for Actions Taken by Navajo

Since October 15, 2013, when Navajo refinery identified a potential violation of the toxicity characteristic leaching procedure (TCLP) selenium limit of 1 milligram per liter (mg/L) (the "Se Limit"), it has provided prompt notifications to the OCD via telephone and submission of C-141 Forms, with a copy to the New Mexico Environment Department (NMED). A list of these

notifications for each potential selenium measurement above the Se Limit is provided in Table 1. To date, Navajo has also complied with the reporting requirements of the Order, including submission of the results of required sampling within three (3) business days of receipt of final data, and submittal of the interim progress report on November 21, 2013 pursuant to Paragraph 10 of Exhibit A to the Order.

Table 1: Summary of Potential Selenium Violation Notifications made to the OCD

Sample Date	Selenium Concentration (mg/L)		Verbal Notification to OCD	Form C-141 Submittal Date
	TCLP Selenium	Total Selenium		
September 27, 2013	1.24	1.6	October 15, 2013	October 21, 2013
October 15, 2013	1.24	1.49	October 20, 2013	October 21, 2013
October 31, 2013	1.23	0.996	November 5, 2013	November 11, 2013
November 1, 2013[1]	1.13	0.974	November 6, 2013	November 13, 2013
November 4, 2013	1.1	0.98	November 6, 2013	November 13, 2013
November 5, 2013	1.2	0.51	November 7, 2013	November 14, 2013

[1] As explained in Navajo's C-141 report, the corresponding discharge for this sampling event occurred on November 2, 2013.

In response to these selenium results, the Artesia Refinery took immediate action to reduce the amount of selenium in the discharge. These actions included evaluating the Refinery's process and operations, implementing an extensive selenium sampling program, temporarily reducing production rates, temporarily changing the crude slate, shutting down units to evaluate their impacts on selenium levels, and adding reverse osmosis (RO) reject wastewater upstream of the wastewater treatment system, most of which are described in the November 21, 2013 interim progress report. Navajo has also aggressively pursued short-term and long-term selenium control strategies. A timeline of the activities to support these solutions is provided below.

October 30-31, 2013

- Met in Artesia to kick off process engineering by CH2M Hill for selenium reduction via SeRT® (Selenium Removal Technology) process and other WWTP upgrades.
- Negotiated an expedited project schedule with CH2M HILL to design and build a 200 gpm SeRT® Unit within 6 to 8 months.
- Reviewed feasibility of implementing Iron Co-precipitation of selenite via ferric chloride addition as a possible short-term selenium reduction technology.

November 5, 2013

- Met with Phillips 66 in California to kick off license and technology agreement for SeRT® process.

November 7, 2013

- Inquired with Valero about potential purchase of an idle 100 gpm SeRT® unit. Relocation of this existing unit is expected to put a portion of the long-term selenium removal technology in place within 3 to 4 months (estimated).

November 12, 2013

- Reached agreement for purchase of the idle SeRT® equipment from the Valero Wilmington Refinery.

- Hired a relocation contractor to mark the unit for removal.

November 14, 2013

- Made arrangements to test the feasibility of ferric chloride injection to reduce selenium in wastewater effluent, with the performance of parallel testing onsite at the Refinery and at the CH2M HILL laboratory.

November 18, 2013

- Oversaw dismantling of idle SeRT® Unit at the Valero refinery.
- Scheduled to begin moving SeRT® equipment by December 2, 2013.
- Sited tie-ins and existing piping and equipment at the Navajo Refinery for use in both short- and long-term SeRT® installations.
- Confirmed via jar tests that ferric chloride injection will precipitate selenite from water and, therefore, is anticipated to result in a significant reduction in selenium TCLP levels in the Refinery's discharge at the injection wells.

November 19-22, 2013

- Completed engineering for ferric chloride injection; relevant equipment and ferric chloride ordered.

November 21, 2013

- Agreed to licensing terms with Phillips 66 on use of SeRT® technology.

November 26, 2013

- Completed installation of the equipment necessary to conduct a scale-up trial of the Iron Co-precipitation process.

November 27, 2013

- Commenced trial of ferric chloride injection

Navajo has developed a schedule for the further commissioning of selenium reduction technologies, subject to change as necessary. This schedule is provided below.

1. **Iron Co-precipitation via ferric chloride injection:** Include results of the ferric chloride injection trial in the December 13, 2013 technical evaluation report of short-term remedy(ies).
2. **SeRT® Process – 200 gpm Unit:** Obtain the existing idle unit at Valero for trial stream treatment as part of the short-term selenium reduction remedy:
    a. Commence installation of foundation during week of December 2, 2013
    b. Equipment components begin arriving December 9, 2013
    c. Include technology evaluation based on available information and proposed milestones / deadlines for SeRT® process in the December 13, 2013 short-term remedy report
    d. Startup in mid-to-late February 2014 (estimated).

3. **SeRT® Process**- Depending on the results of the above SeRT® trial, potential installation of a full capacity permanent unit:
    a. Process Engineering complete by February 6, 2014 (estimated)
    b. Startup Goal: June 2014 (estimated)

In addition to the status and timeline of actions taken by Navajo, this monthly report includes the requirements of items a-c of Paragraph 9 of Exhibit A to the Order, as follow.

a) A summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data.

A summary of the results of sampling collected pursuant to Paragraph 1 of Exhibit A to the Order are provided in Table 2. This table includes only those samples collected at the OCD-approved Sample Location on the first business day of each week after the effective date of the Order, per the requirements of this paragraph. This data is provided for all sample results that were final at the time of this report (i.e., samples collected through November 18, 2013). The laboratory reports for these samples are provided in Attachment A.

Table 2: Weekly Selenium Measurements Collected Pursuant to Paragraph 1 of Exhibit A to the Order (mg/L)

DATE	Sampling Location	Laboratory	Method	TCLP Selenium (mg/L)	
				Split Samples	Average[2]
10/24/2013[1]	T-801	ALS Environmental	SW1311/ 6020	0.82	0.78
		Hall Environmental	EPA 6010B	0.74	
10/28/2013[1]	T-801	Hall Environmental	EPA 6010B	0.98	0.98
11/4/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	1.10	1.10
11/11/2013[1]	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.088	0.088
11/18/2013	Injection Well Effluent Sampling Point	Hall Environmental	EPA 6010B	0.78	0.78

[1]Samples collected per the requirements of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.
[2]For split samples.

b) A summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request.

A summary of all of the TCLP selenium concentrations measured at the OCD-approved Sample Location and at the effluent of treatment tanks T-801 and T-836 is provided in Attachment B. All of the TCLP selenium measurements for all refinery sample locations are provided in Attachment C, and all of the total selenium measurements for all refinery sample locations are provided in Attachment D. The data provided in all of these attachments is for sampling performed during the month of October through November 23, 2013.

c) The calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

As of the November 23, 2013 sampling event, there are no new reported exceedances of the Se Limit or other violations of the Order, and no stipulated penalties pursuant to Section III, Paragraph 2 of the Order. Therefore, no calculations were performed under this requirement. On November 20, 2013 Navajo submitted payment of the penalty of $26,000 established in the Order for prior reported selenium concentrations above the Se Limit.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Attachment A:
Laboratory Reports for Samples Collected Pursuant to
Paragraph 1 of Exhibit A to the Order

ALS Environmental

30-Oct-2013

Mike Holder
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 746-5487
Fax: (575) 746-5421

Re: Waste Water Effluent Monitoring Work Order: **13101164**

Dear Mike,

ALS Environmental received 6 samples on 25-Oct-2013 09:40 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 18.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West
Project Manager

NELAP ACCREDITED LABORATORY

Certificate No: T104704231-13-12

ALS Environmental

Date: 29-Oct-13

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Work Order: **13101164**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
13101164-01	WWT T-801	Liquid		10/24/2013 05:00	10/25/2013 09:40	☐
13101164-02	WWT T-836	Liquid		10/24/2013 05:05	10/25/2013 09:40	☐
13101164-03	Storm Water Tank T-830	Liquid		10/24/2013 05:15	10/25/2013 09:40	☐
13101164-04	API Inlet	Liquid		10/24/2013 04:50	10/25/2013 09:40	☐
13101164-05	SWS Bottoms W-634	Liquid		10/24/2013 05:25	10/25/2013 09:40	☐
13101164-06	Wet Gas Scrubber Purge D-250	Liquid		10/24/2013 04:45	10/25/2013 09:40	☐

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Work Order: 13101164

Case Narrative

No Exceptions

ALS Environmental

Date: *29-Oct-13*

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Sample ID: WWT T-801
Collection Date: 10/24/2013 05:00 AM

Work Order: 13101164
Lab ID: 13101164-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP METALS			**SW1311/6020**		Prep Date: **10/28/2013**	Analyst: **SKS**
Selenium	**0.821**		**0.0500**	**mg/L**	10	10/28/2013 05:30 PM
TOTAL RECOVERABLE METALS			**E200.8**		Prep Date: **10/25/2013**	Analyst: **SKS**
Selenium	**1.11**		**0.0500**	**mg/L**	10	10/28/2013 04:23 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Oct-13*

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Sample ID: WWT T-836
Collection Date: 10/24/2013 05:05 AM

Work Order: 13101164
Lab ID: 13101164-02
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP METALS			**SW1311/6020**		Prep Date: **10/28/2013**	Analyst: **SKS**
Selenium	**0.648**		**0.0500**	**mg/L**	10	10/28/2013 05:33 PM
TOTAL RECOVERABLE METALS			**E200.8**		Prep Date: **10/25/2013**	Analyst: **SKS**
Selenium	**0.919**		**0.0500**	**mg/L**	10	10/28/2013 04:25 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Oct-13*

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Sample ID: Storm Water Tank T-830
Collection Date: 10/24/2013 05:15 AM

Work Order: 13101164
Lab ID: 13101164-03
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP METALS			**SW1311/6020**		Prep Date: **10/28/2013**	Analyst: **SKS**
Selenium	**0.374**		**0.0500**	**mg/L**	10	10/28/2013 05:35 PM
TOTAL RECOVERABLE METALS			**E200.8**		Prep Date: **10/25/2013**	Analyst: **SKS**
Selenium	**0.534**		**0.0500**	**mg/L**	10	10/28/2013 04:28 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Oct-13*

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Sample ID: API Inlet
Collection Date: 10/24/2013 04:50 AM

Work Order: 13101164
Lab ID: 13101164-04
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP METALS			**SW1311/6020**		Prep Date: **10/28/2013**	Analyst: **SKS**
Selenium	U		0.0500	mg/L	10	10/28/2013 05:37 PM
TOTAL RECOVERABLE METALS			**E200.8**		Prep Date: **10/25/2013**	Analyst: **SKS**
Selenium	**1.83**		**0.0500**	**mg/L**	10	10/28/2013 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Oct-13*

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Sample ID: SWS Bottoms W-634
Collection Date: 10/24/2013 05:25 AM

Work Order: 13101164
Lab ID: 13101164-05
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP METALS			**SW1311/6020**		Prep Date: **10/28/2013**	Analyst: **SKS**
Selenium	**5.03**		**0.0500**	**mg/L**	10	10/28/2013 05:40 PM
TOTAL RECOVERABLE METALS			**E200.8**		Prep Date: **10/25/2013**	Analyst: **SKS**
Selenium	**4.77**		**0.0500**	**mg/L**	10	10/28/2013 04:33 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Oct-13*

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
Sample ID: Wet Gas Scrubber Purge D-250
Collection Date: 10/24/2013 04:45 AM

Work Order: 13101164
Lab ID: 13101164-06
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP METALS			**SW1311/6020**		Prep Date: **10/28/2013**	Analyst: **SKS**
Selenium	**0.104**		**0.100**	**mg/L**	10	10/28/2013 05:47 PM
TOTAL RECOVERABLE METALS			**E200.8**		Prep Date: **10/25/2013**	Analyst: **SKS**
Selenium	**0.103**		**0.0500**	**mg/L**	10	10/28/2013 04:52 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Work Order: 13101164
Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 74124 **Test Name:** Total Recoverable Metals						
13101164-01A	WWT T-801	Liquid	10/24/2013 5:00:00 AM		10/25/2013 10:00 AM	10/28/2013 04:23 PM
13101164-02A	WWT T-836		10/24/2013 5:05:00 AM		10/25/2013 10:00 AM	10/28/2013 04:25 PM
13101164-03A	Storm Water Tank T-830		10/24/2013 5:15:00 AM		10/25/2013 10:00 AM	10/28/2013 04:28 PM
13101164-04A	API Inlet		10/24/2013 4:50:00 AM		10/25/2013 10:00 AM	10/28/2013 04:30 PM
13101164-05A	SWS Bottoms W-634		10/24/2013 5:25:00 AM		10/25/2013 10:00 AM	10/28/2013 04:33 PM
13101164-06A	Wet Gas Scrubber Purge D-250		10/24/2013 4:45:00 AM		10/25/2013 10:00 AM	10/28/2013 04:52 PM
Batch ID 74172 **Test Name:** TCLP Metals						
13101164-01D	WWT T-801	Liquid	10/24/2013 5:00:00 AM	10/26/2013 9:00:00 AM	10/28/2013 11:00 AM	10/28/2013 05:30 PM
13101164-02D	WWT T-836		10/24/2013 5:05:00 AM	10/26/2013 9:00:00 AM	10/28/2013 11:00 AM	10/28/2013 05:33 PM
13101164-03D	Storm Water Tank T-830		10/24/2013 5:15:00 AM	10/26/2013 9:00:00 AM	10/28/2013 11:00 AM	10/28/2013 05:35 PM
13101164-04D	API Inlet		10/24/2013 4:50:00 AM	10/26/2013 9:00:00 AM	10/28/2013 11:00 AM	10/28/2013 05:37 PM
13101164-05D	SWS Bottoms W-634		10/24/2013 5:25:00 AM	10/26/2013 9:00:00 AM	10/28/2013 11:00 AM	10/28/2013 05:40 PM
13101164-06D	Wet Gas Scrubber Purge D-250		10/24/2013 4:45:00 AM	10/26/2013 9:00:00 AM	10/28/2013 11:00 AM	10/28/2013 05:47 PM

Batch ID: **74124** Instrument ID **ICPMS05** Method: **E200.8**

MBLK Sample ID: **MBLKW2-102513-74124** Units: **µg/L** Analysis Date: **10/25/2013 03:17 PM**

Client ID: Run ID: **ICPMS05_131025A** SeqNo: **3406732** Prep Date: **10/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	1.015	5.00								J

LCS Sample ID: **MLCSW2-102513-74124** Units: **µg/L** Analysis Date: **10/25/2013 03:19 PM**

Client ID: Run ID: **ICPMS05_131025A** SeqNo: **3406733** Prep Date: **10/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	53.55	5.00	50	0	107	85-115				

MS Sample ID: **13101112-01AMS** Units: **µg/L** Analysis Date: **10/25/2013 03:48 PM**

Client ID: Run ID: **ICPMS05_131025A** SeqNo: **3406745** Prep Date: **10/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	56.81	5.00	50	5.093	103	70-130				

MS Sample ID: **13101164-05AMS** Units: **µg/L** Analysis Date: **10/28/2013 04:37 PM**

Client ID: **SWS Bottoms W-634** Run ID: **ICPMS05_131028A** SeqNo: **3408334** Prep Date: **10/25/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	4772	50.0	50	4768	9.08	70-130				SO

MSD Sample ID: **13101112-01AMSD** Units: **µg/L** Analysis Date: **10/25/2013 03:50 PM**

Client ID: Run ID: **ICPMS05_131025A** SeqNo: **3406746** Prep Date: **10/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	55.55	5.00	50	5.093	101	70-130	56.81	2.23	20	

MSD Sample ID: **13101164-05AMSD** Units: **µg/L** Analysis Date: **10/28/2013 04:40 PM**

Client ID: **SWS Bottoms W-634** Run ID: **ICPMS05_131028A** SeqNo: **3408335** Prep Date: **10/25/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	4716	50.0	50	4768	-104	70-130	4772	1.19	20	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 13101164
Project: Waste Water Effluent Monitoring

QC BATCH REPORT

Batch ID: **74124** Instrument ID **ICPMS05** Method: **E200.8**

DUP Sample ID: **13101112-01ADUP** Units: **µg/L** Analysis Date: **10/25/2013 03:46 PM**
Client ID: Run ID: **ICPMS05_131025A** SeqNo: **3406744** Prep Date: **10/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	3.967	5.00					5.093	0	20	J

DUP Sample ID: **13101164-05ADUP** Units: **µg/L** Analysis Date: **10/28/2013 04:35 PM**
Client ID: **SWS Bottoms W-634** Run ID: **ICPMS05_131028A** SeqNo: **3408333** Prep Date: **10/25/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	4469	50.0					4768	6.47	20	

The following samples were analyzed in this batch:

13101164-01A	13101164-02A	13101164-03A
13101164-04A	13101164-05A	13101164-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 13101164
Project: Waste Water Effluent Monitoring

QC BATCH REPORT

Batch ID: **74172** Instrument ID **ICPMS05** Method: **SW1311/6020**

MBLK Sample ID: **MBLKT1-102713-74172** Units: **mg/L** Analysis Date: **10/28/2013 04:56 PM**
Client ID: Run ID: **ICPMS05_131028A** SeqNo: **3408998** Prep Date: **10/28/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	U	0.0500								

MBLK Sample ID: **MBLKW4-102813-74172** Units: **mg/L** Analysis Date: **10/28/2013 04:59 PM**
Client ID: Run ID: **ICPMS05_131028A** SeqNo: **3408999** Prep Date: **10/28/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	U	0.0500								

LCS Sample ID: **MLCSW4-102813-74172** Units: **mg/L** Analysis Date: **10/28/2013 05:01 PM**
Client ID: Run ID: **ICPMS05_131028A** SeqNo: **3409000** Prep Date: **10/28/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.5067	0.0500	0.5	0	101	80-120				

MS Sample ID: **13101152-01AMS** Units: **mg/L** Analysis Date: **10/28/2013 05:11 PM**
Client ID: Run ID: **ICPMS05_131028A** SeqNo: **3409004** Prep Date: **10/28/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.5598	0.0500	0.5	0.00793	110	75-125				

MSD Sample ID: **13101152-01AMSD** Units: **mg/L** Analysis Date: **10/28/2013 05:18 PM**
Client ID: Run ID: **ICPMS05_131028A** SeqNo: **3409007** Prep Date: **10/28/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.5158	0.0500	0.5	0.00793	102	75-125	0.5598	8.17	20	

DUP Sample ID: **13101152-01ADUP** Units: **mg/L** Analysis Date: **10/28/2013 05:08 PM**
Client ID: Run ID: **ICPMS05_131028A** SeqNo: **3409003** Prep Date: **10/28/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	U	0.0500					0.00793	0	25	

The following samples were analyzed in this batch:

13101164-01B	13101164-02B	13101164-03B
13101164-04B	13101164-05B	13101164-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: Waste Water Effluent Monitoring
WorkOrder: 13101164

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **25-Oct-13 09:40**

Work Order: **13101164** Received by: **PMG**

Checklist completed by Paresh M. Giga (eSignature) 25-Oct-13 (Date) Reviewed by: (eSignature) (Date)

Matrices: Liquid
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	
Temperature(s)/Thermometer(s):	21.7c/21.7c C/U	IR1	
Cooler(s)/Kit(s):	2892		
Date/Time sample(s) sent to storage:	10/25/13 14:20		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes: Sample Desalter Effluent W-7 - not received in cooler.

Client Contacted: Aaron Strange Date Contacted: 25-Oct-13 Person Contacted: Aaron Strange

Contacted By: Sonia West Regarding: Missing Sample

Comments: As per the client sample Desalter Effluent W-7 was not sent to the lab. This sample was cancelled.

CorrectiveAction:

SRC Page 1 of 1

☑ ALS Laboratory Group
10450 Stanelift Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 2

13101164

NAVAJO REFINING: Navajo Refining Company

Project: Waste Water Effluent Monitoring

ALS Project Manager: Sonia West

Customer Information		Project Information			
Purchase Order		Project Name	Wastewater Effluent Monitoring	A	Total Selenium 200.8
Work Order		Project Number		B	TCLP Selenium 1311/6020
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	
Address	P. O. Box 159	Address	501 East Main	E	
				F	
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	
Phone	(575) 748-3311	Phone	(575) 748-3311	H	
Fax	(575) 746-5451	Fax	(575) 746-5451	I	
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WWT T-801	10/24/13	5:00	Liquid	HNO3	1	X										
2	WWT T-801	10/24/13	5:00	Liquid	Neat	1		X									
3	WWT T-836	10/24/13	5:05	Liquid	HNO3	1	X										
4	WWT T-836	10/24/13	5:05	Liquid	Neat	1		X									
5	Storm Water Tank T-830	10/24/13	5:15	Liquid	HNO3	1	X										
6	Storm Water Tank T-830	10/24/13	5:15	Liquid	Neat	1		X									
7	API Inlet	10/24/13	4:50	Liquid	HNO3	1	X										
8	API Inlet	10/24/13	4:50	Liquid	Neat	1		X									
9	SWS Bottoms W-634	10/24/13	5:25	Liquid	HNO3	1	X										
10	SWS Bottoms W-634	10/24/13	5:25	Liquid	Neat	1		X									

Sampler(s): Please Print & Sign: Anthony Widman

Shipment Method: FedEx

Required Turnaround Time: ☐ Other ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☑ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
	10/24/2013	16:15		Sampled by Kevin Newton
Relinquished by:	Date:	Time:	Received by (Laboratory): 10.25.13. 0940.	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

☐ Level II: Standard QC ☐ TRRP-Checklist
☐ Level III: Std QC + Raw Data ☐ TRRP Level IV
☐ Level IV: SW846 CLP-Like
☐ Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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☑ ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 2 of 2

☐ ALS Laboratory Group
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

ALS Project Manager: Sonia West | Work Order #: 1310464

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Wastewater Effluent Monitoring	A	Total Selenium 200.8
Work Order		Project Number		B	TCLP Selenium 1311/6020
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	
Address	P. O. Box 159	Address	501 East Main	E	
				F	
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	
Phone	(575) 748-3311	Phone	(575) 748-3311	H	
Fax	(575) 746-5451	Fax	(575) 746-5451	I	
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SWS Bottoms W-20	10/24/13	No Sample	Liquid	HNO3	1	X										
2	SWS Bottoms W-20	10/24/13	No Sample	Liquid	Neat	1		X									
3	Desalter Effluent W-7	10/24/13	5:35	Liquid	HNO3	1	X										
4	Desalter Effluent W-7	10/24/13	5:35	Liquid	Neat	1		X									
5	Wet Gas Scrubber Purge D-250	10/24/13	4:45	Liquid	HNO3	1	X										
6	Wet Gas Scrubber Purge D-250	10/24/13	4:45	Liquid	Neat	1		X									
7	Temperature Blank																
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Anthony Waldman

Shipment Method: FedEx

Required Turnaround Time: ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☑ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
	10/24/2013	16:15		Sampled by Kevin
Relinquished by:	Date:	Time:	Received by (Laboratory): 10-25-13 940	Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

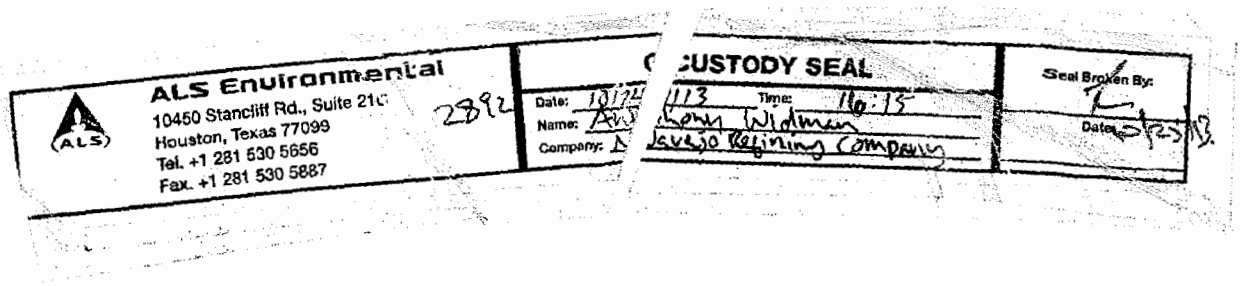
QC Package: (Check Box Below)

☐ Level II: Standard QC ☐ TRRP-Checklist
☐ Level III: Std QC + Raw Data ☐ TRRP Level IV
☐ Level IV: SW846 CLP-Like
☐ Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
2892
CUSTODY SEAL
Seal Broken By:
Date:
Time:
Name:
Company:
Valero Refining Company


TRK# 0201 5797 1186 8436
FRI – 25 OCT 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US IAH

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 30, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1310C06

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 10/24/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1310C06**
Date Reported: **10/30/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-001 **Matrix:** AQUEOUS

Client Sample ID: WWT T-801
Collection Date: 10/24/2013 5:00:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.91	0.050	*	mg/L	50	10/25/2013 11:41:27 AM	10018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310C06**
Date Reported: **10/30/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-002 **Matrix:** AQUEOUS

Client Sample ID: WWT T-801 TCLP
Collection Date: 10/24/2013 5:00:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.74	0.10		mg/L	1	10/28/2013 6:18:17 AM	10028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-003 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836
Collection Date: 10/24/2013 5:05:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.78	0.050	*	mg/L	50	10/25/2013 11:43:50 AM	10018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-004 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836 TCLP
Collection Date: 10/24/2013 5:05:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.58	0.10		mg/L	1	10/28/2013 6:20:38 AM	10028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-005 **Matrix:** AQUEOUS

Client Sample ID: Storm Water Tank T-830
Collection Date: 10/24/2013 5:15:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.33	0.050	*	mg/L	50	10/25/2013 11:46:14 AM	10018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-006 **Matrix:** AQUEOUS

Client Sample ID: Storm Water Tank T-830 TCLP
Collection Date: 10/24/2013 5:15:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.39	0.10		mg/L	1	10/28/2013 6:22:59 AM	10028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-007 **Matrix:** AQUEOUS

Client Sample ID: API Inlet
Collection Date: 10/24/2013 4:50:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	1.1	0.050	*	mg/L	50	10/25/2013 11:48:37 AM	10018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-008 **Matrix:** AQUEOUS

Client Sample ID: API Inlet TCLP
Collection Date: 10/24/2013 4:50:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.11	0.10		mg/L	1	10/30/2013 6:35:45 AM	10089

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-009 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634
Collection Date: 10/24/2013 5:25:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	2.3	0.050	*	mg/L	50	10/25/2013 11:51:01 AM	10018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-010 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634 TCLP
Collection Date: 10/24/2013 5:25:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	5.0	0.50		mg/L	10	10/28/2013 6:33:08 AM	10028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-011 **Matrix:** AQUEOUS

Client Sample ID: Wet Gas Scrubber Purge D-250
Collection Date: 10/24/2013 4:45:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.069	0.050	*	mg/L	50	10/25/2013 11:53:24 AM	10018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310C06-012 **Matrix:** AQUEOUS

Client Sample ID: Wet Gas Scrubber Purge D-250
Collection Date: 10/24/2013 4:45:00 AM
Received Date: 10/24/2013 2:17:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	ND	0.10		mg/L	1	10/28/2013 6:27:41 AM	10028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1310C06**

30-Oct-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LLLCS-10018**	SampType: **LCSLL**			TestCode: **200.8 ICPMS Metals:Total**					
Client ID:	**BatchQC**	Batch ID: **10018**			RunNo: **14346**					
Prep Date:	**10/25/2013**	Analysis Date: **10/25/2013**			SeqNo: **411977**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.023	0.0010	0.02500	0	90.7	85	115			

Sample ID	**MB-10018**	SampType: **MBLK**			TestCode: **200.8 ICPMS Metals:Total**					
Client ID:	**PBW**	Batch ID: **10018**			RunNo: **14346**					
Prep Date:	**10/25/2013**	Analysis Date: **10/25/2013**			SeqNo: **411978**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.0010								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1310C06**

30-Oct-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10028**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10028**	RunNo: **14374**
Prep Date: **10/25/2013**	Analysis Date: **10/28/2013**	SeqNo: **412595** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID **LCS-10028**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10028**	RunNo: **14374**
Prep Date: **10/25/2013**	Analysis Date: **10/28/2013**	SeqNo: **412596** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	101	80	120			

Sample ID **MB-10089**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10089**	RunNo: **14428**
Prep Date: **10/29/2013**	Analysis Date: **10/30/2013**	SeqNo: **414456** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID **LCS-10089**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10089**	RunNo: **14428**
Prep Date: **10/29/2013**	Analysis Date: **10/30/2013**	SeqNo: **414457** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	92.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1310C06 RcptNo: 1

Received by/date: MG 10/24/13

Logged By: Michelle Garcia 10/24/2013 2:17:00 PM Michelle Garcia

Completed By: Michelle Garcia 10/24/2013 3:44:31 PM Michelle Garcia

Reviewed By: IO 10/24/2013

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes	No ✔	NA
6. Sample(s) in proper container(s)?	Yes ✔ (Not required)	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes	No	No VOA Vials ✔
11. Were any sample containers received broken?	Yes	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	24.4	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☐ Yes ☑ No
	Sample Temperature: 24.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1310200	Total Selenium 200.8	TCLP Selenium 1311/6010
10/24/13	5:00	Liquid	WWT T-801	Glass-1	HNO3	-001	X	
10/24/13	5:00	Liquid	WWT T-801	Glass-1	Neat	-002		X
10/24/13	5:05	Liquid	WWT T-836	Glass-1	HNO3	-003	X	
10/24/13	5:05	Liquid	WWT T-836	Glass-1	Neat	-004		X
10/24/13	5:15	Liquid	Storm Water Tank T-830	Glass-1	HNO3	-005	X	
10/24/13	5:15	Liquid	Storm Water Tank T-830	Glass-1	Neat	-006		X
10/24/13	4:50	Liquid	API Inlet	Glass-2	HNO3	-007	X	
10/24/13	4:50	Liquid	API Inlet	Glass-3	Neat	-008		X
10/24/13	5:25	Liquid	SWS Bottoms W-634	Glass-1	HNO3	-009	X	
10/24/13	5:25	Liquid	SWS Bottoms W-634	Glass-1	Neat	-010		X
10/24/13		Liquid	SWS Bottoms W-20	Glass-1	HNO3	No Sample	X	
10/24/13		Liquid	SWS Bottoms W-20	Glass-1	Neat	No Sample		X

Date	Time	Relinquished by	Received by	Date	Time
10/24/13	10:00	Anthony Widmer			
				10/24/13	1417

Remarks: Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☑ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: Kevin Newton

On Ice: ☐ Yes ☑ No

Sample Temperature: 2.4 °C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1310826	Total Selenium 200.8	TCLP Selenium 1311/6010
10/24/13	~~5:35~~	Liquid	Desalter Effluent W-7	Glass-1	HNO3	No Sample	X	
10/24/13	~~5:35~~	Liquid	Desalter Effluent W-7	Glass-1	Neat	No Sample		X
10/24/13	4:45	Liquid	Wet Gas Scrubber Purge D-250	Glass-2	HNO3	-011	X	
10/24/13	4:45	Liquid	Wet Gas Scrubber Purge D-250	Glass-3	Neat	-012		X
			Temperature Blank					

Date:	Time:	Relinquished by:	Received by:	Date Time
10/24/13	10:00	Anthony Widmer	Mike Gallegos	10/24/13 1417
Date:	Time:	Relinquished by:	Received by:	Date Time

Remarks: Page 2 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 31, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1310D18

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 16 sample(s) on 10/28/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1310D18**
Date: **10/31/2013**

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring

Analytical Comments Regarding Sample "API Inlet TCLP":
The internal standard recovery was elevated for this sample. The sample result of, Se <0.1mg/L, has been confirmed by the ICPMS.

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-001 **Matrix:** AQUEOUS

Client Sample ID: WWT T-801
Collection Date: 10/28/2013 5:10:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.91	0.050	*	mg/L	50	10/29/2013 11:31:45 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-002 **Matrix:** AQUEOUS

Client Sample ID: WWT T-801 TCLP
Collection Date: 10/28/2013 5:10:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.98	0.10		mg/L	1	10/30/2013 7:25:15 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-003 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836
Collection Date: 10/28/2013 5:15:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.85	0.050	*	mg/L	50	10/29/2013 11:34:08 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-004 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836 TCLP
Collection Date: 10/28/2013 5:15:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.84	0.10		mg/L	1	10/30/2013 7:27:36 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-005 **Matrix:** AQUEOUS

Client Sample ID: Storm Water Tank T-830
Collection Date: 10/28/2013 5:25:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.21	0.050	*	mg/L	50	10/29/2013 11:36:31 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-006 **Matrix:** AQUEOUS

Client Sample ID: Storm Water Tank T-830 TCLP
Collection Date: 10/28/2013 5:25:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.33	0.10		mg/L	1	10/30/2013 7:29:59 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-007 **Matrix:** AQUEOUS

Client Sample ID: API Inlet
Collection Date: 10/28/2013 5:05:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.054	0.020	*	mg/L	20	10/29/2013 11:46:04 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-008 **Matrix:** AQUEOUS

Client Sample ID: API Inlet TCLP
Collection Date: 10/28/2013 5:05:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	ND	0.10		mg/L	1	10/30/2013 7:32:17 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-009 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634
Collection Date: 10/28/2013 5:40:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	2.4	0.050	*	mg/L	50	10/29/2013 11:41:17 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-010 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634 TCLP
Collection Date: 10/28/2013 5:40:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	4.5	0.25		mg/L	5	10/30/2013 8:11:59 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-011 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-20
Collection Date: 10/28/2013 5:35:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	2.3	0.050	*	mg/L	50	10/29/2013 11:43:40 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-012 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-20 TCLP
Collection Date: 10/28/2013 5:35:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.8	0.25		mg/L	5	10/30/2013 8:18:28 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-013 **Matrix:** AQUEOUS

Client Sample ID: Desalter Effluent W-7
Collection Date: 10/28/2013 5:50:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.084	0.050	*	mg/L	50	10/29/2013 11:48:29 AM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-014 **Matrix:** AQUEOUS

Client Sample ID: Desalter Effluent W-7 TCLP
Collection Date: 10/28/2013 5:50:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.98	0.10		mg/L	1	10/30/2013 7:44:18 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-015 **Matrix:** AQUEOUS

Client Sample ID: Wet Gas Scrubber Purge D-250
Collection Date: 10/28/2013 5:00:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	6.6	0.20	*	mg/L	200	10/29/2013 12:05:21 PM	10063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1310D18**
Date Reported: **10/31/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1310D18-016 **Matrix:** AQUEOUS

Client Sample ID: Wet Gas Scrubber Purge D-250
Collection Date: 10/28/2013 5:00:00 AM
Received Date: 10/28/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	11	1.0		mg/L	20	10/30/2013 8:32:35 AM	10090

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1310D18**

31-Oct-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **LLLCS-10063**	SampType: **LCSLL**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **BatchQC**	Batch ID: **10063**	RunNo: **14417**
Prep Date: **10/29/2013**	Analysis Date: **10/29/2013**	SeqNo: **414110** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.023	0.0010	0.02500	0	92.3	85	115			

Sample ID **MB-10063**	SampType: **MBLK**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **PBW**	Batch ID: **10063**	RunNo: **14417**
Prep Date: **10/29/2013**	Analysis Date: **10/29/2013**	SeqNo: **414111** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.0010								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1310D18**

31-Oct-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10090**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10090**	RunNo: **14428**
Prep Date: **10/29/2013**	Analysis Date: **10/30/2013**	SeqNo: **414458** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID **LCS-10090**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10090**	RunNo: **14428**
Prep Date: **10/29/2013**	Analysis Date: **10/30/2013**	SeqNo: **414459** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	95.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1310D18 RcptNo: 1

Received by/date: MG 10/28/13

Logged By: Michelle Garcia 10/28/2013 2:00:00 PM Michelle Garcia

Completed By: Michelle Garcia 10/28/2013 2:15:16 PM Michelle Garcia

Reviewed By: JO 10/28/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ Not required	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 8 (<2 or >12 unless noted)

Adjusted? ~13 ~ 10 mls ~15 ~ 11 mls +HNO3

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	22	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standard ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☐ Yes ☐ No
	Sample Temperature: 1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1310754	Total Selenium 200.8	TCLP Selenium 1311/6010
10/28/13	5:10	Liquid	WWT T-801	Glass-1	HNO3	-001	X	
10/28/13	5:10	Liquid	WWT T-801	Glass-1	Neat	-002		X
10/28/13	5:15	Liquid	WWT T-836	Glass-1	HNO3	-003	X	
10/28/13	5:15	Liquid	WWT T-836	Glass-1	Neat	-004		X
10/28/13	5:25	Liquid	Storm Water Tank T-830	Glass-1	HNO3	-005	X	
10/28/13	5:25	Liquid	Storm Water Tank T-830	Glass-1	Neat	-006		X
10/28/13	5:05	Liquid	API Inlet	Glass-2	HNO3	-007	X	
10/28/13	5:05	Liquid	API Inlet	Glass-3	Neat	-008		X
10/28/13	5:40	Liquid	SWS Bottoms W-634	Glass-1	HNO3	-009	X	
10/28/13	5:40	Liquid	SWS Bottoms W-634	Glass-1	Neat	-010		X
10/28/13	5:35	Liquid	SWS Bottoms W-20	Glass-1	HNO3	-011	X	
10/28/13	5:35	Liquid	SWS Bottoms W-20	Glass-1	Neat	-012		X

Date:	Time:	Relinquished by:	Received by:	Date / Time
10/28/13	10:00	Anthony Widmer		
Date:	Time:	Relinquished by:	Received by:	Date / Time
				10/28/13 1400

Remarks: Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia,	
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)	Sampler: Kevin Newton
☐ Other ☐ EDD (Type)	On Ice: ☐ Yes ☐ No
	Sample Temperature:

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www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1310013	Analysis Request: Total Selenium 200.8	Analysis Request: TCLP Selenium 1311/6010
10/28/13	5:50	Liquid	Desalter Effluent W-7	Glass-1	HNO3	-013	X	
10/28/13	5:50	Liquid	Desalter Effluent W-7	Glass-1	Neat	-014		X
10/28/13	5:00	Liquid	Wet Gas Scrubber Purge D-250	Glass-2	HNO3	-015	X	
10/28/13	5:00	Liquid	Wet Gas Scrubber Purge D-250	Glass-3	Neat	-016		X
			Temperature Blank					

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks: Page 2 of 2
10/28/13	10:00	Anthony Widman			
Date:	Time:	Relinquished by:	Received by:	Date Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 07, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1311082

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 11/4/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311082**
Date Reported: **11/7/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-001 **Matrix:** AQUEOUS

Client Sample ID: WWT T-801
Collection Date: 11/4/2013 5:35:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	1.1	0.050	*	mg/L	50	11/5/2013 1:17:07 PM	10185

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-002 **Matrix:** AQUEOUS

Client Sample ID: WWT T-801 TCLP
Collection Date: 11/4/2013 5:35:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.74	0.10		mg/L	1	11/6/2013 9:34:32 AM	10200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-003 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836
Collection Date: 11/4/2013 5:45:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.66	0.050	*	mg/L	50	11/5/2013 1:19:30 PM	10185

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-004 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836 TCLP
Collection Date: 11/4/2013 5:45:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.98	0.10		mg/L	1	11/6/2013 9:36:53 AM	10200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-005 **Matrix:** AQUEOUS

Client Sample ID: API Outlet
Collection Date: 11/4/2013 5:30:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.10	0.050	*	mg/L	50	11/5/2013 1:21:54 PM	10185

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-006 **Matrix:** AQUEOUS

Client Sample ID: API Outlet TCLP
Collection Date: 11/4/2013 5:30:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.42	0.10		mg/L	1	11/6/2013 9:39:18 AM	10200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-007 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-20
Collection Date: 11/4/2013 5:55:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	2.4	0.050	*	mg/L	50	11/5/2013 1:24:17 PM	10185

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-008 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-20 TCLP
Collection Date: 11/4/2013 5:55:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.6	0.25		mg/L	5	11/6/2013 9:59:40 AM	10200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-009 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634
Collection Date: 11/4/2013 6:05:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	2.1	0.050	*	mg/L	50	11/5/2013 1:26:40 PM	10185

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1311082**
Date Reported: **11/7/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-010 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634 TCLP
Collection Date: 11/4/2013 6:05:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	3.4	0.25		mg/L	5	11/6/2013 10:01:59 AM	10200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-011 **Matrix:** AQUEOUS

Client Sample ID: Wastewater Effluent
Collection Date: 11/4/2013 5:50:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.98	0.050	*	mg/L	50	11/5/2013 1:29:03 PM	10185

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Analytical Report
Lab Order **1311082**
Date Reported: **11/7/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311082-012 **Matrix:** AQUEOUS

Client Sample ID: Wastewater Effluent TCLP
Collection Date: 11/4/2013 5:50:00 AM
Received Date: 11/4/2013 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.1	0.10		mg/L	2	11/6/2013 10:04:22 AM	10200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311082**

07-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LLLCS-10185**	SampType: **LCSLL**			TestCode: **200.8 ICPMS Metals:Total**					
Client ID:	**BatchQC**	Batch ID: **10185**			RunNo: **14583**					
Prep Date:	**11/5/2013**	Analysis Date: **11/5/2013**			SeqNo: **419071**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.025	0.0010	0.02500	0	99.6	85	115			

Sample ID	**MB-10185**	SampType: **MBLK**			TestCode: **200.8 ICPMS Metals:Total**					
Client ID:	**PBW**	Batch ID: **10185**			RunNo: **14583**					
Prep Date:	**11/5/2013**	Analysis Date: **11/5/2013**			SeqNo: **419073**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.0010								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311082**

07-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10200**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10200**	RunNo: **14603**
Prep Date: **11/5/2013**	Analysis Date: **11/6/2013**	SeqNo: **419883** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID **LCS-10200**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10200**	RunNo: **14603**
Prep Date: **11/5/2013**	Analysis Date: **11/6/2013**	SeqNo: **419884** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1311082 RcptNo: 1

Received by/date: MJ 11/04/13

Logged By: Michelle Garcia 11/4/2013 2:30:00 PM Michelle Garcia

Completed By: Michelle Garcia 11/4/2013 3:00:03 PM Michelle Garcia

Reviewed By: MJ 11/04/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes	No ✔	NA
	Not required		
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes	No	No VOA Vials ✔
11. Were any sample containers received broken?	Yes	No ✔	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: Date:

By Whom: Via: eMail Phone Fax In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	28	Good	Yes			

Chain of Custody Record

Client: Navajo Refining Co.	☐ Standard ☒ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☐ Yes ☑ No
	Sample Temperature: 4°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311082	Analysis Request: Total Selenium 200.8	Analysis Request: TCLP Selenium 1311/6010
11/4/13	5:35	Liquid	WWT T-801	Plastic-1	HNO3	-001	X	
11/4/13	5:35	Liquid	WWT T-801	Plastic-1	Neat	-002		X
11/4/13	5:45	Liquid	WWT T-836	Plastic-1	HNO3	-003	X	
11/4/13	5:45	Liquid	WWT T-836	Plastic-1	Neat	-004		X
11/4/13	5:30	Liquid	API Outlet	Plastic-1	HNO3	-005	X	
11/4/13	5:30	Liquid	API Outlet	Plastic-1	Neat	-006		X
11/4/13	5:55	Liquid	SWS Bottoms W-20	Plastic-1	HNO3	-007	X	
11/4/13	5:55	Liquid	SWS Bottoms W-20	Plastic-1	Neat	-008		X
11/4/13	6:05	Liquid	SWS Bottoms W-634	Plastic-1	HNO3	-009	X	
11/4/13	6:05	Liquid	SWS Bottoms W-634	Plastic-1	Neat	-010		X
11/4/13	5:50	Liquid	Wastewater Effluent	Plastic-1	HNO3	-011	X	
11/4/13	5:50	Liquid	Wastewater Effluent	Plastic-1	Neat	-012		X

Date	Time	Relinquished by	Received by	Date	Time
11/4/13	10:00	Anthony Widmer	Michelle Gee	11/04/13	1430
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 14, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1311402

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 12 sample(s) on 11/11/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311402**
Date Reported: **11/14/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-001 **Matrix:** AQUEOUS

Client Sample ID: WWT T-830
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.22	0.050	*	mg/L	50	11/12/2013 11:56:47 AM	10288

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-002 **Matrix:** AQUEOUS

Client Sample ID: WWT T-830 TCLP
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.41	0.10		mg/L	1	11/13/2013 6:31:39 AM	10304

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Analytical Report
Lab Order **1311402**
Date Reported: **11/14/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-003 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.95	0.050	*	mg/L	50	11/12/2013 11:59:10 AM	10288

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-004 **Matrix:** AQUEOUS

Client Sample ID: WWT T-836 TCLP
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	1.1	0.20		mg/L	2	11/13/2013 7:51:07 AM	10304

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-005 **Matrix:** AQUEOUS

Client Sample ID: API Outlet
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.14	0.050	*	mg/L	50	11/12/2013 12:01:34 PM	10288

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-006 **Matrix:** AQUEOUS

Client Sample ID: API Outlet TCLP
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.19	0.10		mg/L	1	11/13/2013 6:36:23 AM	10304

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1311402**
Date Reported: **11/14/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-007 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	1.7	0.050	*	mg/L	50	11/12/2013 12:03:57 PM	10288

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-008 **Matrix:** AQUEOUS

Client Sample ID: SWS Bottoms W-634 TCLP
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	2.6	0.50		mg/L	5	11/13/2013 7:53:30 AM	10304

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Analytical Report
Lab Order **1311402**
Date Reported: **11/14/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-009 **Matrix:** AQUEOUS

Client Sample ID: Wastewater Effluent
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.077	0.050	*	mg/L	50	11/12/2013 12:06:20 PM	10288

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-010 **Matrix:** AQUEOUS

Client Sample ID: Wastewater Effluent TCLP
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.088	0.050		mg/L	1	11/13/2013 6:41:04 AM	10304

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1311402**
Date Reported: **11/14/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-011 **Matrix:** AQUEOUS

Client Sample ID: Tank 829
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
200.8 ICPMS METALS:TOTAL						Analyst: **DBD**	
Selenium	0.38	0.050	*	mg/L	50	11/12/2013 12:08:43 PM	10288

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311402-012 **Matrix:** AQUEOUS

Client Sample ID: Tank 829
Collection Date: 11/11/2013 6:00:00 AM
Received Date: 11/11/2013 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Selenium	0.74	0.10		mg/L	1	11/13/2013 7:19:46 AM	10304

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311402**

14-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID	**LLLCS-10288**	SampType: **LCSLL**			TestCode: **200.8 ICPMS Metals:Total**					
Client ID:	**BatchQC**	Batch ID: **10288**			RunNo: **14737**					
Prep Date:	**11/12/2013**	Analysis Date: **11/12/2013**			SeqNo: **424137**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.025	0.0010	0.02500	0	98.8	85	115			

Sample ID	**MB-10288**	SampType: **MBLK**			TestCode: **200.8 ICPMS Metals:Total**					
Client ID:	**PBW**	Batch ID: **10288**			RunNo: **14737**					
Prep Date:	**11/12/2013**	Analysis Date: **11/12/2013**			SeqNo: **424139**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.0010								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311402**

14-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10304**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10304**	RunNo: **14762**
Prep Date: **11/12/2013**	Analysis Date: **11/13/2013**	SeqNo: **425010** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID **LCS-10304**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10304**	RunNo: **14762**
Prep Date: **11/12/2013**	Analysis Date: **11/13/2013**	SeqNo: **425011** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	94.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1311402 RcptNo: 1

Received by/date: AT 11/11/13

Logged By: Michelle Garcia 11/11/2013 2:00:00 PM Michelle Garcia

Completed By: Michelle Garcia 11/11/2013 2:38:30 PM Michelle Garcia

Reviewed By: 11/11

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No	NA
6. Sample(s) in proper container(s)?	Yes ✔ (Not required)	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes	No	No VOA Vials ✔
11. Were any sample containers received broken?	Yes	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	# of preserved bottles checked for pH: 6 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? No
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: mg

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	22.8	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standard ☑ Rush Next Day
	Project Name: Wastewater Effluent Monitoring
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Mike Holder
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: Kevin Newton
	On Ice: ☐ Yes ☒ No
	Sample Temperature: 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311402	Total Selenium 200.8	TCLP Selenium 1311/6010
11/11/13	6:00	Liquid	WWT T-~~804~~ 830	Plastic-1	HNO3	-001	X	
11/11/13	6:00	Liquid	WWT T-~~804~~ 830	Plastic-1	Neat	-002		X
11/11/13	6:00	Liquid	WWT T-836	Plastic-1	HNO3	-003	X	
11/11/13	6:00	Liquid	WWT T-836	Plastic-1	Neat	-004		X
11/11/13	6:00	Liquid	API Outlet	Plastic-1	HNO3	-005	X	
11/11/13	6:00	Liquid	API Outlet	Plastic-1	Neat	-006		X
~~—~~	~~—~~	Liquid	~~SWS Bottoms W-20~~	~~Plastic-1~~	~~HNO3~~	No Sample	X	
~~—~~	~~—~~	Liquid	~~SWS Bottoms W-20~~	~~Plastic-1~~	~~Neat~~	No Sample		X
11/11/13	6:00	Liquid	SWS Bottoms W-634	Plastic-1	HNO3	-007	X	
11/11/13	6:00	Liquid	SWS Bottoms W-634	Plastic-1	Neat	-008		X
11/11/13	6:00	Liquid	Wastewater Effluent	Plastic-1	HNO3	-009	X	
11/11/13	6:00	Liquid	Wastewater Effluent	Plastic-1	Neat	-010		X

Date:	Time:	Relinquished by:	Received by:	Date Time	Remarks:
11/11/13	10:00	Anthony Widman		11/11/13 1460	Page 1 of 2
Date:	Time:	Relinquished by:	Received by:	Date Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.	☐ Standar ☒ Rush Next Day
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Wastewater Effluent Monitoring
NM 88211-0159	Project #:
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	
☐ Standard ☐ Level 4 (Full Validation)	Mike Holder
☐ Other	Sampler: ~~Aaron Strange~~ Kevin Newton
☐ EDD (Type)	On Ice: ☐ Yes ☒ No
	Sample Temperature: 2.2 C

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311402	Analysis Request: Total Selenium 200.8	Analysis Request: TCLP Selenium 1311/6010
11/11/13	6:00	Liquid	Tank 829	plastic-1	HNO3	-001	X	
11/11/13	6:00	Liquid	Tank 829	plastic-1	Neat	-002		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/11/13	10:00	Anthony Widman		11/11/13	1400
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 22, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1311743

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/18/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311743**
Date Reported: **11/22/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311743-001 **Matrix:** AQUEOUS

Client Sample ID: WWTP Effluent
Collection Date: 11/18/2013 6:00:00 AM
Received Date: 11/18/2013 2:55:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	11/20/2013 4:12:17 PM	10419
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	5	11/20/2013 3:27:51 PM	10400
Barium	ND	0.10		mg/L	5	11/20/2013 3:27:51 PM	10400
Cadmium	ND	0.010		mg/L	5	11/20/2013 3:27:51 PM	10400
Chromium	ND	0.030		mg/L	5	11/20/2013 3:27:51 PM	10400
Lead	ND	0.025		mg/L	5	11/20/2013 3:27:51 PM	10400
Selenium	0.59	0.25		mg/L	5	11/20/2013 3:27:51 PM	10400
Silver	ND	0.025		mg/L	5	11/20/2013 3:27:51 PM	10400

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1311743**
Date Reported: **11/22/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311743-002 **Matrix:** AQUEOUS

Client Sample ID: WWTP Effluent TCLP
Collection Date: 11/18/2013 6:00:00 AM
Received Date: 11/18/2013 2:55:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	11/20/2013 3:31:02 PM	10420
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Barium	0.10	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Cadmium	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Chromium	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Lead	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Selenium	0.78	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Silver	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10419**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **10419**	RunNo: **14940**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430898** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-10419**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **10419**	RunNo: **14940**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430899** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10420**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **10420**	RunNo: **14941**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430908** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-10420**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **10420**	RunNo: **14941**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430909** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10402**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10402**	RunNo: **14900**
Prep Date: **11/19/2013**	Analysis Date: **11/19/2013**	SeqNo: **429727** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10402**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10402**	RunNo: **14900**
Prep Date: **11/19/2013**	Analysis Date: **11/19/2013**	SeqNo: **429728** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	115	80	120			
Barium	ND	100	0.5000	0	104	80	120			
Cadmium	ND	1.0	0.5000	0	112	80	120			
Chromium	ND	5.0	0.5000	0	103	80	120			
Lead	ND	5.0	0.5000	0	103	80	120			
Selenium	ND	1.0	0.5000	0	117	80	120			
Silver	ND	5.0	0.1000	0	107	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10400**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **10400**	RunNo: **14935**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430767** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-10400**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **10400**	RunNo: **14935**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430768** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.49	0.020	0.5000	0	98.2	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.49	0.0050	0.5000	0	98.5	80	120			
Selenium	0.51	0.050	0.5000	0	102	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1311743 RcptNo: 1

Received by/date: LM 11/18/13

Logged By: Michelle Garcia 11/18/2013 2:55:00 PM Michelle Garcia

Completed By: Michelle Garcia 11/18/2013 3:14:01 PM Michelle Garcia

Reviewed By: IO 11/18/2013

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Not required Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Not required Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No ☐	
9. Was preservative added to bottles?	Yes ✔	No ✔ MJ 11/18	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No ☐	Adjusted? yes
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by: MJ

Added 1mL HNO_3 to #001 for acceptable pH.

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☒ Rush Next Day

Project Name:

Wastewater Effluent Monitoring

Project #:

Project Manager:

Mike Holder

Sampler: ~~Aaron Strange~~ Bryan Ironmonger

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.1 °C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311743	~~Total Selenium 200.8~~	~~TCLP Selenium 1311/6010~~	Total RCRA 8 Metals ①	TCLP RCRA 8 Metals ②
11/18/13	6:00	Liquid	WWTP Effluent	Plastic-1	HNO3	-001			X	
11/18/13	6:00	Liquid	WWTP Effluent	Plastic-1	NEAT	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/18/13	10:00	Anthony Widman		11/18/13	1455
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder

① Totals method 6010/6020

② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Attachment B:
Additional Monitoring Performed at the Injection Well Effluent Sampling Location and Treatment Tanks T-801 and T-836

Attachment B Table 1: TCLP Selenium Measurements Collected from the Injection Well Effluent Sampling Location, Tank T-801, and Tank T-836 Effluent (mg/L), EPA Method SW1311/6020/6010

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	Selenium Concentration
9/27/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/15/2013	Injection Well Effluent Sampling Point	ALS	1.24	-	-	1.24
10/20/2013	T-801 Effluent	Hall	0.85	ALS	0.803	0.83
10/20/2013	T-836 Effluent	Hall	0.91	ALS	0.888	0.90
10/22/2013	T-801 Effluent	Hall	0.75	ALS	0.708	0.73
10/22/2013	T-836 Effluent	Hall	0.65	ALS	0.823	0.74
10/23/2013	T-801 Effluent	Hall	0.79	ALS	0.835	0.81
10/23/2013	T-836 Effluent	Hall	0.75	ALS	0.831	0.79
10/24/2013[1]	T-801 Effluent	Hall	0.74	ALS	0.821	0.78
10/24/2013	T-836 Effluent	Hall	0.58	ALS	0.648	0.61
10/25/2013	T-801 Effluent	Hall	0.79	-	-	0.79
10/25/2013	T-836 Effluent	Hall	0.71	-	-	0.71
10/26/2013	T-801 Effluent	Hall	0.81	-	-	0.81
10/26/2013	T-836 Effluent	Hall	0.83	-	-	0.83
10/27/2013	T-801 Effluent	Hall	0.95	-	-	0.95
10/27/2013	T-836 Effluent	Hall	0.75	-	-	0.75
10/28/2013	T-801 Effluent	Hall	0.98	-	-	0.98
10/28/2013	T-836 Effluent	Hall	0.84	-	-	0.84
10/29/2013	T-801 Effluent	Hall	0.99	Cardinal	0.98	0.99
10/29/2013	T-836 Effluent	Hall	0.94	Cardinal	0.97	0.95
10/30/2013	T-801 Effluent	Hall	0.83	Cardinal	0.88	0.85
10/30/2013	T-836 Effluent	Hall	0.88	Cardinal	0.90	0.89
10/31/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20
10/31/2013	T-801 Effluent	Hall	0.80	Cardinal	1.09	0.95
10/31/2013	T-836 Effluent	Hall	1.20	Cardinal	1.26	1.23
11/1/2013	T-801 Effluent	Hall	0.89	Cardinal	0.94	0.92
11/1/2013	T-836 Effluent	Hall	1.10	Cardinal	1.16	1.13
11/2/2013	No Sample	-	-	-	-	-
11/3/2013	No Sample	-	-	-	-	-
11/4/2013	Injection Well Effluent Sampling Point	Hall	1.10	-	-	1.10
11/4/2013	T-801 Effluent	Hall	0.74	-	-	0.74
11/4/2013	T-836 Effluent	Hall	0.98	-	-	0.98
11/5/2013	Injection Well Effluent Sampling Point	Hall	1.20	-	-	1.20

DATE	Sampling Location	Split Samples (mg/L)				Average (mg/L)
		Laboratory	TCLP Selenium Concentration	Laboratory	TCLP Selenium Concentration	Selenium Concentration
11/5/2013	T-801 Effluent	Hall	1.20			1.20
11/6/2013	T-836 Effluent	Hall	0.73	-	-	0.73
11/7/2013	T-801 Effluent	Hall	0.95	-	-	0.95
11/7/2013	T-836 Effluent	Hall	1.10			1.10
11/8/2013	T-801 Effluent	Hall	0.78	-	-	0.78
11/8/2013	T-836 Effluent	Hall	1.20			1.20
11/9/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/10/2013	T-836 Effluent	Hall	1.1	-	-	1.10
11/11/2013	Injection Well Effluent Sampling Point	Hall	0.088	-	-	0.09
11/11/2013	T-836 Effluent	Hall	1.100			1.10
11/12/2013	No Sample	-	-	-	-	-
11/13/2013	No Sample	-	-	-	-	-
11/14/2013[2]	T-836 Effluent	Hall	1.0	-	-	0.99
11/15/2013	No Sample	-	-	-	-	-
11/16/2013	Injection Well Effluent Sampling Point	Hall	<0.1 (ND)	-	-	-
11/17/2013	Injection Well Effluent Sampling Point	Hall	0.96	-	-	0.96
11/18/2013	Injection Well Effluent Sampling Point	Hall	0.78	-	-	0.78
11/18/2013	T-836 Effluent	Hall	1.00	-	-	1.00
11/19/2013	T-836 Effluent to Wells	Hall	0.95	-	-	0.95
11/20/2013	Injection Well Effluent Sampling Point	Hall	0.76			0.76
11/21/2013	T-801 Effluent to Wells	Hall	0.73			0.73
11/22/2013	T-836 Effluent to Wells	Hall	0.80	-	-	0.80
11/23/2013	T-801 Effluent to Wells	Hall	0.75	-	-	0.75

Gray Shading = Sampling performed when the tanks were not discharging to the injection wells.

[1] Date of the Agreed Compliance Order No. WQA-OCD-CO-2013-001 signed on October 24, 2013.

[2] Date of the Supplemental Agreed Compliance Order No. WQA-OCD-CO-2013-001, signed on November 14, 2013.

Attachment C:
Additional TCLP Selenium Monitoring Performed at the Navajo Refinery

Attachment C Table 1: TCLP Selenium Measurements Collected from all Navajo Refinery Sampling Locations from September 27, 2013 through November 23, 2013; EPA Method SW1311/6020/6010, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		API-Inlet		API Outlet	T-801		T-836		Injection Wells	Storm Tank (T-830)		T-829	Unit #4S Sour Water (W-2421)		Unit #34 MHC Cold Separator		DAF BinS. Brotheres 24	RO Reject	Lab Report No.
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	
9/27/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310034
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24	-	-	-	-	-	-	-	-	-	1310767
10/20/2013	Hall Environmental	5.80		-		1.60		<0.1 (ND)		-		-	0.85		0.91		-	-		-	-		-		-	-	1310A04
10/20/2013	ALS Environmental	4.92	5.36	-	-	1.90	1.75	0.24	0.24	-	-	-	0.80	0.83	0.89	0.90	-	-	-	-	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	3.60		-		1.60		<1.0 (ND)		0.39		-	0.75		0.65		-	0.46		-	-		-		-	-	1310A71
10/22/2013	ALS Environmental	1.15	2.38	-	-	1.52	1.56	0.13	0.13	0.46	0.43	-	0.71	0.73	0.82	0.74	-	0.53	0.50	-	-	-	-	-	-	-	13101021
10/23/2013	Hall Environmental	5.20		-		1.40		<1.0 (ND)		0.39		-	0.79		0.75		-	0.43		-	-		-		<1.0 (ND)	-	1310B47 1310B48
10/23/2013	ALS Environmental	4.88	5.04	-	-	1.07	1.24	0.07	0.07	0.38	0.39	-	0.84	0.81	0.83	0.79	-	0.41	0.42	-	-	-	-	-	0.07	-	13101089 13101196
10/24/2013	Hall Environmental	5.00		-		-		<0.1 (ND)		0.11		-	0.74		0.58		-	0.39		-	-		-		-	-	1310C06
10/24/2013	ALS Environmental	5.03	5.02	-	-	-	-	0.1	0.10	<0.050 (ND)	0.11	-	0.82	0.78	0.65	0.61	-	0.37	0.38	-	-	-	-	-	-	-	13101164
10/25/2013	Hall Environmental	5.30	5.30	4.20	4.20	1.20	1.20	9.2	9.20	1.60	1.60	-	0.79	0.79	0.71	0.71	-	0.39	0.39	-	-	-	-	-	-	-	1310C53
10/26/2013	Hall Environmental	4.70	4.70	3.80	3.80	0.86	0.86	12	12	1.30	1.30	-	0.81	0.81	0.83	0.83	-	0.31	0.31	-	-	-	-	-	-	-	1310C58
10/27/2013	Hall Environmental	4.90	4.90	3.80	3.80	0.93	0.93	12	12	0.70	0.70	-	0.95	0.95	0.75	0.75	-	0.33	0.33	-	-	-	-	-	-	-	1310C60
10/28/2013	Hall Environmental	4.50	4.50	3.80	3.80	0.98	0.98	11	11	<0.1 (ND)	<0.1 (ND)	-	0.98	0.98	0.84	0.84	-	0.33	0.33	-	-	-	-	-	-	-	1310D18
10/29/2013	Hall Environmental	4.90		3.80		1.10		10		<0.2 (ND)		-	0.99		0.94		-	0.37		-	-		-		-	-	1310D78
10/29/2013	Cardinal Laboratories	4.01	4.46	3.08	3.44	0.81	0.96	9.42	9.71	<0.202 (ND)	<0.2	-	0.98	0.99	0.97	0.95	-	0.58	0.48	-	-	-	-	-	-	-	H302620
10/30/2013	Hall Environmental	3.70		3.70		1.20		14		<0.2 (ND)		-	0.83		0.88		-	0.40		-	1.70		3.30		-	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	3.03	3.37	3.33	3.52	0.77	0.99	11.3	12.65	<1.0 (ND)	<0.2	-	0.88	0.85	0.90	0.89	-	0.38	0.39	-	1.28	1.49	1.77	2.54	-	-	H302639
10/31/2013	Hall Environmental	4.00		4.00		0.99		14		<1.0 (ND)		-	0.80		1.20		1.20	0.33		-	3.30		4.00		-	-	1310E78 1310E81 1311035
10/31/2013	Cardinal Laboratories	3.15	3.58	3.18	3.59	0.76	0.87	10.3	12.15	<1.0 (ND)	<1.0 (ND)	-	1.09	0.95	1.26	1.23	-	0.40	0.36	-	2.38	2.84	1.50	2.75	-	-	H302652
11/1/2013	Hall Environmental	4.00		4.10		1.30		14.0		0.60		-	0.89		1.10		-	0.40		-	2.90		3.10		-	-	1311033 1311034
11/1/2013	Cardinal Laboratories	3.46	3.73	3.33	3.72	0.86	1.08	14.2	14.1	0.51	0.55	-	0.94	0.92	1.16	1.13	-	0.46	0.43	-	1.23	2.07	2.85	2.98	-	-	H302670
11/2/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/3/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/4/2013	Hall Environmental	3.40	3.40	3.60	3.60	-	-	-	-		0.00	0.42	0.74	0.74	0.98	0.98	1.10	-	-	-	-	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	1.20	1.20	-	-	1.20	-	-	-	-	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	0.73	0.73	-	-	-	-	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	3.60	3.60	4.10	4.10	-	-	-	-	-	-	0.41	0.95	0.95	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	3.80	3.80	3.80	3.80	-	-	-	-	0.42	0.42	-	0.78	0.78	1.20	1.20	-	-	-	-	-	-	-	-	-	<0.1(ND)	1311362 1311336
11/9/2013	Hall Environmental	3.60	3.60	3.30	3.30	-	-	-	-	-	-	0.43	-	-	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	3.70	3.70	4.10	4.10	-	-	-	-	-	-	0.20	-	-	1.10	1.10	-	-	-	-	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	2.60	2.60	-	-	-	-	-	-	-	-	0.19	-	-	1.10	1.10	0.09	0.41	0.41	0.74	-	-	-	-	-	-	1311402
11/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/13/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/14/2013	Hall Environmental	2.60	2.60	2.60	2.60	-	-	-	-	-	-	0.21	-	-	0.99	0.99	-	-	-	-	-	-	-	-	-	-	1311625
11/15/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1 (ND)	-	-	-	-	-	-	-	-	-	1311693
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	-	-	-	-	-	-	-	-	-	1311694

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		API-Inlet		API Outlet	T-801		T-836		Injection Wells	Storm Tank (T-830)		T-829	Unit #45 Sour Water (W-2421)		Unit #34 MHC Cold Separator		DAF BinS. Brotheres 24	RO Reject	Lab Report No.
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	
11/18/2013	Hall Environmental	3.40	3.40	3.40	3.40	-	-	-	-	-	-	0.51	-	-	1.00	1.00	0.78	-	-	-	-	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	-	-	-	-	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.60	3.60	3.50	-	-	-	-	-	0.43	0.43	-	0.63	0.63	0.86	0.86	0.73	-	-	-	-	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	3.80	3.80	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-	-	-	-	-	1311A50

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Attachment D:
Additional Total Selenium Monitoring Performed at the Navajo Refinery

Attachment D Table 1: Total Selenium Measurements Collected from all Navajo Refinery Sampling Locations from September 27, 2013 through November 23, 2013; EPA Method 200.7/200.8, mg/L

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		API-Inlet		API Outlet	Tk-801		Tk-836		Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	
10/15/2013	ALS Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-	1310768
10/20/2013	Hall Environmental	4.10		-		1.50		0.21		-		-	0.87		0.90		-	-	-	-	-	-	1310A04
10/20/2013	ALS Environmental	5.14	4.62	-	-	1.88	1.69	0.25	0.23	-	-	-	1.02	0.95	1.06	0.98	-	-	-	-	-	-	1310959
10/22/2013	Hall Environmental	0.47		-		0.62		0.07		0.31		-	0.87		0.73		-	0.39	-	-	-	-	1310A71
10/22/2013	ALS Environmental	2.31	1.39	-	-	0.79	0.71	0.13	0.10	0.39	0.35	-	0.93	0.90	0.84	0.79	-	0.59	-	-	-	-	13101021
10/23/2013	Hall Environmental	2.50		-		0.58		0.10		0.33		-	0.88		0.77		-	0.32	-	-	-	-	1310B48
10/23/2013	ALS Environmental	2.50	2.50	-	-	0.54	0.56	0.16	0.13	0.52	0.42	-	0.92	0.90	0.88	0.82	-	0.37	-	-	-	-	13101089
10/24/2013	Hall Environmental	2.30		-		-		0.07		1.10		-	0.91		0.78		-	0.33	-	-	-	-	1310C06
10/24/2013	ALS Environmental	4.77	3.54	-	-	-	-	0.10	0.09	1.83	1.47	-	1.11	1.01	0.92	0.85	-	0.53	-	-	-	-	13101164
10/25/2013	Hall Environmental	1.60	1.60	1.90	1.90	0.13	0.13	5.10	5.10	1.20	1.20	-	0.92	0.92	1.00	1.00	-	0.27	-	0.05	-	-	1310C53 1310C55
10/26/2013	Hall Environmental	2.20	2.20	2.30	2.30	0.32	0.32	8.70	8.70	0.94	0.94	-	0.91	0.91	1.10	1.10	-	0.24	-	0.03	0.03	-	1310C57 1310C58
10/27/2013	Hall Environmental	2.50	2.50	2.40	2.40	0.27	0.27	9.50	9.50	0.54	0.54	-	1.10	1.10	1.20	1.20	-	0.26	-	0.05	0.05	-	1310C59 1310C60
10/28/2013	Hall Environmental	2.40	2.40	2.30	2.30	0.08	0.08	6.60	6.60	0.05	0.05	-	0.91	0.91	0.85	0.85	-	0.21	-	0.08	0.08	-	1310D18 1310D21
10/29/2013	Hall Environmental	2.20		2.30		0.22		3.40		0.15		-	0.84		1.10		-	1.40	-	0.09	0.23	-	1310D78 1310D79
10/29/2013	Cardinal Laboratories	1.92	2.06	2.47	2.39	0.22	0.22	5.38	4.39	<0.041 (ND)	0.15	-	0.63	0.74	0.91	1.00	-	0.51	-	0.01	<0.0041 (ND)	-	H302620
10/30/2013	Hall Environmental	2.20		2.20		0.10		5.40		0.11		-	0.98		0.95		-	0.26	-	0.05	0.25	-	1310E22 1210E23
10/30/2013	Cardinal Laboratories	2.14	2.17	2.52	2.36	0.21	0.15	8.23	6.82	<0.1 (ND)	0.11	-	0.61	0.80	0.90	0.92	-	0.24	-	2.15	2.67	-	H302639
10/31/2013	Hall Environmental	2.20		2.30		0.39		1.50		0.06		-	1.20		1.20		0.88	0.29	-	0.13	0.14	-	1310F78 1310E81 1311035
10/31/2013	Cardinal Laboratories	2.86	2.53	2.98	2.64	0.32	0.36	4.24	2.87	<0.1 (ND)	0.06	-	0.65	0.93	0.79	1.00	-	0.29	-	2.51	2.99	-	H302652
11/1/2013	Hall Environmental	1.70		2.00		0.21		3.90		0.31		-	0.97		1.10		-	0.28	-	0.30	0.37	-	1311033 1311034
11/1/2013	Cardinal Laboratories	1.96	1.83	2.53	2.27	0.18	0.20	5.36	4.63	0.33	0.32	-	0.62	0.79	0.85	0.97	-	0.24	-	2.58	2.92	-	H302670
11/2/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/3/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/4/2013	Hall Environmental	2.10	2.10	2.40	2.40	-	-	-	-	-	-	0.10	1.10	1.10	0.66	0.66	0.98	-	-	-	-	-	1311082
11/5/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	0.84	0.84	-	-	0.51	-	-	-	-	-	1311156 1311209
11/6/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-	-	-	-	-	-	1311209
11/7/2013	Hall Environmental	2.10	2.10	2.00	2.00	-	-	-	-	-	-	0.13	1.10	1.10	1.00	1.00	-	-	-	-	-	-	1311286
11/8/2013	Hall Environmental	1.50	1.50	1.80	1.80	-	-	-	-	0.21	0.21	-	0.91	0.91	0.59	0.59	-	-	-	-	-	0.011	1311362 1311336
11/9/2013	Hall Environmental	1.90	1.90	1.70	1.70	-	-	-	-	-	-	0.13	-	-	0.96	0.96	-	-	-	-	-	-	1311362
11/10/2013	Hall Environmental	2.00	2.00	1.80	1.80	-	-	-	-	-	-	0.13	-	-	1.20	1.20	-	-	-	-	-	-	1311363
11/11/2013	Hall Environmental	1.70	1.70	-	-	-	-	-	-	-	-	0.14	-	-	0.95	0.95	0.08	0.22	0.38	-	-	-	1311402
11/12/2013	CH2M HILL ASL	-	-	-	-	-	-	-	-	-	-	-	-	-	1.37	1.37	-	-	-	-	-	-	M3259
11/13/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/14/2013	Hall Environmental	1.60	1.60	1.60	1.60	-	-	-	-	-	-	0.15	-	-	1.10	1.10	-	-	-	-			1311625
11/15/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/16/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	1311693

DATE	Laboratory	SWS Bottoms (W-634)		SWS Bottoms (W-20)		Desalter Effluent (W-7)		Wet Gas Scrubber Purge (D-250)		API-Inlet		API Outlet	Tk-801		Tk-836		Injection Wells	Storm Tank (T-830)	T-829	Unit #45 Sour Water (W-2421)	Unit #34 MHC Cold Separator	RO Reject	Lab Report ID
		Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Ave*	Result	Result	Ave*	Result	Ave*	Result	Result	Result	Result	Result	Result	
11/17/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-			1311694
11/18/2013	Hall Environmental	2.70	2.70	2.80	2.80	-	-	-	-	-	-	0.43	-	-	0.72	0.72	0.59	-	-	-	-	-	1311743 1311742
11/19/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-	1311802
11/20/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	-	-	-	-	-	1311893
11/21/2013	Hall Environmental	3.30	3.30	3.30	3.30	-	-	-	-	0.36	0.36	-	0.65	0.65	0.66	0.66	0.68	-	-	-	-	-	1311970 1311971
11/22/2013	Hall Environmental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	-	-	-	-	-	1311A38
11/23/2013	Hall Environmental	0.86	0.86	1.10	1.10	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-	1311A50

*Average of the split samples. If one result was not detected, the detected value is estimated to be the average.

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Sunday, November 24, 2013 11:54 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Holder, Mike; Brancard, Bill, EMNRD; McWatters, Denise; McKee, Michael
Subject: Final TCLP Se Results for 11/18/13
Attachments: Rpt_1311743_Final_v1.pdf

Importance: High

Scott/Carl – attached is the final laboratory analytical report for TCLP selenium results for Monday, 11/18/2013. Per the report, selenium = 0.78 mg/L via the TCLP method. These results were received Friday, 11/22/2013, and are required to be taken weekly on the first business day of the week per Condition 1.a of Exhibit A of the Amended and Supplemental Agreed Order (the "Order") between NRC & OCD (Dated November 14, 2013). Condition 4 of the Order requires their reporting to OCD within 3 business days of receipt. This submittal fulfills the requirements of the afore-mentioned Conditions. If you have any questions, please do not hesitate to contact me at (575) 746-5487. Thank you for your assistance.

Regards,
Mike Holder

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received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
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HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 22, 2013

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Wastewater Effluent Monitoring OrderNo.: 1311743

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/18/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311743**
Date Reported: **11/22/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311743-001 **Matrix:** AQUEOUS

Client Sample ID: WWTP Effluent
Collection Date: 11/18/2013 6:00:00 AM
Received Date: 11/18/2013 2:55:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	11/20/2013 4:12:17 PM	10419
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	5	11/20/2013 3:27:51 PM	10400
Barium	ND	0.10		mg/L	5	11/20/2013 3:27:51 PM	10400
Cadmium	ND	0.010		mg/L	5	11/20/2013 3:27:51 PM	10400
Chromium	ND	0.030		mg/L	5	11/20/2013 3:27:51 PM	10400
Lead	ND	0.025		mg/L	5	11/20/2013 3:27:51 PM	10400
Selenium	0.59	0.25		mg/L	5	11/20/2013 3:27:51 PM	10400
Silver	ND	0.025		mg/L	5	11/20/2013 3:27:51 PM	10400

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Wastewater Effluent Monitoring
Lab ID: 1311743-002 **Matrix:** AQUEOUS

Client Sample ID: WWTP Effluent TCLP
Collection Date: 11/18/2013 6:00:00 AM
Received Date: 11/18/2013 2:55:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP						Analyst: **JML**	
Mercury	ND	0.020		mg/L	1	11/20/2013 3:31:02 PM	10420
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Barium	0.10	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Cadmium	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Chromium	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Lead	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Selenium	0.78	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402
Silver	ND	0.10		mg/L	1	11/19/2013 3:37:08 PM	10402

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10419**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **10419**	RunNo: **14940**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430898** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-10419**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **10419**	RunNo: **14940**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430899** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10420**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **10420**	RunNo: **14941**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430908** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-10420**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **10420**	RunNo: **14941**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430909** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10402**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **10402**	RunNo: **14900**
Prep Date: **11/19/2013**	Analysis Date: **11/19/2013**	SeqNo: **429727** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-10402**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **10402**	RunNo: **14900**
Prep Date: **11/19/2013**	Analysis Date: **11/19/2013**	SeqNo: **429728** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	115	80	120			
Barium	ND	100	0.5000	0	104	80	120			
Cadmium	ND	1.0	0.5000	0	112	80	120			
Chromium	ND	5.0	0.5000	0	103	80	120			
Lead	ND	5.0	0.5000	0	103	80	120			
Selenium	ND	1.0	0.5000	0	117	80	120			
Silver	ND	5.0	0.1000	0	107	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311743**

22-Nov-13

Client: Navajo Refining Company

Project: Wastewater Effluent Monitoring

Sample ID **MB-10400**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **10400**	RunNo: **14935**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430767** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-10400**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **10400**	RunNo: **14935**
Prep Date: **11/19/2013**	Analysis Date: **11/20/2013**	SeqNo: **430768** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.49	0.020	0.5000	0	98.2	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	98.4	80	120			
Lead	0.49	0.0050	0.5000	0	98.5	80	120			
Selenium	0.51	0.050	0.5000	0	102	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1311743 RcptNo: 1

Received by/date: LM 11/18/13

Logged By: Michelle Garcia 11/18/2013 2:55:00 PM Michelle Garcia

Completed By: Michelle Garcia 11/18/2013 3:14:01 PM Michelle Garcia

Reviewed By: IO 11/18/2013

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C (Not required)	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)? (Not required)	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No ☐	
9. Was preservative added to bottles?	Yes ✔	No ✔ mg 11/18	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ✔
11. Were any sample containers received broken?	Yes ☐	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No ☐	Adjusted? YES
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by: mg

Added 1mL HNO3 to ~ool for acceptable pH.

Special Handling (If applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☐ Standar ☒ Rush Next Day

Project Name:
Wastewater Effluent Monitoring

Project #:

Project Manager:
Mike Holder

Sampler: ~~Aaron Strange~~ Byron Ironmonger

On Ice: ☒ Yes ☐ No

Sample Temperature: 4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311745	~~Total Selenium 200.8~~	~~TCLP Selenium 1311/6010~~	① Total RCRA 8 metals	② TCLP RCRA 8 metals
11/18/13	6:00	Liquid	WWTP Effluent	Plastic-1	HNO3	-001			X	
11/18/13	6:00	Liquid	WWTP Effluent	Plastic-1	NONE	-002				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/18/13	10:00	Anthony Widman		11/18/13	1455
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Expedited turn-around and results sent to Mike Holder
① Totals method 6010/6020
② TCLP 1311/6010

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HOLLYFRONTIER.

RECEIVED OCD
2013 NOV 26 P 2:43

November 21, 2013

Mr. Scott Dawson
Mr. Carl Chavez
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0797

RE: Navajo Refining Company, L.L.C. / Artesia Refinery
November 21, 2013 Interim Progress Report under OCD Order

Dear Sirs:

This interim progress report is submitted pursuant to Paragraph 10 of Exhibit A to the Amended and Supplemental Agreed Compliance Order with OCD (No. WQA-OCD-CO-2013-001), dated November 14, 2013 (the "Order"). Specifically, Paragraph 10 requires that Navajo provide to OCD an interim progress report that summarizes its efforts to date to address the causes of reported exceedance of the Se Limit (as defined in the Order) in injection fluid at Navajo's three, OCD-permitted non-hazardous underground injection control Class 1 wells (Permit Nos. UICI-008-01 (WDW-1), UICI-008-2 (WDW-2), and UICI-008-3 (WDW-3)).

To date, Navajo has taken the following steps to address causes of the above-reported exceedance of the Se Limit and to pursue the development and implementation of short term and long term remedies to reduce selenium concentrations to acceptable levels. These steps are further detailed below and include the following:

- Processes and Operational evaluations and changes,
- Source Evaluation - Sampling,
- Analytical Testing Evaluation,
- Potential Treatment Evaluation.

Processes/Operational Evaluations and Changes

Navajo has reviewed refinery operations and its crude oil slate in an effort to identify potential sources of elevated selenium. This includes a review of crude rates and selenium concentrations in specific crude oil feedstock's, and a review of refinery process units involved in the production or processing of heavier oil products and the potential contribution of these units to selenium in wastewater.

- On November 8, 2013, Navajo temporarily reduced total crude rate from 85 thousand barrels per day to 60 thousand barrels per day. This resulted in decreasing the mass of selenium processed in the refinery.

  Navajo temporarily discontinued purchasing West Canadian Select (WCS) and Devon crude oils to evaluate the potential impacts of this crude on selenium levels in wastewater. These crude oils were identified as potential higher selenium-bearing crudes.. The refinery is temporarily only processing WTI (West Texas Intermediate) crudes.

- Navajo shut down the hydrocracker unit, which processes the heavy oil product, "gas oil," using hydrotreating, in order to evaluate the impacts of this unit on selenium levels.

Source Evaluation – Sampling

In addition to sampling at the Refinery discharge point to the wells, Navajo has implemented an extensive selenium sampling program at multiple intermediate units using both the TCLP (Method 1311) and total selenium analysis in order to evaluate and better understand the levels of selenium at various points in the Refinery process and wastewater treatment system. The results will be used to target the appropriate treatment process. These units and sampling points are:

- Biological Tanks (Tanks 801 and 836)
- API Outlet
- Storm Water Tank (Tank 830) – Currently used as additional storage for process wastewater
- Equalization Tank (Tank 829) – Currently used as additional storage for process wastewater
- Sour Water Stripper (SWS) Bottoms (W-634)
- SWS Bottoms (W-20)
- Desalter Effluent (W-7)
- Wet Gas Scrubber Purge (D-250)
- Unit 45 Sour Water
- Unit 34 MHC Cold Separator

Testing Evaluation

Navajo has been working with four (4) different laboratories to compare selenium sampling results (Hall Environmental Analysis Laboratory, Cardinal Laboratories, ALS Environmental, and CH2M HILL Applied Sciences Laboratory). Navajo has been reviewing the laboratory data from these labs, as well as the laboratory methods through split sampling and methodology analysis to ensure the accuracy of the data. A consultant, CH2M Hill, was hired to provide expertise on selenium testing, including sampling and testing procedures, laboratory instrumentation, etc. We are also attempting to identify an additional consultant who can assist with the interpretation of data that continues to be vexing.

Potential Treatments Evaluation

Navajo is evaluating the technical viability of lowering selenium levels through use of an iron co-precipitation process. As part of this process, additional selenium speciation testing was conducted on November 13th to identify the quantity of selenium in the form of selenite which can be removed using the iron co-precipitation process. Two jar testing studies were also conducted on November 13th, one on site and one in a contractor laboratory. These studies will help Navajo to determine the feasibility of this treatment and evaluate associated technical problems.

Navajo is also expediting the installation of SeRT® (Selenium Removal Technology). This technology was developed by Phillips 66 to remove selenocyanate from aqueous streams. Navajo is currently planning to use this technology on the sour water stream as previous testing has shown that most of the selenium at this location is in the form of selenocyanate.

If you have any questions, please do not hesitate to contact me at (575) 746-5487 or mike.holder@hollyfrontier.com. Thank you for your assistance in this matter and we will continue to work closely with you as we resolve the issues associated with selenium concentrations.

Sincerely,

Mike Holder
Environmental Manager, NRC

Elec cc: Navajo Michael McKee
HollyFrontier Denise McWatters

Env. Fil NOVs Artesia OCD Order Report
2013-11-21 Subm' OCD Order Report

HOLLYFRONTIER.

November 20, 2013

Director, Oil Conservation Division
NM Energy, Minerals & Natural Resources Dept.
1220 S. St. Francis Drive
Santa Fe, NM 87505
Re: AOCW-6

Certified Mail/Return Receipt
7011 3500 0001 4786 0780

Re: No. WQA-OCD-CO-2013-001
Civil Penalty Fee Payment
Navajo Refining Company, L.L.C.
Artesia Refinery

Dear Director:

Enclosed is a corporate check for twenty six thousand dollars ($26,000.00) payable to the State of New Mexico, General Fund. This check is in accordance with Condition III.2.A of the Amended and Supplemental Agreed Compliance Order, dated November 14, 2013.

If you have any questions, please contact me at the address below, by telephone at (575) 746-5487, or by e-mail at mike.holder@hollyfrontier.com.

Sincerely,

Mike Holder,
Environmental Manager

Enclosure

Electronic cc (w/enc.): NM Oil Conservation Div — Scott Dawson, Carl Chavez
Navajo — Michael McKee, Mike Holder
HollyFrontier — Denise McWatters

Environmental File: NOVs Artesia Civil Penalty III Order Violation of the SE Limit
2013-11-20_NO. AOCW-6 WQA-OCD-CO-2013-001 Stipulated Order penalty payment.doc

NAVAJO REFINING COMPANY, L.L.C.
2828 N. Harwood St., Suite 1300
Dallas TX 75201-1507

STATE OF NEW MEXICO GENERAL FUND
DIRECTOR OIL CONSERVATION DIVISION
NM ENERGY MINERALS & NATURAL RESOUR
1220 S ST FRANCIS DR
SANTA FE NM 87505-4225

Check Date		11/19/2013
Check Amount	$	26,000.00
Vendor No		5126527
Payment Document		2000163508
Company Code		1020

Invoice Date	Invoice Number	Description	Invoice Amount	Discount Amount	Net Amount
11/18/2013	111813	STIPULATED PENALTY	26,000.00	0.00	26,000.00

Payment document	Check number	Date	Currency	Payment amount
2000163508	1000245329	11/19/2013	USD	********26,000.00*

↓ PLEASE FOLD ON PERFORATION AND DETACH HERE ↓

VERIFY THE AUTHENTICITY OF THIS MULTITONE SECURITY DOCUMENT — CHECK BACKGROUND AREA CHANGES COLOR GRADUALLY FROM TOP TO BOTTOM

NAVAJO REFINING COMPANY, L.L.C. 64-1278/611 1000245329
2828 N. Harwood St., Suite 1300 11/19/2013
Dallas TX 75201-1507

PAY EXACTLY
********26,000.00*USD
VOID AFTER 180 DAYS

PAY *** TWENTY-SIX THOUSAND and 00 /100 USD***

TO THE ORDER OF STATE OF NEW MEXICO GENERAL FU
DIRECTOR OIL CONSERVATION DIVI
NM ENERGY MINERALS & NATURAL R
1220 S ST FRANCIS DR
SANTA FE NM 87505-4225

Stephen D Wise
AUTHORIZED SIGNATURE

Bank of America N.A.

[redacted]

Chavez, Carl J, EMNRD

From: Brancard, Bill, EMNRD
Sent: Tuesday, November 19, 2013 11:31 AM
To: Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Cc: Bailey, Jami, EMNRD
Subject: FW: Navajo Refinery

Scott, Carl,

The ACO provides that you all are the points of contact with Navajo. However, since you are both out of town, I wanted to get Navajo moving on implementation of the agreement. From now on, I assume you two will receive the required communication under the ACO.

Bill

From: Brancard, Bill, EMNRD
Sent: Tuesday, November 19, 2013 10:53 AM
To: 'McWatters, Denise'; Holder, Mike
Cc: lrose@montand.com; Bailey, Jami, EMNRD; Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD
Subject: RE: Navajo Refinery

Denise, Mike:

Thank you for the response. In accordance with the Amended and Supplemental Agreed Compliance Order entered on November 14, 2013 (ACO), we note the following:

1. Navajo has designated the Sample Location, in the message below, as required under Paragraph 1 (a) of Exhibit A to the ACO;
2. OCD hereby approves the Sample Location;
3. Under the ACO, the first required sample of injection fluid was to be taken on the first business day of the week, November 18, 2013, as provided in Paragraph 1 (a) of Exhibit A. The results should be sent to OCD within 3 business days of receipt (Paragraph 4).
4. The daily samples currently required by NMED are not subject to the reporting requirement of Paragraph 4, but the results should be summarized in the monthly report due under Paragraph 9. Also, if any daily sample exceeds the Se Limit (after prior samples did not), the results must be reported to OCD within 24 hours pursuant to Paragraph 5.
5. Navajo indicates that injection resumed on November 9 and is continuing. Under the prior ACO, which was in effect when injection resumed, a sample was to be taken "at least weekly". The last sample result we received was taken on November 5. Therefore, OCD needs to receive a sample result taken during last week.

Thanks for your attention to the details of the agreement. We look forward to working with Navajo.

Bill Brancard

General Counsel
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe NM 87505
505.476.3210

Bill.brancard@state.nm.us

From: McWatters, Denise [mailto:Denise.McWatters@hollyfrontier.com]
Sent: Monday, November 18, 2013 3:57 PM
To: Brancard, Bill, EMNRD
Cc: lrose@montand.com; Holder, Mike
Subject: RE: Navajo Refinery

Bill-

I just received the following information from Mike Holder:

1. The Refinery resumed injection to the wells on 11/9/13 following receipt of analytical data showing that the effluent was below the TCLP level of 1.0 mg/L. Discharge is continuing and on 11/16 we instituted daily sampling of the effluent per our agreement with NMED.

2. The plant continues to run at a reduced capacity (approximately 60,000 bbls/day) and will do so until the inventory of stored effluent has been processed and sent to the wells.

3. The sampling point for the effluent testing location is the same point where the quarterly injection well samples have always been taken. This location is after the wastewater treatment plant in the pipe line where the effluent is discharged to the wells. This sample location is representative of all treatment processes in the wastewater treatment train.

The refinery will send the required November 21 report to Scott and Carl.

Thanks again for your assistance last week. We look forward to working with OCD as we implement the required actions.

Denise C. McWatters
Senior Vice President & General Counsel
The HollyFrontier Companies
2828 North Harwood, Suite 1300
Dallas, Texas 75201
214.871.3480

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From: Brancard, Bill, EMNRD [mailto:bill.brancard@state.nm.us]
Sent: Monday, November 18, 2013 2:07 PM
To: McWatters, Denise
Cc: lrose@montand.com
Subject: Navajo Refinery

Denise,

Jami Bailey is out today and Scott Dawson, Glenn VonGonten and Carl Chavez are all out of the office until Thursday. So, if there is anything significant to report on Navajo, please let me know. In case I get asked, I would like to know if Navajo is injecting to the UIC wells and if Navajo is operating at full capacity.

Once again, thank you for all your cooperation in the development of the agreements over the past few weeks.

Thank you,

Bill Brancard

General Counsel
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe NM 87505
505.476.3210
Bill.brancard@state.nm.us

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received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

ACKNOWLEDGEMENT OF RECEIPT
OF CHECK/CASH

I hereby acknowledge receipt of Check No. 1000245329 dated 11/19/13

or cash received on 11/26/13 in the amount of $ 26,000.00

from NAVAJO REFINING

for ACOW - 6

Submitted by: CARL CHAVEZ Date: 11/26/13

Submitted to ASD by: Lupe Sherman Date: 11/26/13

Received in ASD by: _____ Date: _____

Filing Fee _____ New Facility: _____ Renewal: _____

Modification _____ Other ✓ CIVIL PENALTY

Organization Code 521.07 Applicable FY 14

To be deposited in the Water Quality Management Fund.

Full Payment _____ or Annual Increment _____

NEW MEXICO ENVIRONMENT DEPARTMENT - ALBUQUERQUE FIELD OFFICE DAILY CHECK RECEIPT LOG

DATE RECEIVED	WALK IN	MAIL	NAME ON CHECK	DATE OF CHECK	CHECK/MONEY ORDER#	PROGRAM ACCOUNT CODE	AMOUNT OF CHECK	DATE DEPOSITED	DEPOSITED BY:
11/25/13		X	BASIC ENERGY SERVICES	11/19/13	1016689		$100.00		
11/26/13		X	NAVAJO REFINING	11/19/13	1000245329		$26,000.00		
TOTAL							$26,100.00		

REVENUE TRANSMITTAL SHEET

Description	Fund	Dept.	Share Acct	Sub Acct	Amount
Liquid Waste	34000	Z3200	496402		
Water Recreation Facilities	40000	Z8501	496402		
Food Permit Fees	99100	Z2600	496402		
OTHER	34100	232900		2329029000	

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, November 18, 2013 4:52 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Injection Well Historical Data for Effluent Analyses
Attachments: Historic_InjWell_20131118b.pdf

Carl,

Per our previous e-mail correspondence, Navajo Refining Company, LLC (Navajo) is proposing that the required analyses of the injected water disposed in injection wells WDW-1, WDW-2 and WDW-3 for hazardous characteristics be based on a review of historical data for TCLP/ICR constituents. This provides a scientific basis for the required analysis that focuses on what could cause the effluent stream to be hazardous.

We have performed the historical analysis of the TCLP list in 40 CFR 261.24, compiling data collected since 2006. As a result, these are the analytical requirements we propose:

- General water chemistry (Method 40 CFR 136.3) to include: cation/anion balance, bromide, calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, fluoride, sulfate, specific conductivity, temperature, total dissolved solids (TDS), Eh, and pH.
- Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Characteristics for Ignitability, Corrosivity and Reactivity (40 CFR Part 261 Subpart C Sections 261.21 – 261.23, July 1, 1992).
- EPA RCRA TCLP analysis (40 CFR Part 261 Subpart C Section 261.24) for selenium.

In support of this proposal, attached are graphs showing the historical totals samples for each of the TCLP constituents that have ever been detected, including 2-butanone (methyl ethyl ketone [MEK]), 2-methylphenol (o-cresol), 3 & 4-methylphenol (m & p-cresol), benzene, arsenic, barium, chromium, and selenium. Each graph shows the trend of the concentration, as compared to the hazardous waste value. Since the concentration levels are almost indiscernible for most constituents with these graphs, we are also providing a graph for each constituent with a logarithmic scale on the y-axis, in order to exaggerate the values and make the comparison more clear. With the exception of selenium, the maximum concentration ever detected for each of these constituents is well below the hazardous characteristic (i.e., TCLP) value. In addition, most of the analytes have only been rarely detected since 2006 (see attached Table 1 – Injection Well Historical Data Summary, and Table 2 – Injection Well Detections).

We did take TCLP samples in April of 2013, and there were three detections, all below the hazardous characteristic value:

Constituent	Concentration (mg/L)	Hazardous waste value (mg/L)
Arsenic - TCLP	0.03880	5
Barium - TCLP	0.08100	100
Selenium - TCLP	0.68200	1

Please do not hesitate to contact me at (575) 746-5487 if you have any questions. I would be happy to set up a call with our consultant as well if you would like to review the data evaluation.

Thanks,
Mike

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received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
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Table 1 - Injection Well Historical Data Summary
2006-2013
Navajo Refining Company, LLC

				Maximum Value		Average Value		
Parameter	Number of Data Points	Number of Detections	Hazardous Characteristic Value (mg/L)	Concentration (mg/L)	% of Hazardous Characteristic Value	Concentration (mg/L)	% of Hazardous Characteristic Value	95th Percentile Concentration (mg/L)
1,1-Dichloroethene	30	0	0.7	NA	NA	NA	NA	NA
1,2-Dichloroethane	30	0	0.5	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1	0	7.5	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	29	0	400	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	29	0	2	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	9	0	0.13	NA	NA	NA	NA	NA
2-Butanone	29	5	200	0.098	0.05%	0.023	0.01%	0.099
2-Methylphenol	29	2	200	0.290	0.15%	0.021	0.01%	0.086
3&4-Methylphenol	29	2	200	0.520	0.26%	0.030	0.01%	0.098
Arsenic	30	30	5	0.205	4.10%	0.092	1.84%	0.184
Barium	30	29	100	0.107	0.11%	0.042	0.04%	0.084
Benzene	30	2	0.5	0.200	40.00%	0.017	3.43%	0.077
Cadmium	30	0	1	NA	NA	NA	NA	NA
Carbon tetrachloride	30	0	0.5	NA	NA	NA	NA	NA
Chlorobenzene	29	0	100	NA	NA	NA	NA	NA
Chloroform	30	0	6	NA	NA	NA	NA	NA
Chromium	30	7	5	0.008	0.16%	0.008	0.17%	0.032
Hexachlorobenzene	10	0	0.13	NA	NA	NA	NA	NA
Hexachlorobutadiene	2	0	0.5	NA	NA	NA	NA	NA
Hexachloroethane	30	0	3	NA	NA	NA	NA	NA
Lead	30	0	5	NA	NA	NA	NA	NA
Mercury	28	0	0.2	NA	NA	NA	NA	NA
Nitrobenzene	29	0	2	NA	NA	NA	NA	NA
Selenium	30	30	1	1.410	141.00%	0.501	50.11%	0.996
Silver	30	0	5	NA	NA	NA	NA	NA
Tetrachloroethene	30	0	0.7	NA	NA	NA	NA	NA
Trichloroethene	30	0	0.5	NA	NA	NA	NA	NA
Vinyl chloride	30	0	0.2	NA	NA	NA	NA	NA

Table 2 - Injection Well Detections
2006-2013
Navajo Refining, LLC

Sample Name	Collection Date	Concentration	RL	Unit	Sample ID	Matrix	Client Sample ID	Project Name
2-Butanone	4/7/2006	0.015	0.01	mg/L	0604118-01	Water	Inject Well	Injection Well Quarterly
2-Butanone	10/20/2006	0.098	0.01	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
2-Butanone	9/26/2007	0.023	0.01	mg/L	0709522-01	Water	Injection Well Quarterly	Injection Well Quarterly
2-Butanone	11/19/2009	0.01	0.01	mg/L	0911524-01	Aqueous	Injection Well	Injection Well Quarterly
2-Butanone	11/16/2011	0.01	0.01	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
2-Methylphenol	10/20/2006	0.11	0.01	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
2-Methylphenol	11/16/2011	0.29	0.05	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
3&4-Methylphenol	10/20/2006	0.13	0.01	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
3&4-Methylphenol	11/16/2011	0.52	0.05	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
Arsenic	11/20/2008	0.111	0.005	mg/L	0811471-01	Aqueous	Injection Well	Injection Well Quarterly
Arsenic	2/13/2009	0.119	0.005	mg/L	0902372-01	Aqueous	Injection Well	Injection Well Quarterly
Arsenic	5/7/2009	0.14	0.005	mg/L	0905157-01	Aqueous	Inj. Well	Injection Well Quarterly
Arsenic	11/19/2009	0.111	0.005	mg/L	0911524-01	Aqueous	Injection Well	Injection Well Quarterly
Arsenic	2/25/2010	0.0502	0.005	mg/L	1002802-01	Aqueous	Inj Well	Injection Well Quarterly
Arsenic	5/19/2010	0.07	0.005	mg/L	1005694-01	Aqueous	Inj. Well	Injection Well Quarterly
Arsenic	8/11/2010	0.0393	0.005	mg/L	1008405-01	Aqueous	Inj Well	Injection Well Quarterly
Arsenic	11/18/2010	0.0365	0.005	mg/L	1011768-01	Aqueous	Effluent	Injection Well Quarterly
Arsenic	2/23/2011	0.0557	0.005	mg/L	1102690-01	Aqueous	Effluent	Injection Well Quarterly
Arsenic	5/24/2011	0.0198	0.005	mg/L	1105823-01	Aqueous	Effluent	Injection Well Quarterly
Arsenic	8/23/2011	0.0207	0.005	mg/L	1108743-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Arsenic	11/16/2011	0.0365	0.005	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
Arsenic	2/28/2012	0.141	0.005	mg/L	1202979-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Arsenic	5/21/2012	0.0791	0.005	mg/L	1205999-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Arsenic	3/21/2013	0.0404	0.01	mg/L	1303855-01	Aqueous	WW Effluent	Injection Well Quarterly
Arsenic - TCLP	6/27/2013	0.0388	0.05	mg/L	1307049-01	Leachate	WW Effluent	Injection Well TCLP
Arsenic, total	4/7/2006	0.205	0.005	mg/L	0604118-01	Water	Inject Well	Injection Well Quarterly
Arsenic, total	10/20/2006	0.177	0.005	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
Arsenic, total	12/11/2006	0.159	0.005	mg/L	0612199-01	Water	Injection Wells	Injection Well Quarterly
Arsenic, total	4/16/2007	0.189	0.005	mg/L	0704309-01	Water	Inj. Well	Injection Well Quarterly

Table 2 - Injection Well Detections
2006-2013
Navajo Refining, LLC

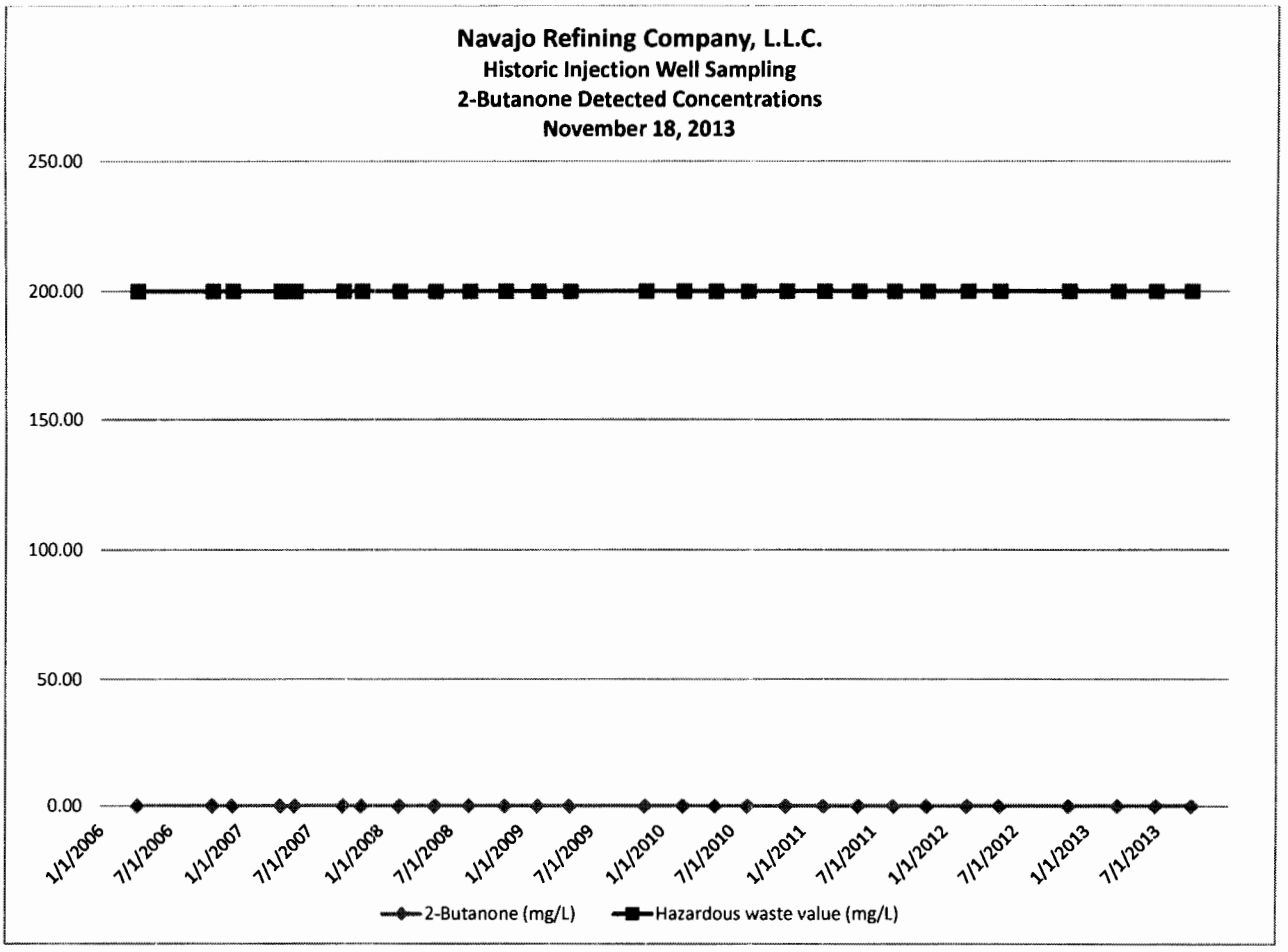
Sample Name	Collection Date	Concentration	RL	Unit	Sample ID	Matrix	Client Sample ID	Project Name
Arsenic, total	5/23/2007	0.168	0.005	mg/L	0705513-01	Water	Inj. Well	Injection Well Quarterly
Arsenic, total	9/26/2007	0.125	0.005	mg/L	0709522-01	WATER	Injection Well Quarterly	Injection Well Quarterly
Arsenic, total	11/13/2007	0.147	0.05	mg/L	0711312-01	Water	Inj. Well	Injection Well Quarterly
Arsenic, total	2/19/2008	0.102	0.005	mg/L	0802381-01	Water	Inj Well	Injection Well Quarterly
Arsenic, total	5/22/2008	0.0474	0.005	mg/L	0805558-01	Aqueous	Injection Well	Injection Well Quarterly
Arsenic, total	8/19/2008	0.116	0.005	mg/L	0808447-01	Aqueous	Injection Well	Injection Well Quarterly
Arsenic, total	9/19/2012	0.0468	0.005	mg/L	1209741-01	Aqueous	WW Effluent	Injection Well Quarterly
Arsenic, total	11/15/2012	0.07	0.01	mg/L	1211601-01	Aqueous	WW Effluent	Injection Well Quarterly
Arsenic, total	6/27/2013	0.0367	0.01	mg/L	1307042-01	Aqueous	WW Effluent	Injection Well Quarterly
Arsenic, total	9/27/2013	0.0581	0.005	mg/L	1310036-01	Aqueous	WDW-1 & 2 WW Effluent	Injection Well Quarterly
Barium	11/20/2008	0.0203	0.005	mg/L	0811471-01	Aqueous	Injection Well	Injection Well Quarterly
Barium	2/13/2009	0.00941	0.005	mg/L	0902372-01	Aqueous	Injection Well	Injection Well Quarterly
Barium	5/7/2009	0.0282	0.005	mg/L	0905157-01	Aqueous	Inj. Well	Injection Well Quarterly
Barium	11/19/2009	0.0198	0.005	mg/L	0911524-01	Aqueous	Injection Well	Injection Well Quarterly
Barium	2/25/2010	0.0243	0.005	mg/L	1002802-01	Aqueous	Inj Well	Injection Well Quarterly
Barium	5/19/2010	0.0235	0.01	mg/L	1005694-01	Aqueous	Inj. Well	Injection Well Quarterly
Barium	8/11/2010	0.0218	0.005	mg/L	1008405-01	Aqueous	Inj Well	Injection Well Quarterly
Barium	11/18/2010	0.0456	0.005	mg/L	1011768-01	Aqueous	Effluent	Injection Well Quarterly
Barium	2/23/2011	0.059	0.005	mg/L	1102690-01	Aqueous	Effluent	Injection Well Quarterly
Barium	5/24/2011	0.0541	0.005	mg/L	1105823-01	Aqueous	Effluent	Injection Well Quarterly
Barium	8/23/2011	0.0796	0.005	mg/L	1108743-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Barium	11/16/2011	0.0182	0.005	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
Barium	2/28/2012	0.0282	0.005	mg/L	1202979-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Barium	5/21/2012	0.0202	0.005	mg/L	1205999-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Barium	3/21/2013	0.086	0.01	mg/L	1303855-01	Aqueous	WW Effluent	Injection Well Quarterly
Barium - TCLP	6/27/2013	0.081	0.05	mg/L	1307049-01	Leachate	WW Effluent	Injection Well TCLP
Barium, total	4/7/2006	0.0673	0.005	mg/L	0604118-01	Water	Inject Well	Injection Well Quarterly
Barium, total	10/20/2006	0.0347	0.005	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
Barium, total	12/11/2006	0.025	0.005	mg/L	0612199-01	Water	Injection Wells	Injection Well Quarterly

Table 2 - Injection Well Detections
2006-2013
Navajo Refining, LLC

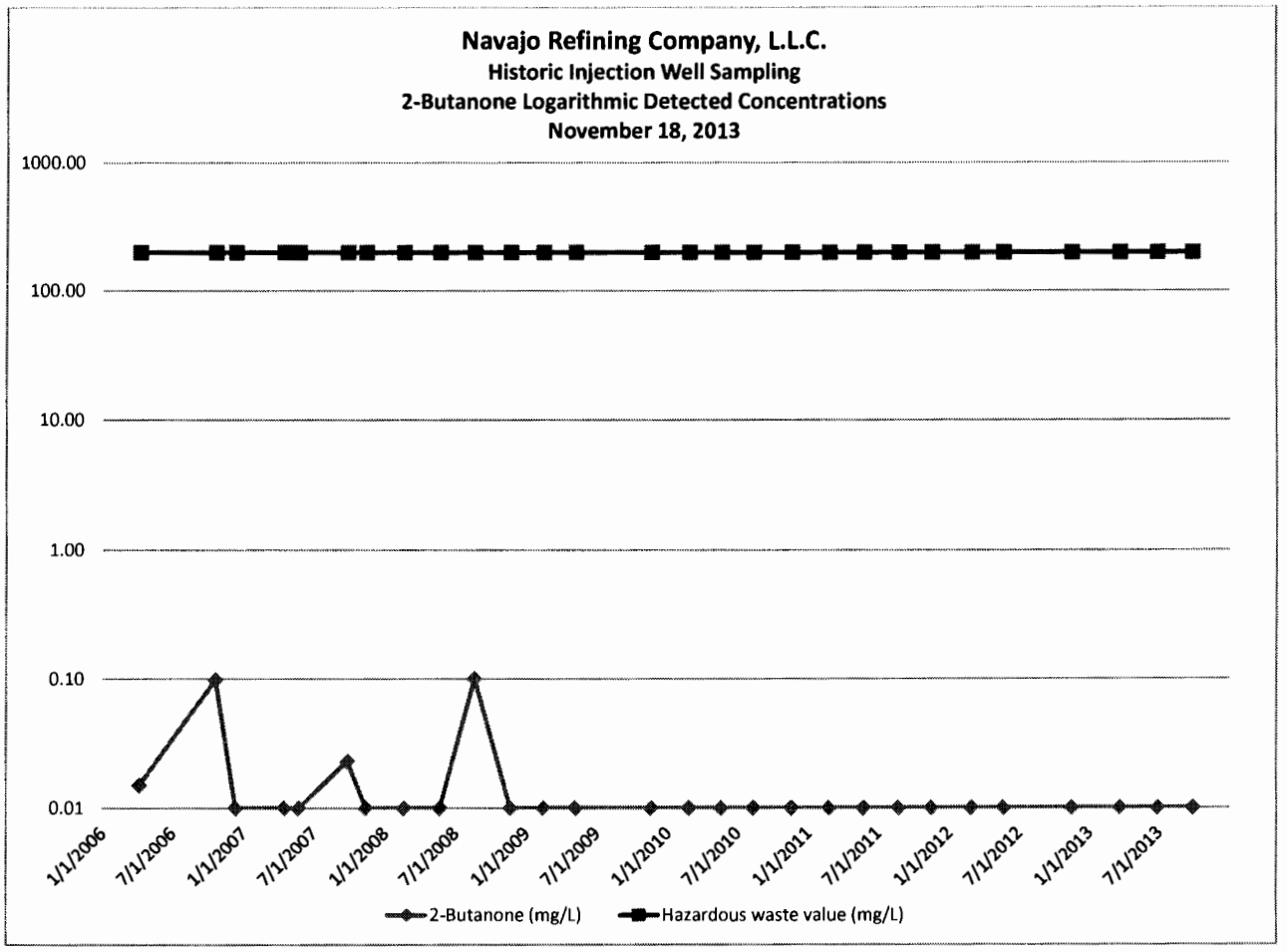
Sample Name	Collection Date	Concentration	RL	Unit	Sample ID	Matrix	Client Sample ID	Project Name
Barium, total	4/16/2007	0.0462	0.005	mg/L	0704309-01	Water	Inj. Well	Injection Well Quarterly
Barium, total	5/23/2007	0.107	0.005	mg/L	0705513-01	Water	Inj. Well	Injection Well Quarterly
Barium, total	9/26/2007	0.0535	0.005	mg/L	0709522-01	Water	Injection Well Quarterly	Injection Well Quarterly
Barium, total	2/19/2008	0.0199	0.005	mg/L	0802381-01	Water	Inj Well	Injection Well Quarterly
Barium, total	5/22/2008	0.0229	0.005	mg/L	0805558-01	Aqueous	Injection Well	Injection Well Quarterly
Barium, total	8/19/2008	0.0187	0.005	mg/L	0808447-01	Aqueous	Injection Well	Injection Well Quarterly
Barium, total	9/19/2012	0.0182	0.005	mg/L	1209741-01	Aqueous	WW Effluent	Injection Well Quarterly
Barium, total	11/15/2012	0.0599	0.01	mg/L	1211601-01	Aqueous	WW Effluent	Injection Well Quarterly
Barium, total	6/27/2013	0.0711	0.01	mg/L	1307042-01	Aqueous	WW Effluent	Injection Well Quarterly
Barium, total	9/27/2013	0.0365	0.005	mg/L	1310036-01	Aqueous	WDW-1 & 2 WW Effluent	Injection Well Quarterly
Benzene	5/22/2008	0.034	0.005	mg/L	0805558-01	Aqueous	Injection Well	Injection Well Quarterly
Benzene	11/16/2011	0.2	0.005	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
Chromium	11/20/2008	0.00501	0.005	mg/L	0811471-01	Aqueous	Injection Well	Injection Well Quarterly
Chromium	2/23/2011	0.00562	0.005	mg/L	1102690-01	Aqueous	Effluent	Injection Well Quarterly
Chromium	2/28/2012	0.00598	0.005	mg/L	1202979-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Chromium, total	4/7/2006	0.00258	0.002	mg/L	0604118-01	Water	Inject Well	Injection Well Quarterly
Chromium, total	10/20/2006	0.00787	0.005	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
Chromium, total	12/11/2006	0.00234	0.002	mg/L	0612199-01	Water	Injection Wells	Injection Well Quarterly
Chromium, total	9/26/2007	0.00503	0.005	mg/L	0709522-01	Water	Injection Well Quarterly	Injection Well Quarterly
Selenium	11/20/2008	0.487	0.005	mg/L	0811471-01	Aqueous	Injection Well	Injection Well Quarterly
Selenium	2/13/2009	0.0443	0.005	mg/L	0902372-01	Aqueous	Injection Well	Injection Well Quarterly
Selenium	5/7/2009	0.653	0.005	mg/L	0905157-01	Aqueous	Inj. Well	Injection Well Quarterly
Selenium	11/19/2009	0.428	0.05	mg/L	0911524-01	Aqueous	Injection Well	Injection Well Quarterly
Selenium	2/25/2010	0.189	0.005	mg/L	1002802-01	Aqueous	Inj Well	Injection Well Quarterly
Selenium	5/19/2010	0.407	0.005	mg/L	1005694-01	Aqueous	Inj. Well	Injection Well Quarterly
Selenium	8/11/2010	0.292	0.005	mg/L	1008405-01	Aqueous	Inj Well	Injection Well Quarterly
Selenium	11/18/2010	0.645	0.005	mg/L	1011768-01	Aqueous	Effluent	Injection Well Quarterly
Selenium	2/23/2011	0.382	0.005	mg/L	1102690-01	Aqueous	Effluent	Injection Well Quarterly
Selenium	5/24/2011	0.646	0.005	mg/L	1105823-01	Aqueous	Effluent	Injection Well Quarterly

Table 2 - Injection Well Detections
2006-2013
Navajo Refining, LLC

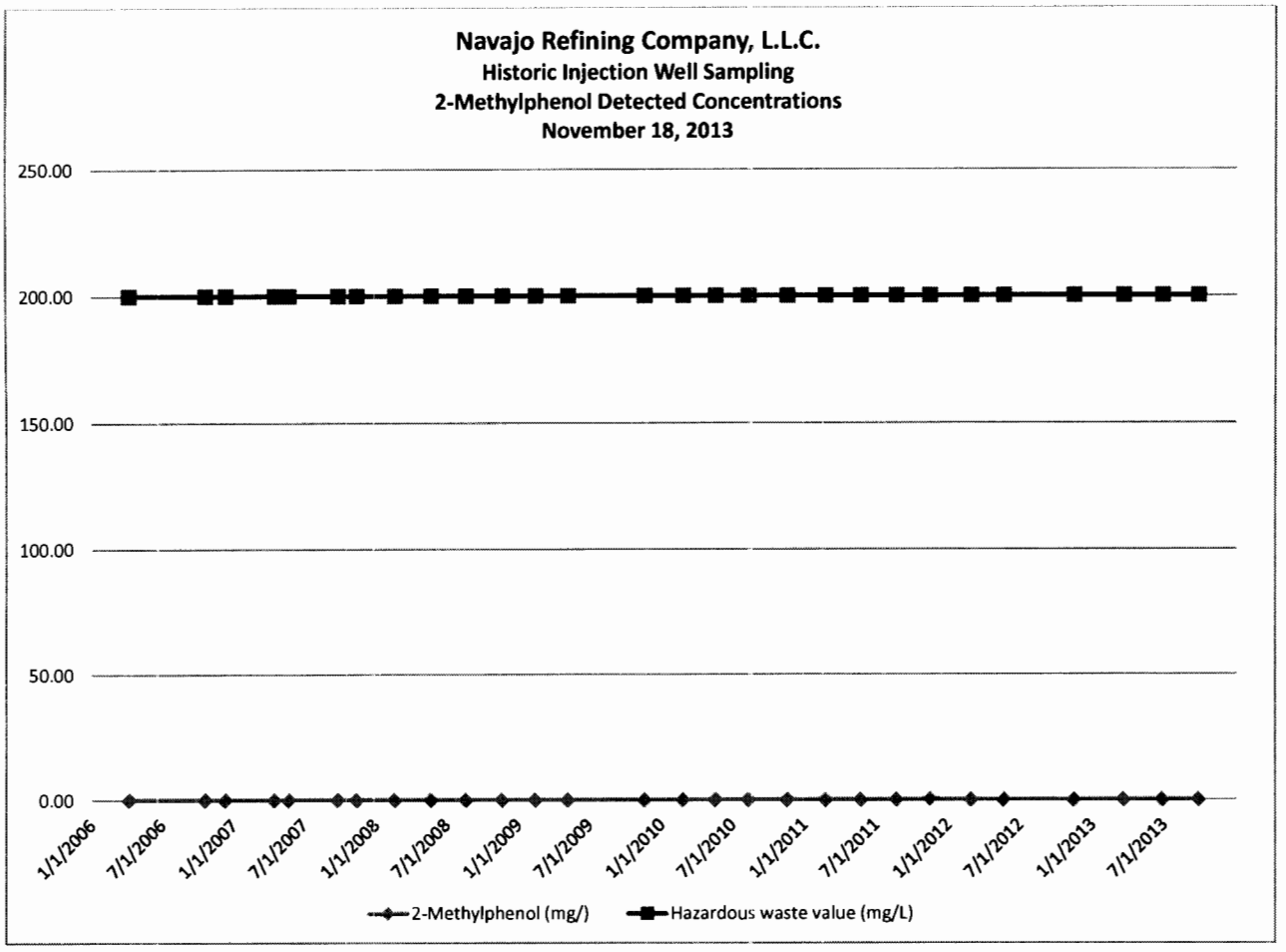
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Selenium	8/23/2011	0.465	0.005	mg/L	1108743-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Selenium	11/16/2011	0.99	0.005	mg/L	1111583-01	Water	Wastewater Effluent	Injection Well Quarterly
Selenium	2/28/2012	0.312	0.005	mg/L	1202979-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Selenium	5/21/2012	0.69	0.005	mg/L	1205999-01	Aqueous	Injection Well Effluent	Injection Well Quarterly
Selenium	3/21/2013	0.924	0.01	mg/L	1303855-01	Aqueous	WW Effluent	Injection Well Quarterly
Selenium - TCLP	6/27/2013	0.682	0.05	mg/L	1307049-01	Leachate	WW Effluent	Injection Well TCLP
Selenium, total	4/7/2006	0.164	0.005	mg/L	0604118-01	Water	Inject Well	Injection Well Quarterly
Selenium, total	10/20/2006	0.327	0.005	mg/L	0610381-01	Water	Inj. Well	Injection Well Quarterly
Selenium, total	12/11/2006	0.344	0.005	mg/L	0612199-01	Water	Injection Wells	Injection Well Quarterly
Selenium, total	4/16/2007	0.17	0.005	mg/L	0704309-01	Water	Inj. Well	Injection Well Quarterly
Selenium, total	5/23/2007	0.33	0.005	mg/L	0705513-01	Water	Inj. Well	Injection Well Quarterly
Selenium, total	9/26/2007	0.388	0.005	mg/L	0709522-01	Water	Injection Well Quarterly	Injection Well Quarterly
Selenium, total	11/13/2007	0.452	0.05	mg/L	0711312-01	Water	Inj. Well	Injection Well Quarterly
Selenium, total	2/19/2008	0.206	0.206	mg/L	0802381-01	Water	Inj Well	Injection Well Quarterly
Selenium, total	5/22/2008	0.0152	0.005	mg/L	0805558-01	Aqueous	Injection Well	Injection Well Quarterly
Selenium, total	8/19/2008	0.339	0.005	mg/L	0808447-01	Aqueous	Injection Well	Injection Well Quarterly
Selenium, total	9/19/2012	1	0.005	mg/L	1209741-01	Aqueous	WW Effluent	Injection Well Quarterly
Selenium, total	11/15/2012	0.842	0.01	mg/L	1211601-01	Aqueous	WW Effluent	Injection Well Quarterly
Selenium, total	6/27/2013	0.81	0.01	mg/L	1307042-01	Aqueous	WW Effluent	Injection Well Quarterly
Selenium, total	9/27/2013	1.41	0.005	mg/L	1310036-01	Aqueous	WDW-1 & 2 WW Effluent	Injection Well Quarterly



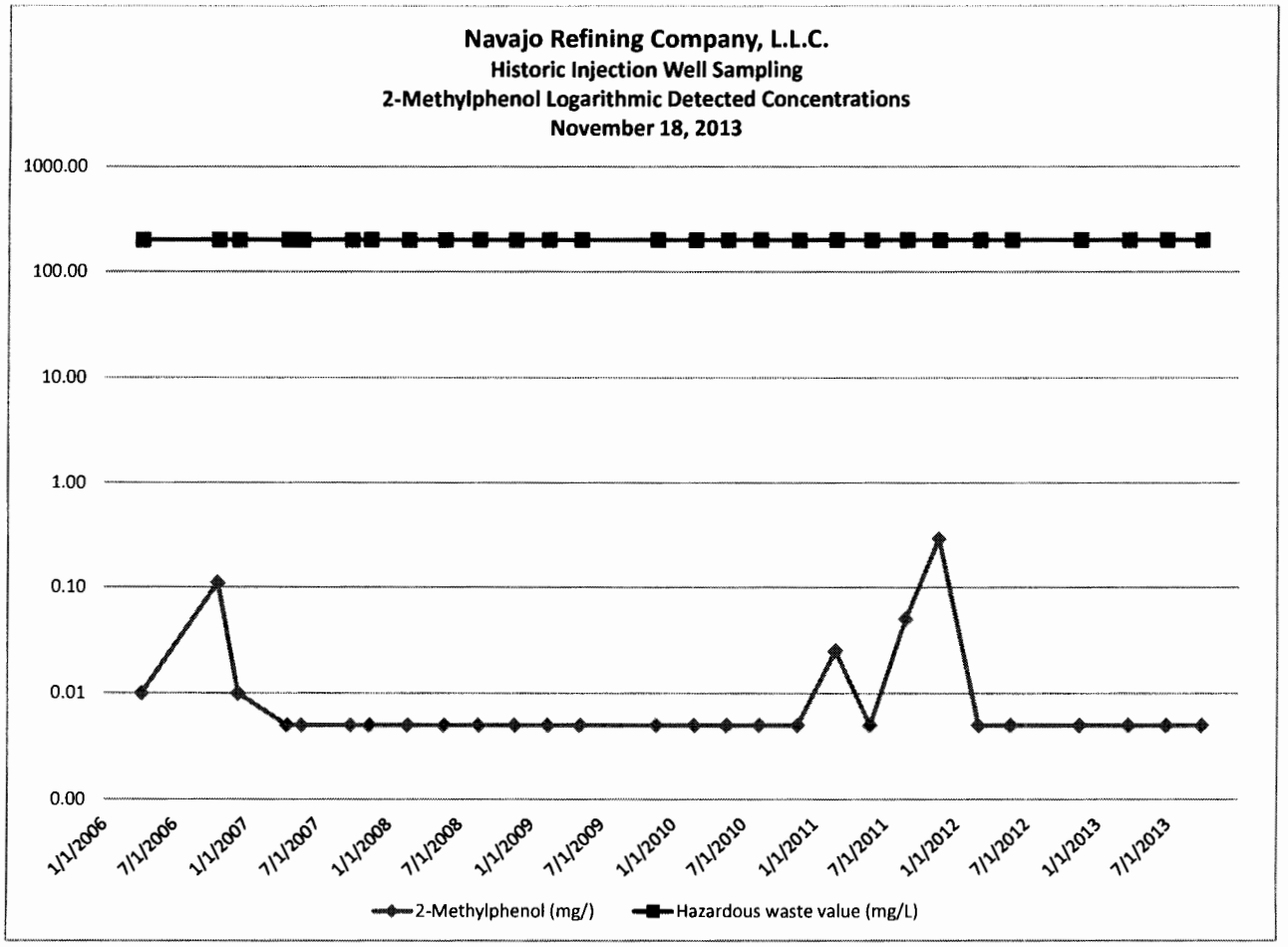
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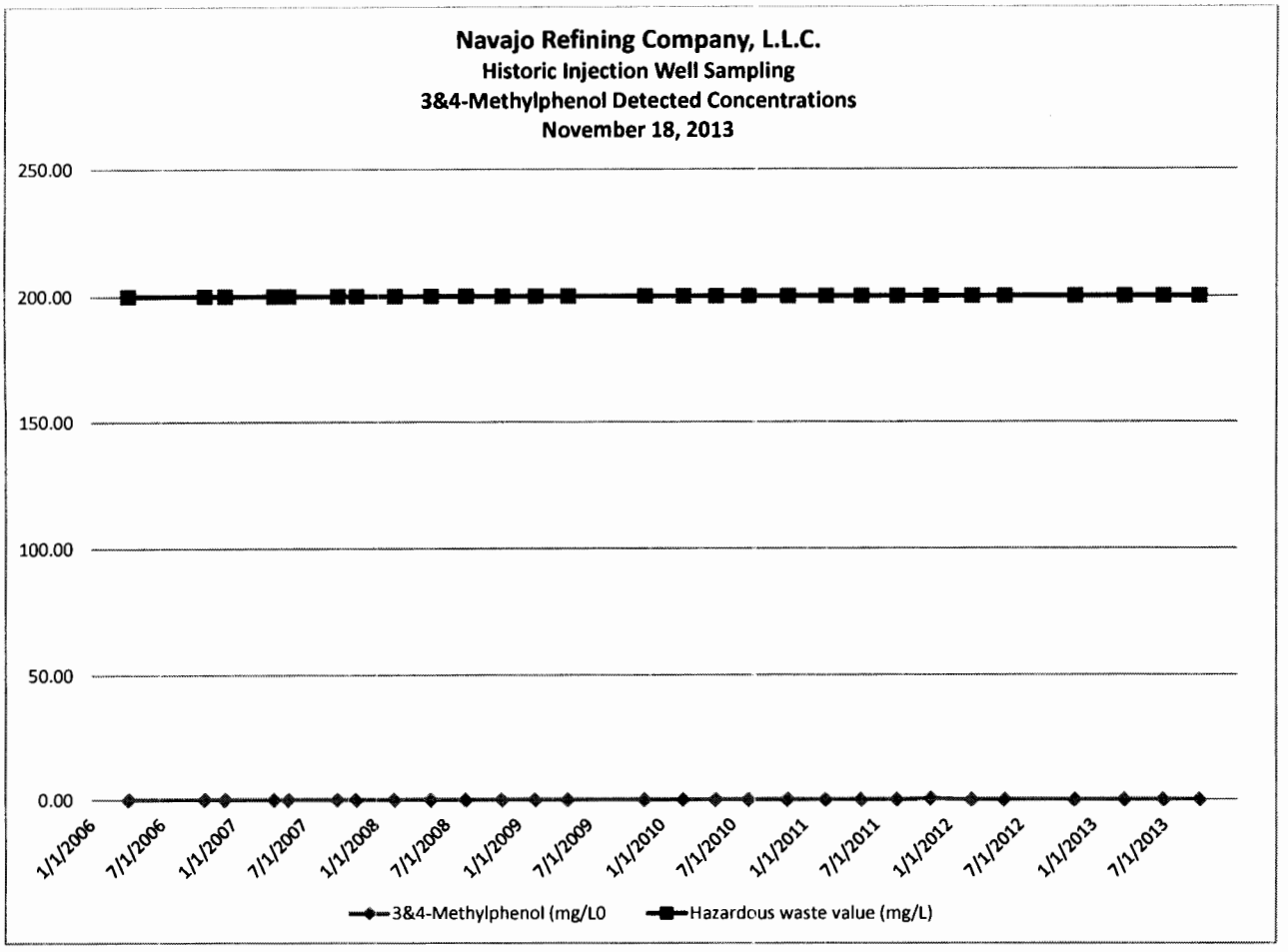
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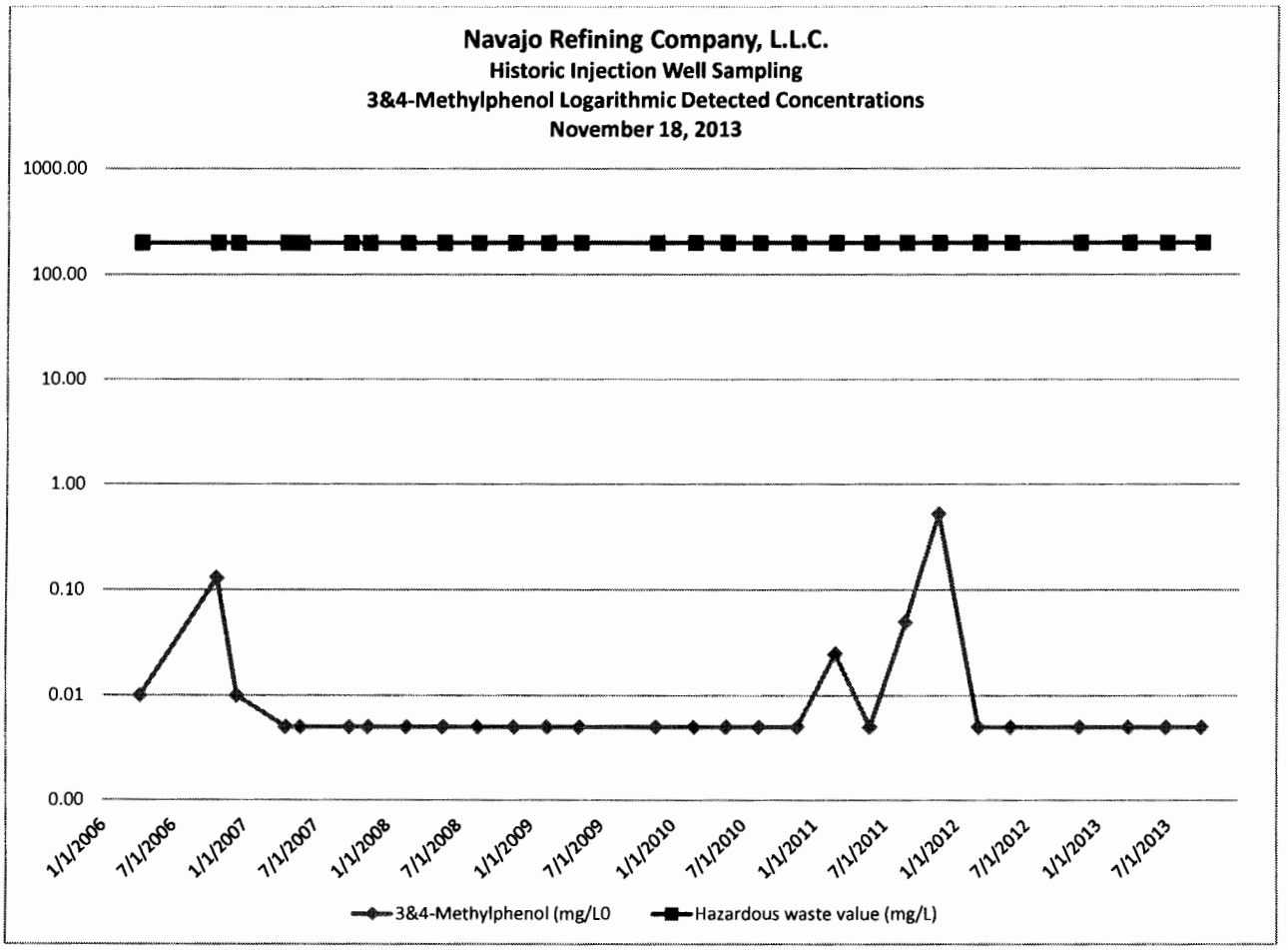
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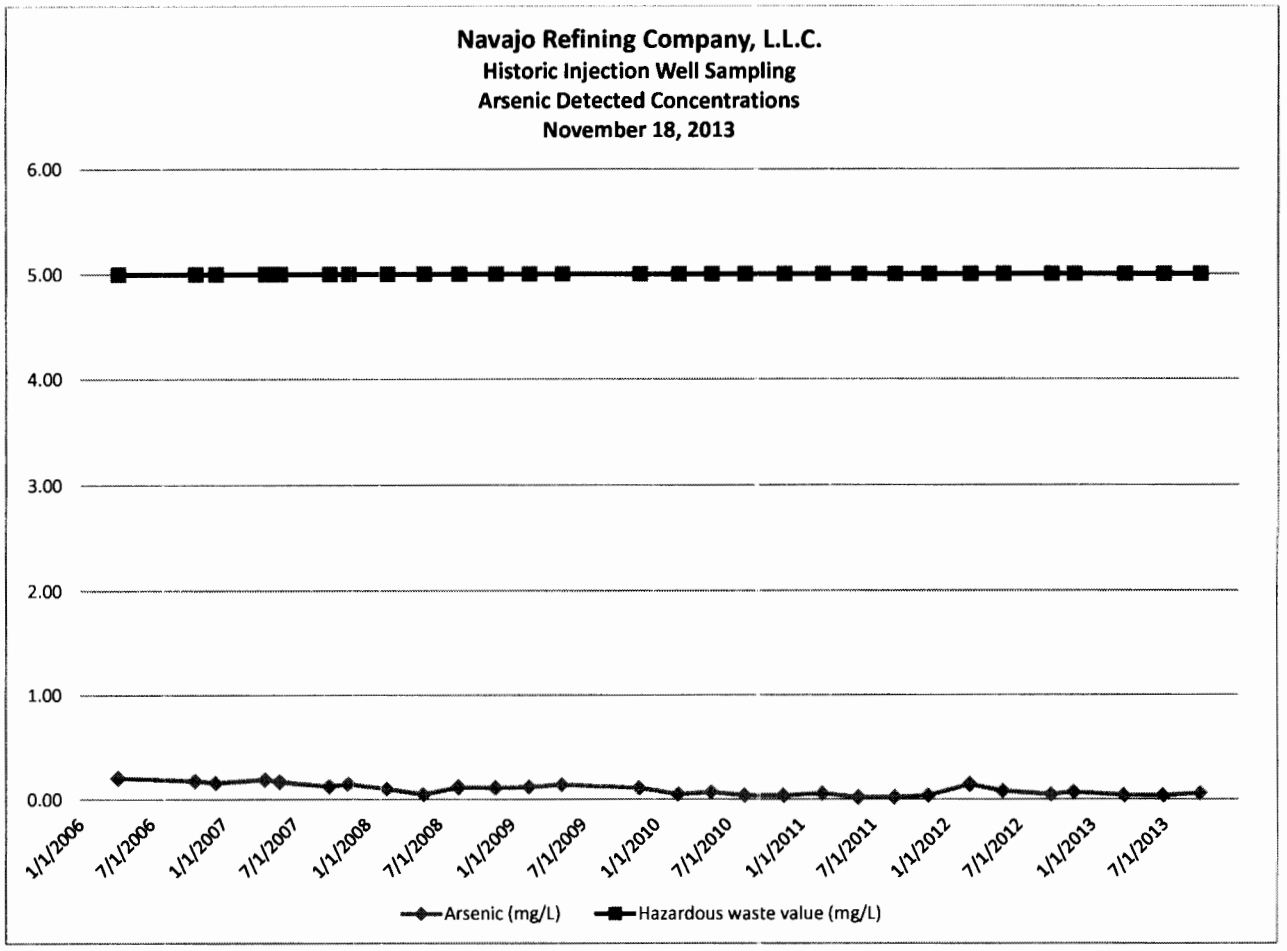
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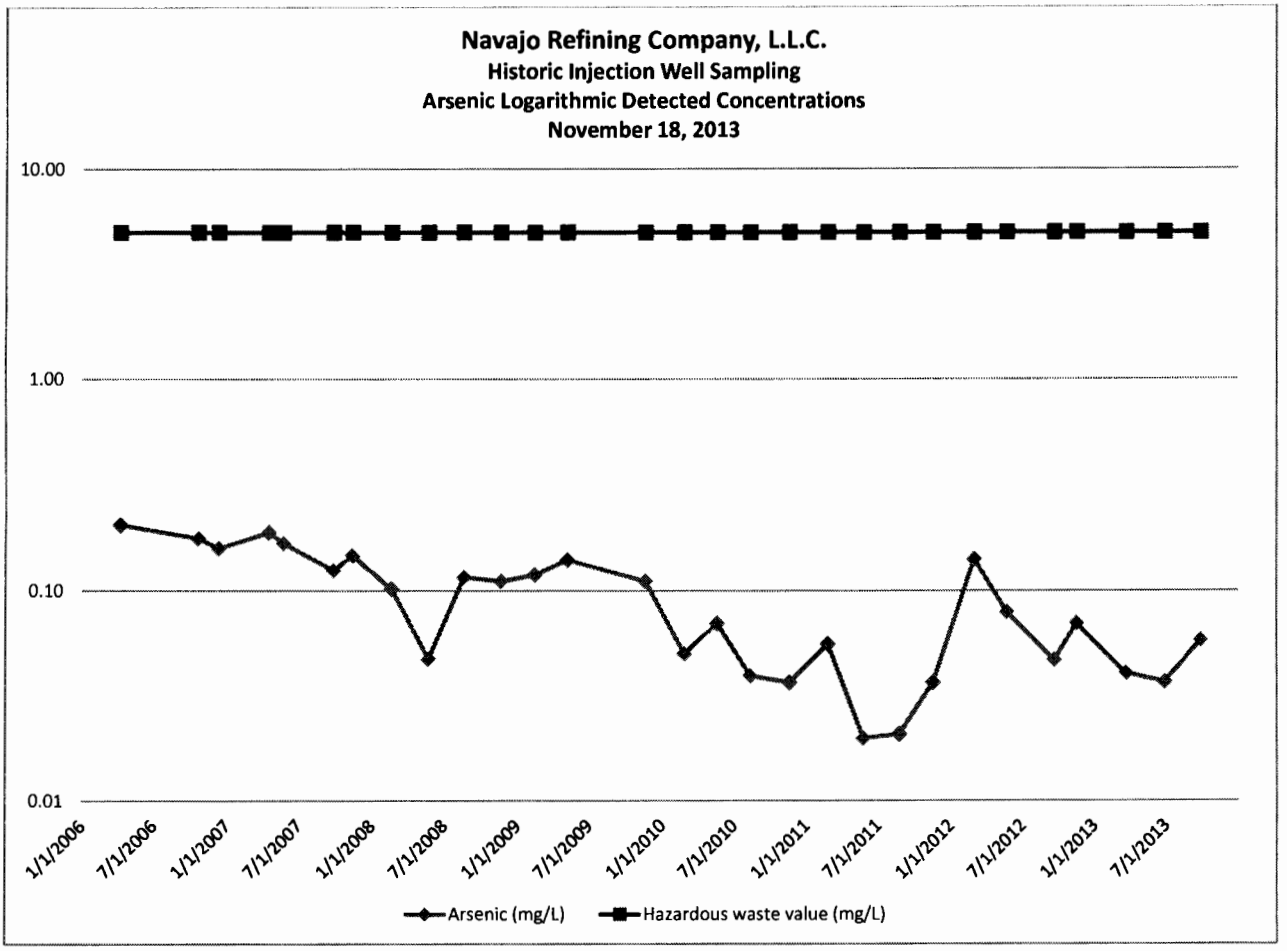
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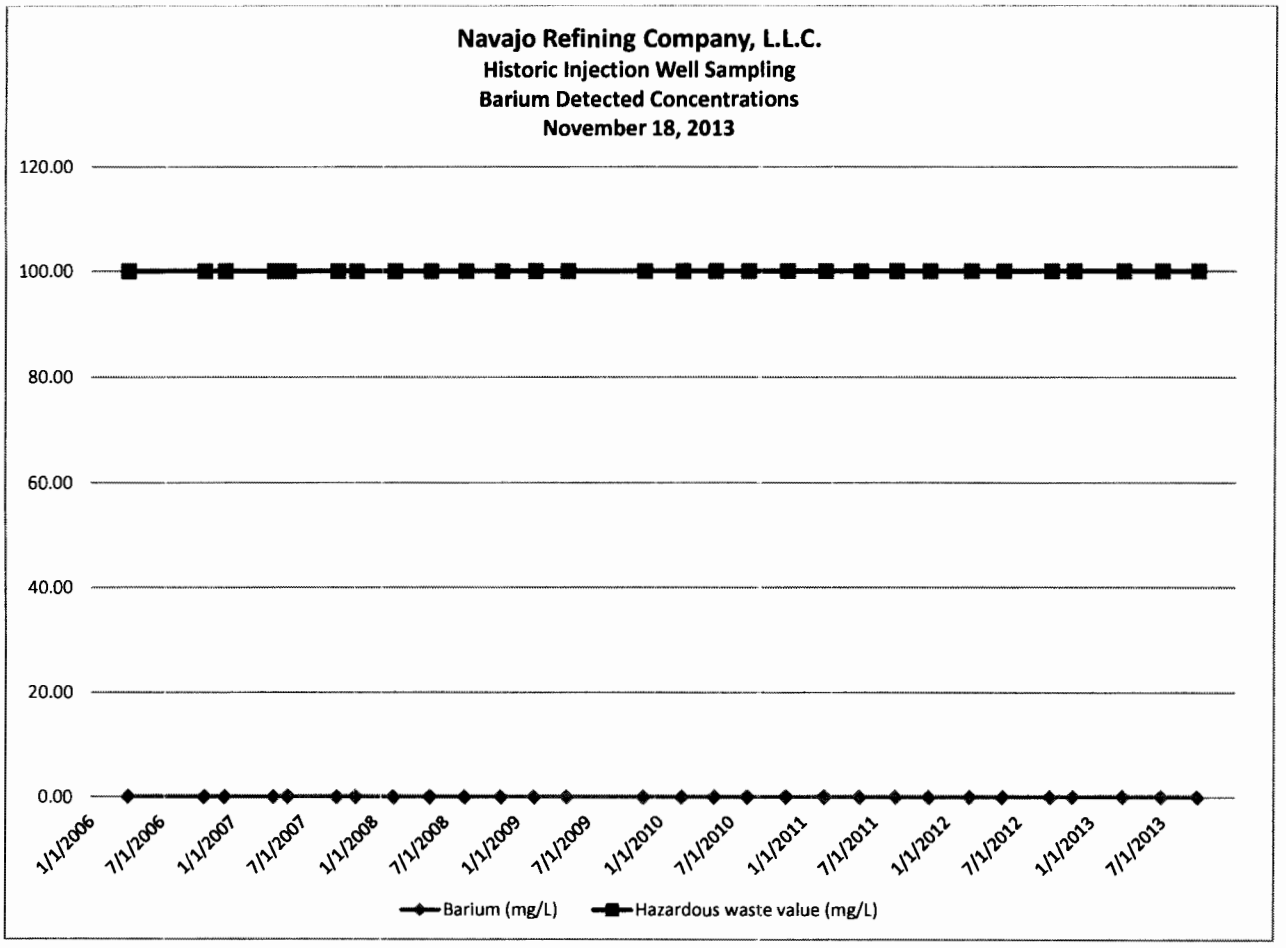
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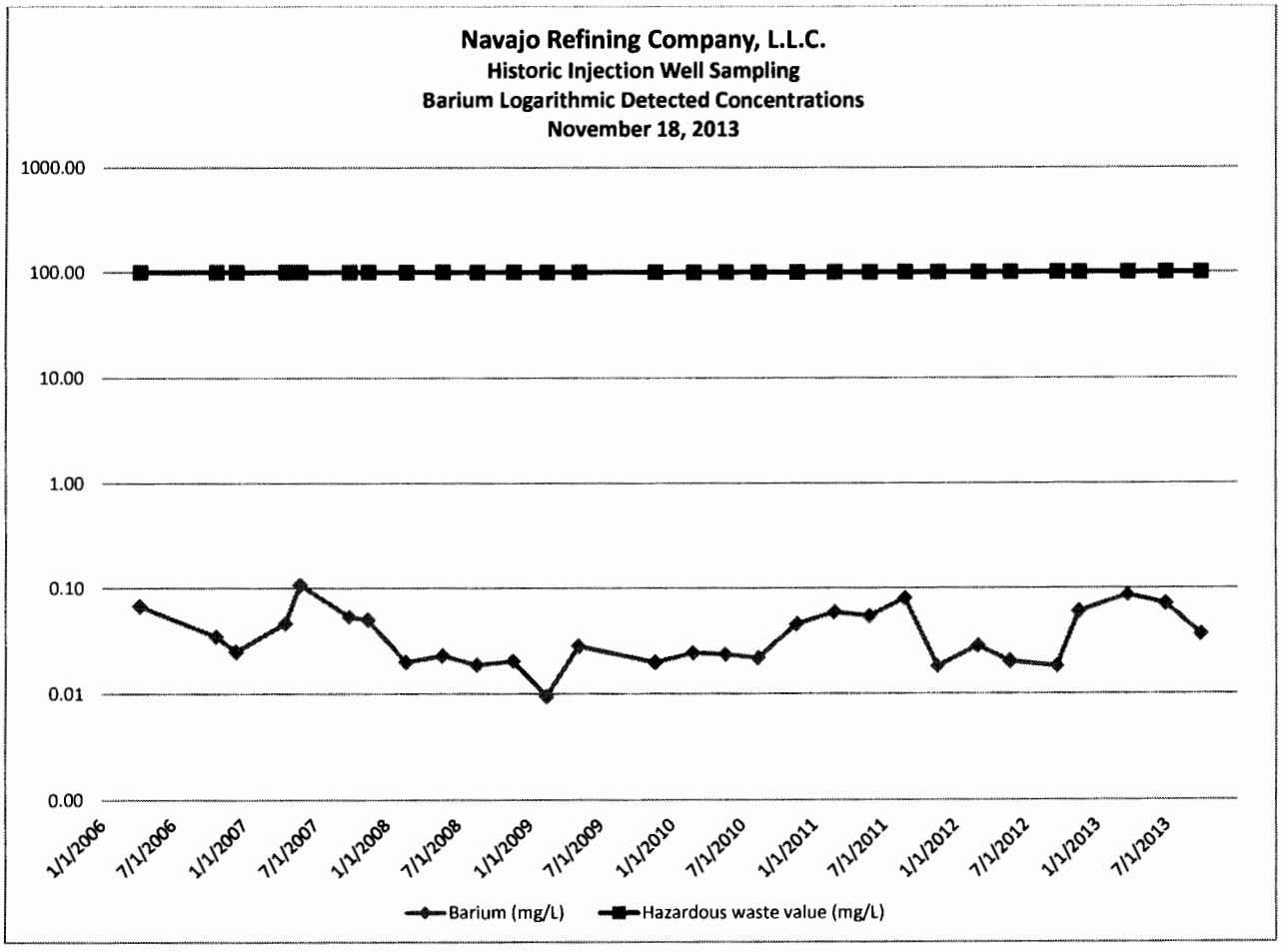
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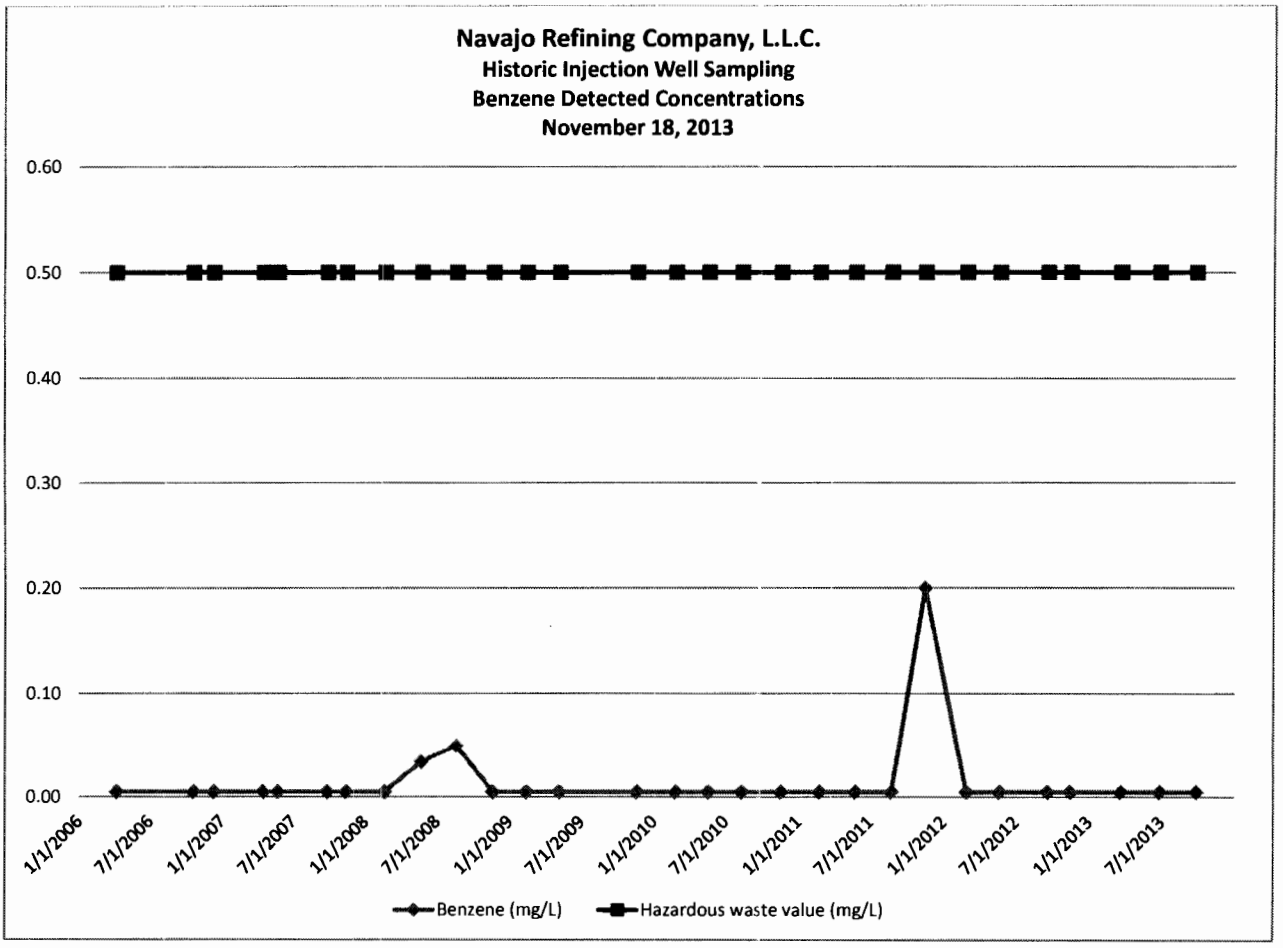
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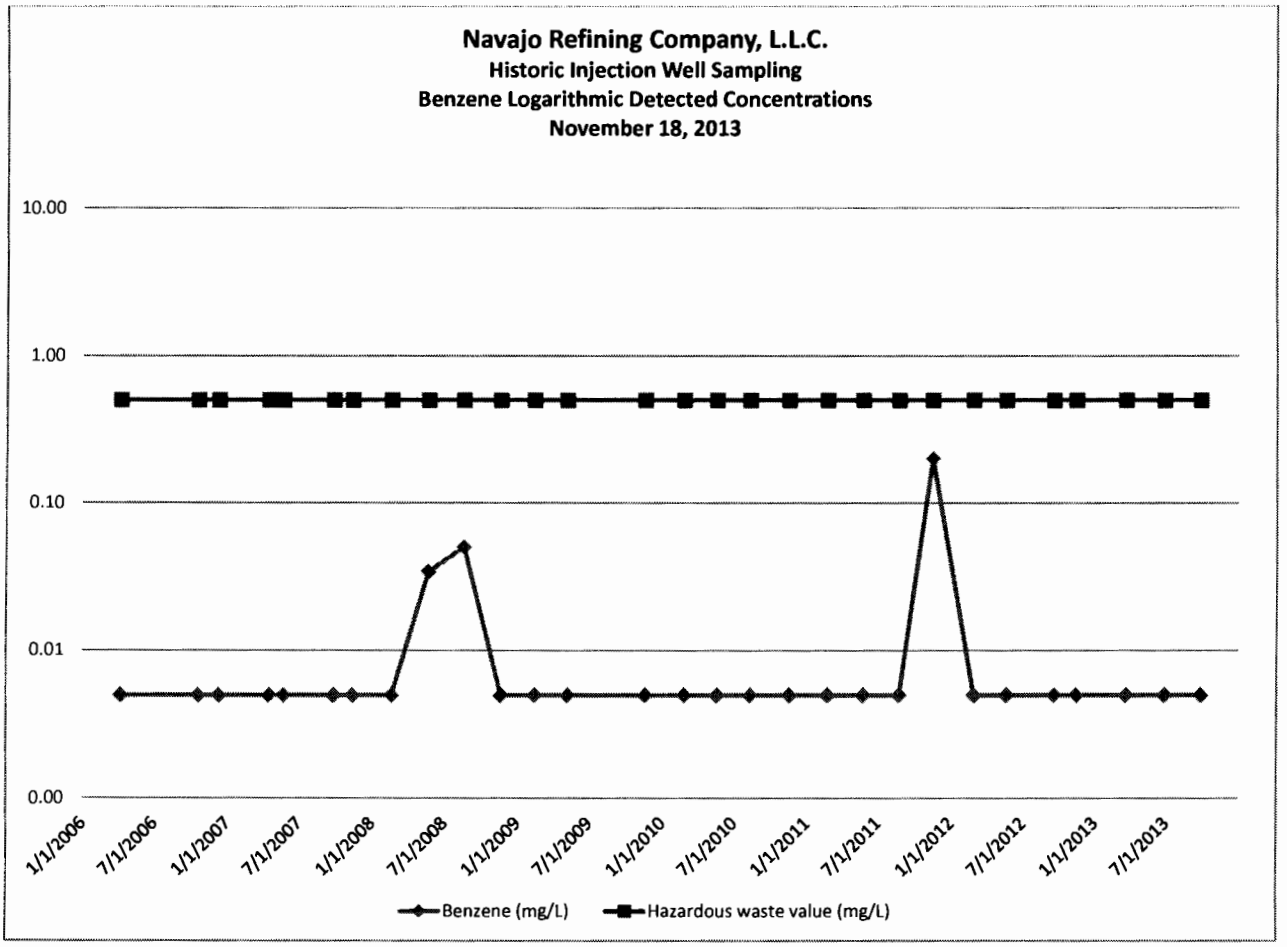
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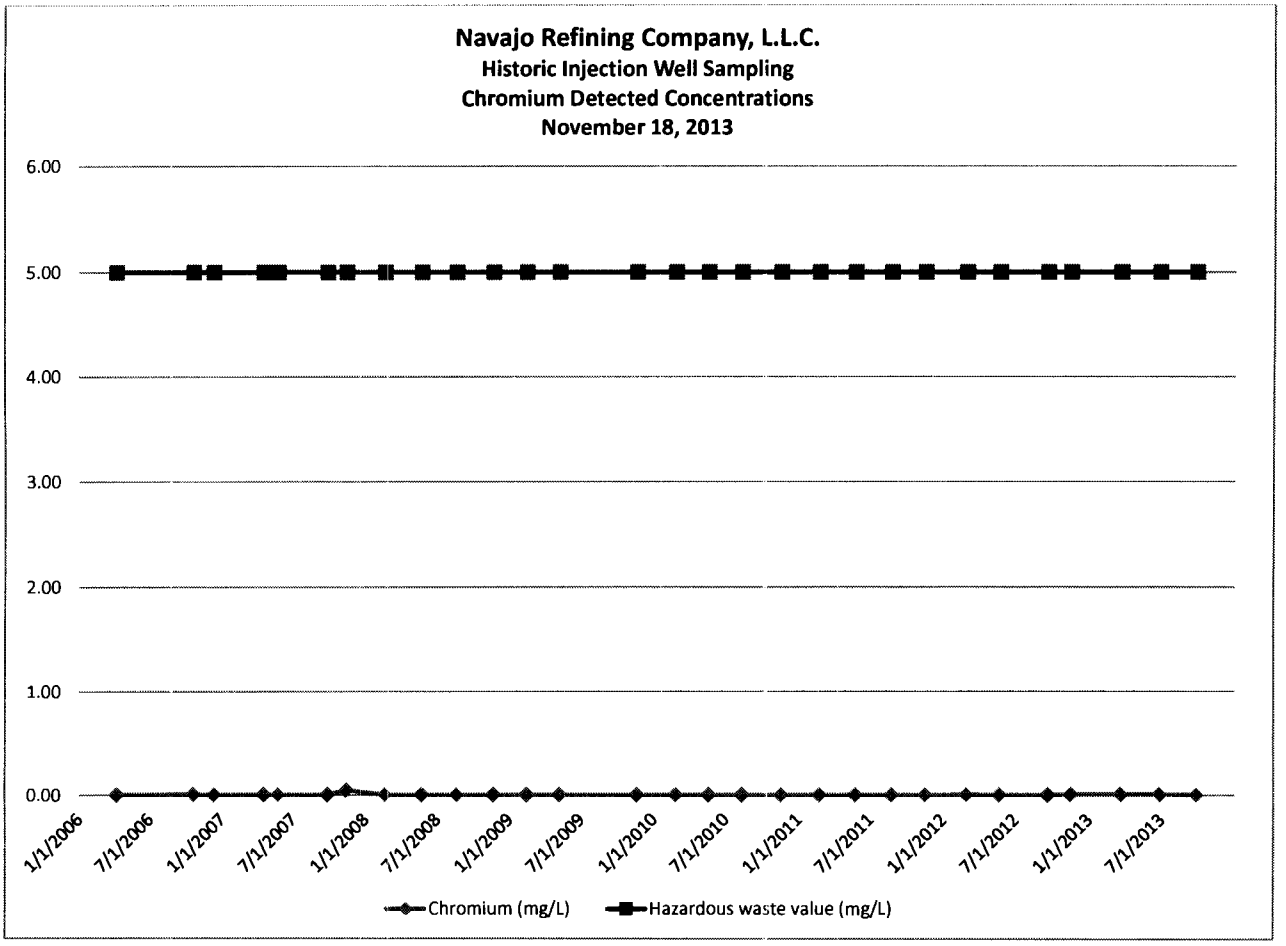
*Nondetect samples are shown at the reporting limit.



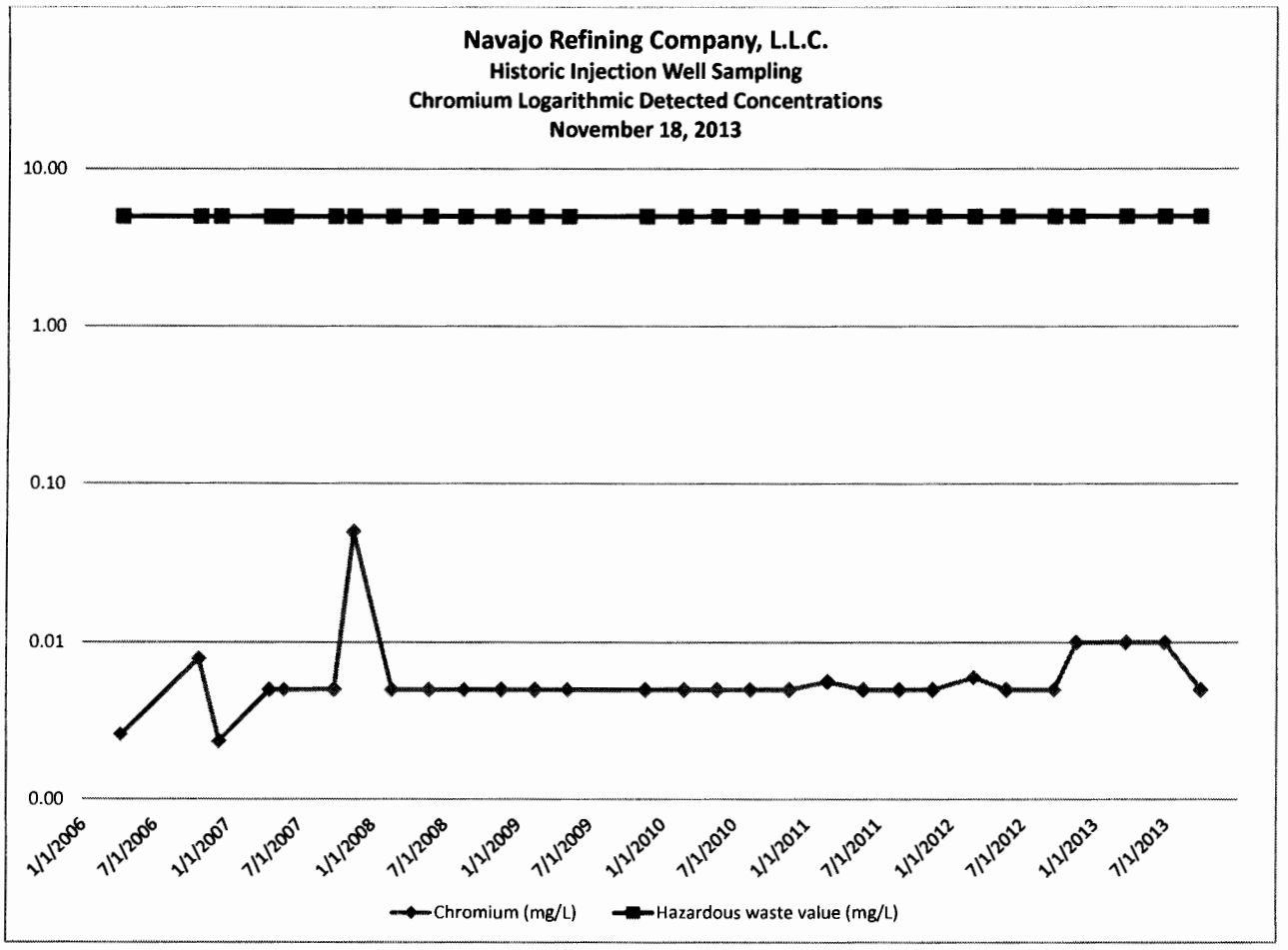
*Nondetect samples are shown at the reporting limit.



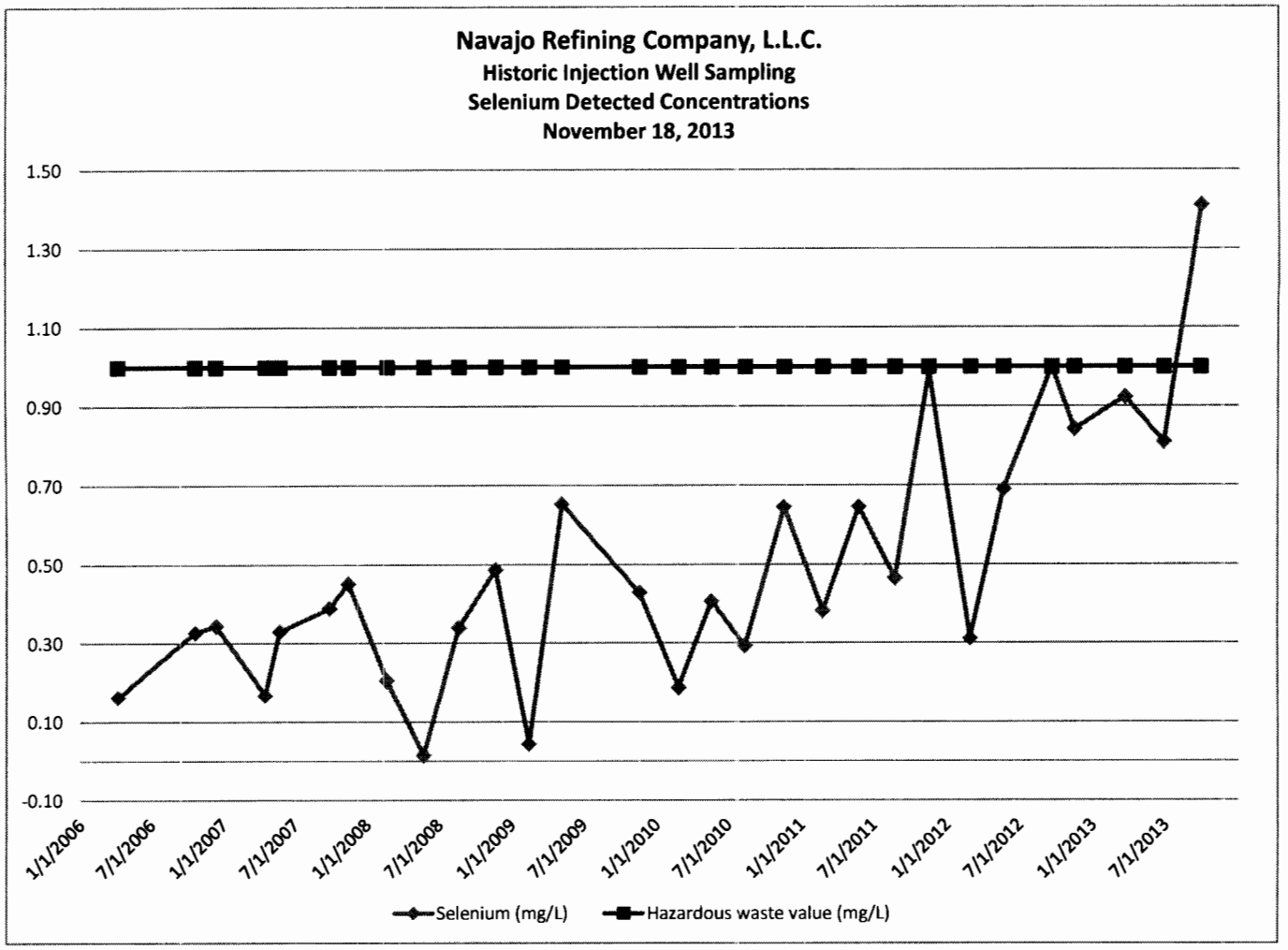
*Nondetect samples are shown at the reporting limit.

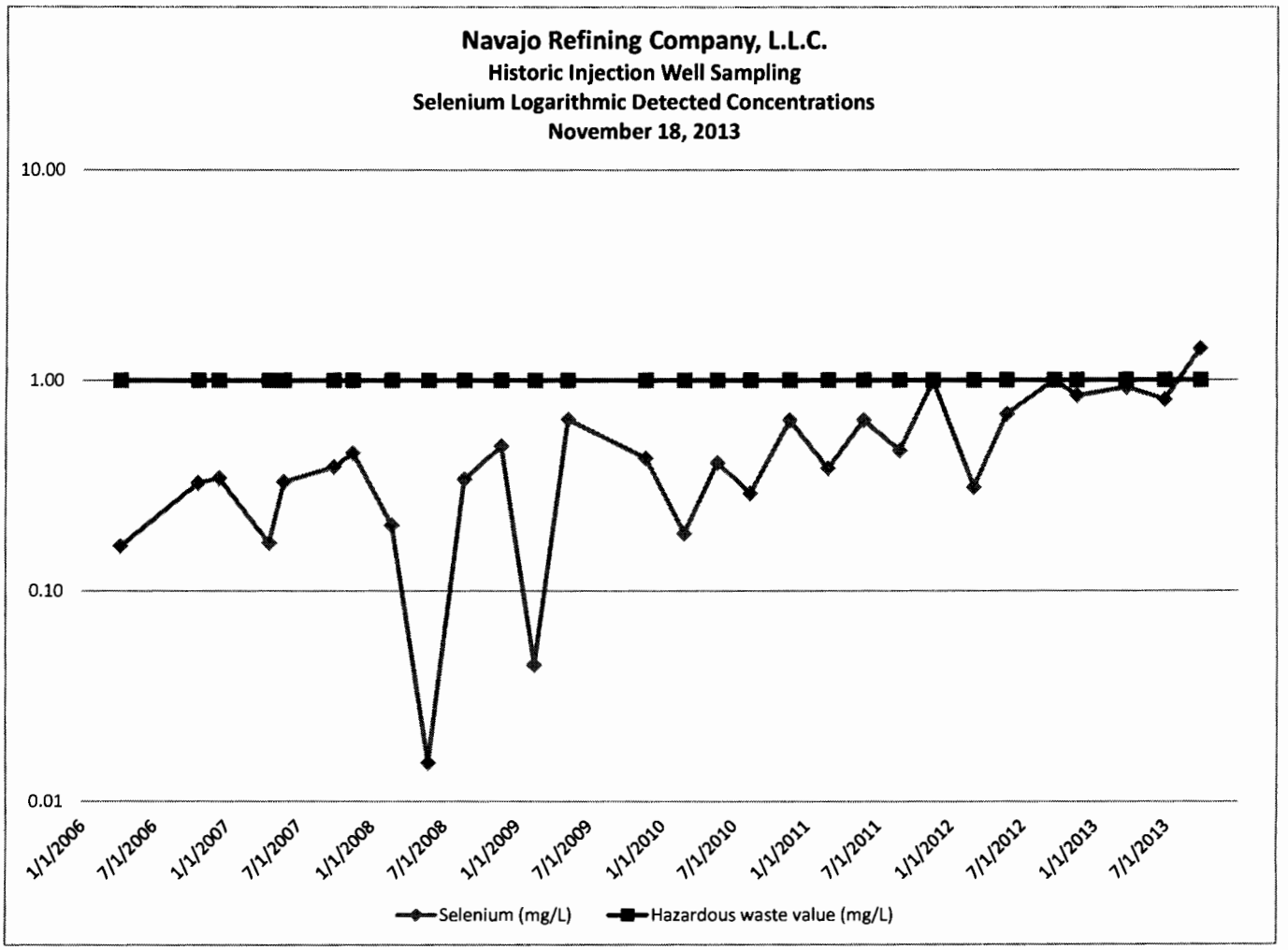


*Nondetect samples are shown at the reporting limit.



*Nondetect samples are shown at the reporting limit.


Navajo Refining Company, L.L.C.
Historic Injection Well Sampling
Selenium Detected Concentrations
November 18, 2013
1.50
1.30
1.10
0.90
0.70
0.50
0.30
0.10
-0.10
1/1/2006
7/1/2006
1/1/2007
7/1/2007
1/1/2008
7/1/2008
1/1/2009
7/1/2009
1/1/2010
7/1/2010
1/1/2011
7/1/2011
1/1/2012
7/1/2012
1/1/2013
7/1/2013
Selenium (mg/L)
Hazardous waste value (mg/L)


Navajo Refining Company, L.L.C.
Historic Injection Well Sampling
Selenium Logarithmic Detected Concentrations
November 18, 2013
10.00
1.00
0.10
0.01
1/1/2006
7/1/2006
1/1/2007
7/1/2007
1/1/2008
7/1/2008
1/1/2009
7/1/2009
1/1/2010
7/1/2010
1/1/2011
7/1/2011
1/1/2012
7/1/2012
1/1/2013
7/1/2013
Selenium (mg/L)
Hazardous waste value (mg/L)

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Thursday, November 14, 2013 11:17 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike; Cobrain, Dave, NMENV
Subject: Initial C-141 Report for 11/7/13 Verbal Notification
Attachments: C-141 for 110713 OCD Reporting 110413.pdf

Carl – attached please find the initial C-141 Report for the verbal notification made on 11/7/13. Please do not hesitate to call w/any questions.

Thanks,
Mike

Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210
(575) 746-5487 (office)
(575) 308-1115 (cell)

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District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Mike Holder
Address: 501 E. Main Street, Artesia, NM 88210	Telephone No. 575-746-5487
Facility Name: Artesia Refinery	Facility Type: Petroleum Refinery

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Refinery wastewater	Volume of Release: Not determined.	Volume Recovered: Not applicable (NA) – See below.
Source of Release: Refinery Wastewater Treatment Plant (WWTP)	Date and Hour of Occurrence Sample taken on 11/5/13 at ~ 2:00 p.m.	Date and Hour of Discovery: Upon receipt of laboratory analytical results on 11/7/13 at ~ 1:41 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD Sante Fe, Carl Chavez; left message NMED Santa Fe, David Cobrain; left message	
By Whom? Mike Holder	Date and Hour: 11/7/13 at ~ 5:20 p.m. (OCD); 11/7/13 at ~ 5:25 p.m. (NMED)	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*

NA

Describe Cause of Problem and Remedial Action Taken.*

The Artesia Refinery is authorized to discharge wastewater from its onsite WWTP to three underground injection control wells pursuant to OCD Permit Nos. UICI-008-1 (WDW-1), UICI-008-2 (WDW-2), and UICI-008-3 (WDW-3). As reported in our immediate notice, on November 7, 2013, the Refinery received laboratory analytical results from a single lab from samples of the WWTP discharge to the three wells taken on November 5, 2013. The results reported total selenium of 0.51 milligrams/liter (mg/l), and selenium of 1.2 mg/l using the Toxicity Characteristic Leachate Procedure (TCLP). Navajo ceased discharging to the wells on November 5, 2013 concurrently with receipt of the sampling data for October 31 that resulted in our November 5 self-report.

The composition of the wastewater discharge on November 5 was generally the same as the Refinery's typical wastewater discharge to the wells, and Navajo has identified certain anomalies in recently reported selenium results, including that selenium levels based on the TCLP are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze whether these results are accurate and valid.

Selenium is a naturally-occurring constituent of the crude oil received and processed at the Refinery, as well as in water used in Refinery processes. Navajo is examining long-term engineering solutions to reduce selenium levels in the Refinery's wastewater discharge, including consideration of various technologies, and has retained an outside engineering firm to assist with this analysis. In addition, the Refinery is promptly taking steps to assess interim, shorter-term methods to lower selenium levels that can be implemented quickly. Navajo will provide OCD with updates on selenium reduction measures consistent with requirements under the ACO.

Describe Area Affected and Cleanup Action Taken.*

As explained above, the wastewater discharge was to three underground injection controls wells permitted by OCD. The discharge is not expected to cause damage or injury because, among other reasons (i) the discharge was not to a watercourse as defined by OCD, (ii) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the TCLP threshold; (iii) the wells are located beneath the lowest formation that could be an underground source of drinking water, (iv) the wells already contain total dissolved solids greater than 10,000 mg/l, and (v) the wastewater discharge was only slightly above the TCLP level of 1.0 mg/l. As a result, the Company has not identified any harm resulting from the discharge, and no immediate cleanup actions were needed or taken. The Company is continuing to take steps to identify the source of elevated selenium and to take corrective measures.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Mike Holder		
Title: Environmental Manager	Approval Date:	Expiration Date:
E-mail Address: Mike.Holder@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: November 14, 2013 Phone: 575-746-5487		

* Attach Additional Sheets If Necessary

Describe Area Affected and Cleanup Action Taken.*

As explained above, the wastewater discharge was to three underground injection controls wells permitted by OCD. The discharge is not expected to cause damage or injury because, among other reasons (i) the discharge was not to a watercourse as defined by OCD, (ii) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the TCLP threshold; (iii) the wells are located beneath the lowest formation that could be an underground source of drinking water, (iv) the wells already contain total dissolved solids greater than 10,000 mg/l, and (v) the wastewater discharge was only slightly above the TCLP level of 1.0 mg/l. As a result, the Company has not identified any harm resulting from the discharge, and no immediate cleanup actions were needed or taken. The Company is continuing to take steps to identify the source of elevated selenium and to take corrective measures.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Mike Holder	Approved by Environmental Specialist:	
Title: Environmental Manager	Approval Date:	Expiration Date:
E-mail Address: Mike.Holder@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: November 13, 2013 Phone: 575-746-5487		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
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State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
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Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Mike Holder
Address: 501 E. Main Street, Artesia, NM 88210	Telephone No. 575-746-5487
Facility Name: Artesia Refinery	Facility Type: Petroleum Refinery

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Refinery wastewater	Volume of Release: Not determined.	Volume Recovered: Not applicable (NA) – See below.
Source of Release: Refinery Wastewater Treatment Plant (WWTP)	Date and Hour of Occurrence Sample taken on 11/4/13 at ~ 5:35 a.m.; discharge on 11/2/13 at ~ 5:55 a.m.	Date and Hour of Discovery: Upon receipt of laboratory analytical results on 11/6/13 at ~ 1:37 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD Sante Fe, Carl Chavez; left message NMED Santa Fe, David Cobrain; left message	
By Whom? Mike Holder	Date and Hour: 11/6/13 at ~ 8:45 p.m. (OCD); 11/6/13 at ~ 8:50 p.m. (NMED)	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*

NA

Describe Cause of Problem and Remedial Action Taken.*

The Artesia Refinery is authorized to discharge wastewater from its onsite WWTP to three underground injection control wells pursuant to OCD Permit Nos. UIC-008-01 (WDW-1), UIC-008-2 (WDW-2), and UIC-008-3 (WDW-3). As reported in our immediate notice, on November 6, 2013, the Refinery received laboratory analytical results from a single lab for our wastewater discharge to the three wells on November 4, 2013. The results reported total selenium of 0.98 milligrams/liter (mg/l), and selenium of 1.1 mg/l using the Toxicity Characteristic Leachate Procedure (TCLP). Also, the data received on November 6 indicated that the discharge to the three wells from WWTP Tank 836 on November 2, 2013 may have been greater than the TCLP level of 1.0 mg/l. As explained in our immediate notice, the average of earlier analytical results from two different labs of samples taken of Tank 836 on November 1, 2013 reported total selenium of 0.974 mg/l and selenium of 1.13 mg/l using the TCLP. Tank 836 was not discharging on November 1, and until receipt of the November 4 discharge data, Navajo did not believe that its discharge on November 2 would have been above the TCLP level for selenium. The November 6 data changed Navajo's thinking on this, and we conservatively reported the November 2 discharge. Navajo ceased discharging to the wells on November 5, 2013 concurrently with receipt of the sampling data for October 31 that resulted in our November 5 self-report.

The composition of the wastewater discharge on November 2 and November 4 was generally the same as the Refinery's typical wastewater discharge to the wells, and Navajo has identified certain anomalies in recently reported selenium results, including that selenium levels based on the TCLP are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze whether these results are accurate and valid.

Selenium is a naturally-occurring constituent of the crude oil received and processed at the Refinery, as well as in water used in Refinery processes. Navajo is examining long-term engineering solutions to reduce selenium levels in the Refinery's wastewater discharge, including consideration of various technologies, and has retained an outside engineering firm to assist with this analysis. In addition, the Refinery is promptly taking steps to assess interim, shorter-term methods to lower selenium levels that can be implemented quickly. Navajo will provide OCD with updates on selenium reduction measures consistent with requirements under the ACO.

§ 261.24 Toxicity characteristic.

(a) A solid waste (except manufactured gas plant waste) exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter, the extract from a representative sample of the waste contains any of the contaminants listed in table 1 at the concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in Method 1311, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE 1—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No.	Contaminant	CAS No.	Regulatory Level (mg/L)
D004	Arsenic	7440–38–2	5.0
D005	Barium	7440–39–3	100.0
D018	Benzene	71–43–2	0.5
D006	Cadmium	7440–43–9	1.0
D019	Carbon tetrachloride	56–23–5	0.5
D020	Chlordane	57–74–9	0.03
D021	Chlorobenzene	108–90–7	100.0
D022	Chloroform	67–66–3	6.0
D007	Chromium	7440–47–3	5.0
D023	o-Cresol	95–48–7	200.0
D024	m-Cresol	108–39–4	200.0
D025	p-Cresol	106–44–5	200.0
D026	Cresol		200.0
D016	2,4-D	94–75–7	10.0
D027	1,4-Dichlorobenzene	106–46–7	7.5
D028	1,2-Dichloroethane	107–06–2	0.5
D029	1,1-Dichloroethylene	75–35–4	0.7
D030	2,4-Dinitrotoluene	121–14–2	0.13
D012	Endrin	72–20–8	0.02
D031	Heptachlor (and its epoxide).	76–44–8	0.008
D032	Hexachlorobenzene	118–74–1	0.13
D033	Hexachlorobutadiene	87–68–3	0.5
D034	Hexachloroethane	67–72–1	3.0
D008	Lead	7439–92–1	5.0
D013	Lindane	58–89–9	0.4
D009	Mercury	7439–97–6	0.2
D014	Methoxychlor	72–43–5	10.0

1 Hazardous waste number.
2 Chemical abstracts service number.
3 Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.
4 If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

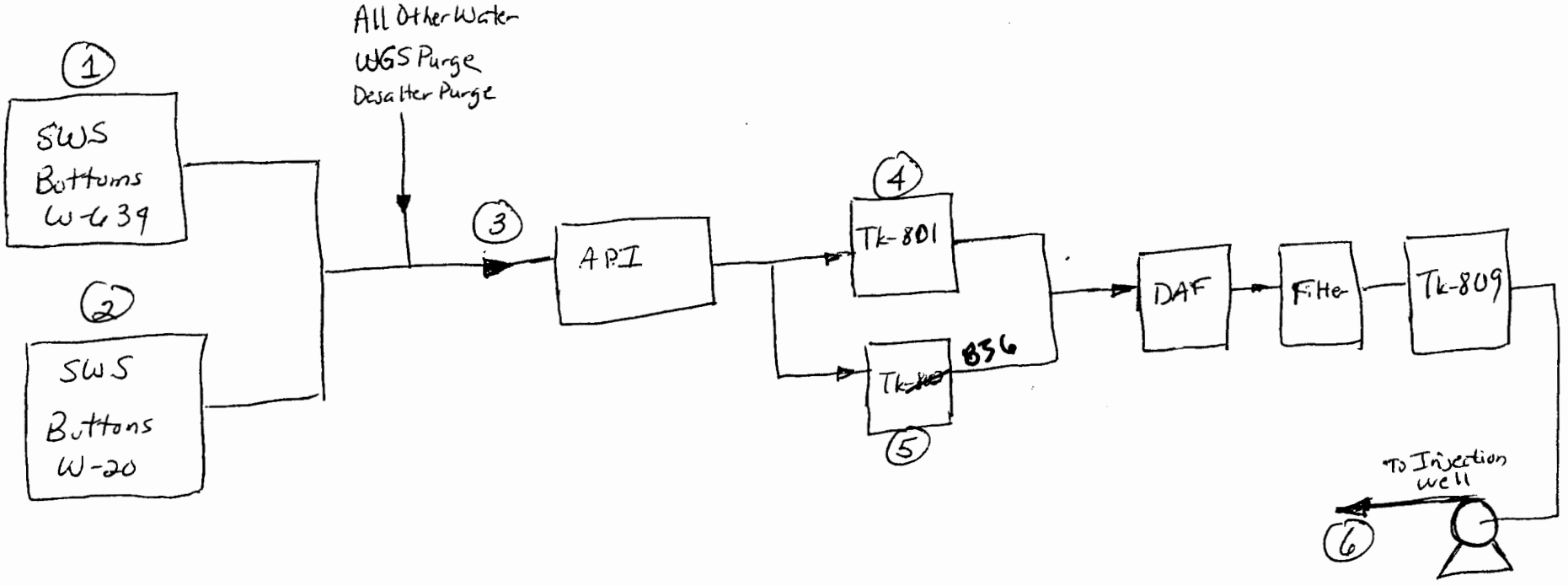
D035	Methyl ethyl ketone	78–93–3	200.0
D036	Nitrobenzene	98–95–3	2.0
D037	Pentrachlorophenol	87–86–5	100.0
D038	Pyridine	110–86–1	5.0
D010	Selenium	7782–49–2	1.0
D011	Silver	7440–22–4	5.0
D039	Tetrachloroethylene	127–18–4	0.7
D015	Toxaphene	8001–35–2	0.5
D040	Trichloroethylene	79–01–6	0.5
D041	2,4,5-Trichlorophenol	95–95–4	400.0
D042	2,4,6-Trichlorophenol	88–06–2	2.0
D017	2,4,5-TP (Silvex)	93–72–1	1.0
D043	Vinyl chloride	75–01–4	0.2

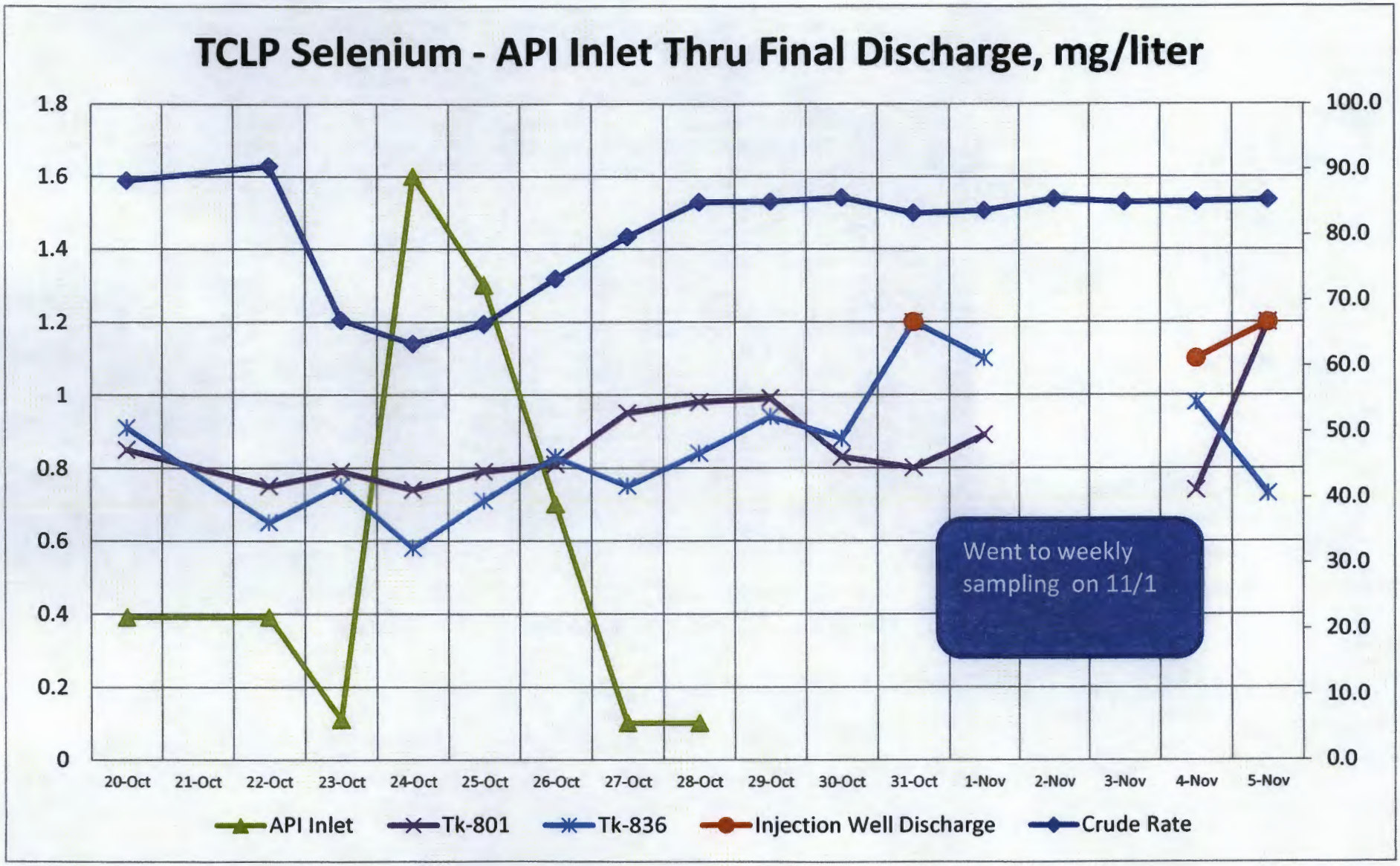
1 Hazardous waste number.
2 Chemical abstracts service number.
3 Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.
4 If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

11/8/13
Mtg. SF
Carl Chan

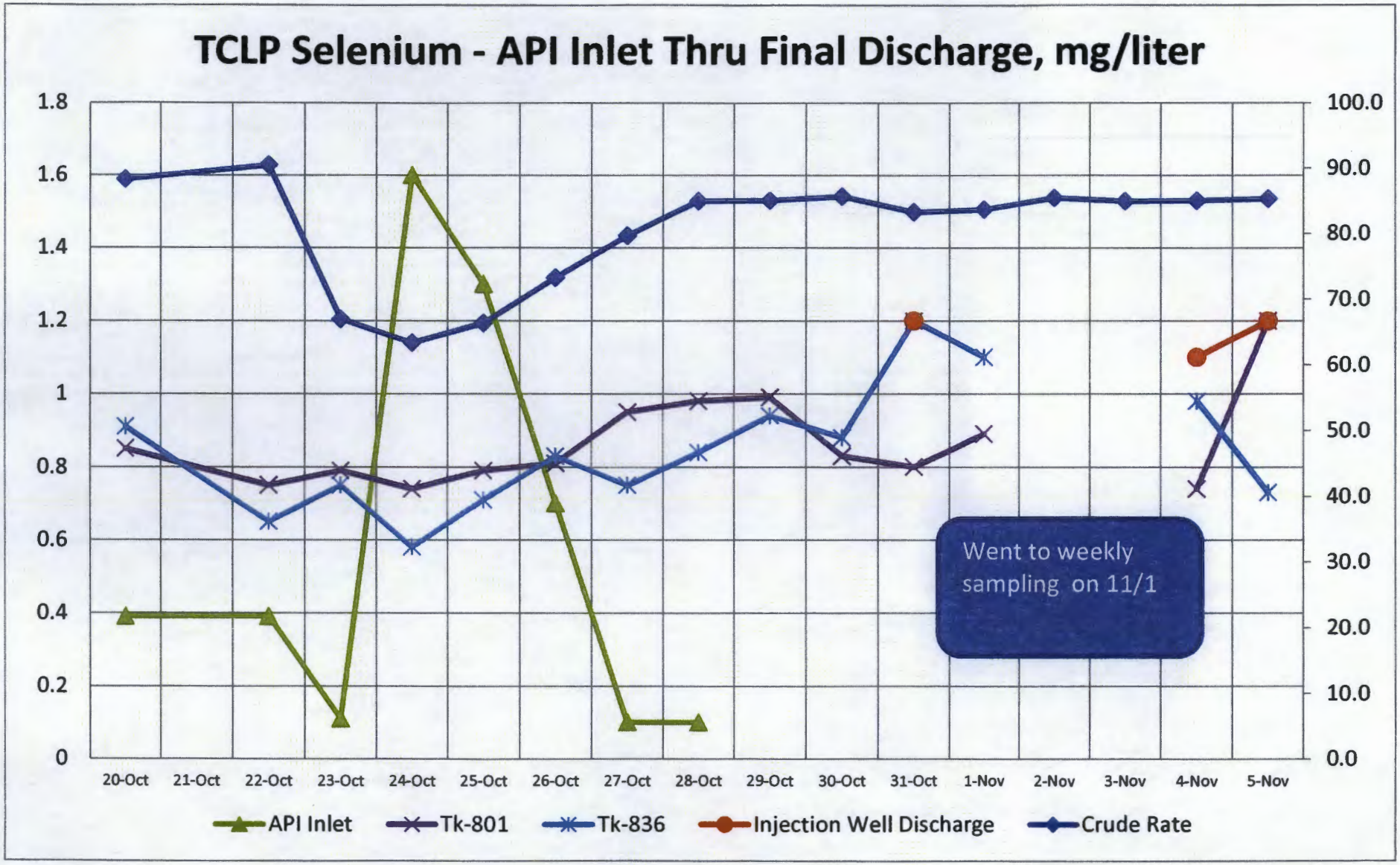
SOUR WATER STREAM

	1	2	3	4	5	6
	SWS Bottoms (W-634)	SWS Bottoms (W-20)	API Inlet	Tk-801	Tk-836	Injection Well Discharge
Average	4.54	3.87	0.59	0.87	0.85	1.17
Deviation from Mean	0.62	0.16	0.46	0.10	0.13	0.04





Data above was above and beyond compliance requirement. Data gathered by company for investigative analysis.



Data above was above and beyond compliance requirement. Data gathered by company for investigative analysis.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, October 22, 2013 8:39 AM
To: Holder, Mike (Michael.Holder@hollyfrontier.com)
Cc: Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: FW: Elevated Selenium in Injection Fluids from Artesia Refinery into Navajo UIC Class I (NH) Disposal Wells

Mike:

Based on Ms. McWatters visit yesterday and the ensuing communication on the selenium in refinery effluent to the OCD UIC Class I (NH) Disposal Wells that installation of a treatment system (mobile clarification) to knock out the selenium may be required.

Therefore, Navajo Refining Company indicated that it has retained a consultant for the waste water issues. This consultant should be able to design and install a portable treatment system to knock out the selenium and address the immediate problem.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

---

From: Chavez, Carl J, EMNRD
Sent: Tuesday, October 22, 2013 8:19 AM
To: VonGonten, Glenn, EMNRD
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD
Subject: Elevated Selenium in Injection Fluids from Artesia Refinery into Navajo UIC Class I (NH) Disposal Wells

Glenn:

Some article related to refinery sources for selenium. It requires a treatment system to knock out the selenium before injection.

The refining of crude oil can result in wastewater selenium concentrations above state and federal guidelines. The customer analyzed multiple point
sources within the facility and determined that the main contributor of selenium was the sour gas stripper (click here and
http://books.google.com/books?id=qGH37iOW7yMC&pg=PA10&lpg=PA10&dq=oil+refinery+sources+for+se

lenium&source=bl&ots=LQu9ZTinTj&sig=AfGpxcNoskeubAV6V5-7PKKfOl4&hl=en&sa=X&ei=MIRmUo3mCqm02wWss4HoAQ&ved=0CEcQ6AEwBQ#v=onepage&q=oil%20refinery%20sources%20for%20selenium&f=false
for articles and information). Siemens was contacted to design a treatment system capable of consistent compliance with the selenium
discharge requirements.

****

Inputs of Selenium from Oil Refineries

The heavy crude oils that are produced in the SJV and refined in the Bay-Delta are especially enriched in Se (400 to 600 µg/L) (Cutter and San Diego-McGlone, 1990). So, refinery effluents have historically provided a quantitatively important load of Se to the Bay-Delta. Furthermore, the Se in these effluents is highly concentrated in a relatively small volume of wastewater, so inputs increase the ambient concentration of Se, especially around the Carquinez Strait (Cutter, 1989). In eight determinations of refinery effluents in 1987 and 1988, Cutter and San Diego-McGlone (1990) estimated that annual Se loadings could vary from 2,035 lbs per year to 4,641 lbs per year from all refineries combined. Annual loads from 1986 to 1992 ranged from 3,103 to 7,457 lbs Se per year as reported by the (Table 10) CSFBRWQCB (1993). In March 1988, refineries inputs accounted for 74% of the internal Se input to Bay-Delta; in May 1988, they accounted for 96%. Selenium inputs from refineries are relatively constant through the year, so they have their greatest influence on Se concentrations during the low river inflow season.

As a result of regulations imposed by the CSFBRWQCB, refinery inputs to the Bay-Delta declined after July 1998. The annual Se loads allowed for the five major refineries by state permit (CSFBRWQCB, personal communication, Johnston Lam and Khalil Abu-Saba, 2000) are listed in Table 10 in comparison to the annual range reported by the CSFBRWQCB from 1986 to 1992 (CSFBRWQCB, 1993). By this estimate, refinery inputs declined by about half (to approximately 2,200 lbs Se per year), from the amount measured from 1986 to 1992 (Cutter, 1989; Johns et al., 1988). On the other hand, refinery effluents also are regulated to concentrations of 50 µg/L Se and to the volumes discharged in the late 1980's. If volumes of effluent remain what they were in the late 1980's, the resulting Se load would be 1,400 lbs Se per year. Treatment technologies in the refineries also remove only selenite. So the Se discharged was, presumably, mostly selenate in 1999; historic discharges were >50% selenite. No mass balance model has yet been constructed to evaluate whether 1,400 lbs or 2,200 lbs Se per year best describe refinery discharges, but the difference is relatively small considering the variability within years and within refineries (Table 10). Preliminary data suggest the selenite concentration peak near the refineries disappeared after the treatment technologies were implemented (Cutter et al., in preparation).

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

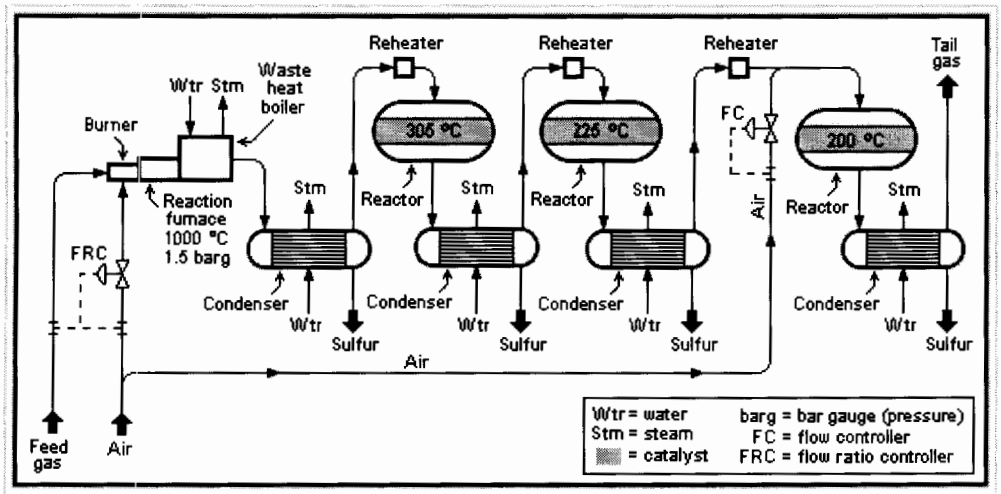
- 5 References

History

The process was invented by Carl Friedrich Claus, a chemist working in England. A British patent was issued to him in 1883. The process was later significantly modified by a German company called IG Farben[6]

Process description

A schematic process flow diagram of a basic 2+1-reactor (converter) SuperClaus unit is shown below:



Schematic flow diagram of a straight-through, 3 reactor (converter), Claus sulfur recovery unit.

The Claus technology can be divided into two process steps, thermal and catalytic.

Thermal step

In the thermal step, hydrogen sulfide-laden gas reacts in a substoichiometric combustion at temperatures above 850 °C [7] such that elemental sulfur precipitates in the downstream process gas cooler.

The H_2S content and the concentration of other combustible components (hydrocarbons or ammonia) determine the location where the feed gas is burned. Claus gases (acid gas) with no further combustible contents apart from H_2S are burned in lances surrounding a central muffle by the following chemical reaction:

$$2\ H_2S + 3\ O_2 \rightarrow 2\ SO_2 + 2\ H_2O \qquad (\Delta H = -4147.2\ \text{kJ mol}^{-1})$$

This is a strongly exothermic free-flame total oxidation of hydrogen sulfide generating sulfur dioxide that reacts away in subsequent reactions. The most important one is the Claus reaction:

Application Description AD/ANAINST/008-EN

Sour water stripping tower

Oil & Gas

Dealing with sour water

Refineries classify sour water as any water that contains sulfur compounds. Sour crude oil processed by a refinery liberates hydrogen sulfide (H_2S) during various processing steps. When H_2S dissolves in water, sour water is the result. Since sulfur is the main element in sulfuric acid, sour water tends to be acidic, causing corrosion problems within the refinery's pipework.

Sour water may also contain other contaminants including ammonia, phenols and even cyanide. The quench tower, fluid catalytic cracking unit (FCCU), steam cracking units and any of the distillation columns can all produce sour water within a refinery. Removal of the hydrogen sulfide and ammonia involves converting these compounds back to a gaseous form. The ideal pH for stripping hydrogen sulfide is less than 5.5. Ammonia removal requires a higher pH and is best stripped at pH values greater than 10. Because of this difference, some refineries use two stripper columns to handle each contaminant. If the refinery chooses to use a single stripper column, as in the diagram, a controlled pH of 8 is generally acceptable to remove both chemicals.

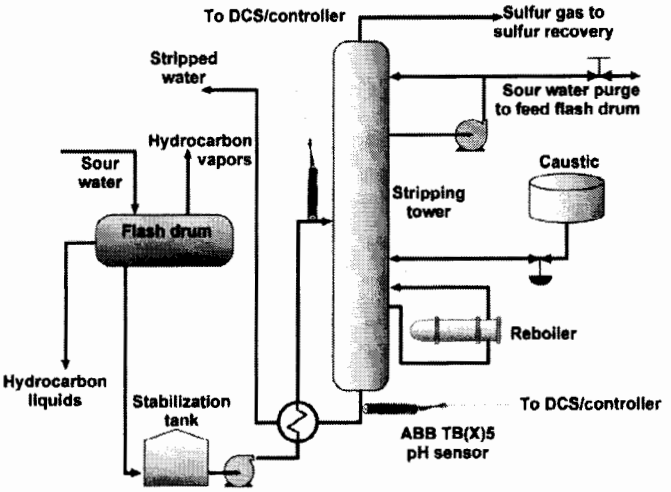
Sour water stripper

In the first stage of the stripping process, called degasification, the sour water is pumped into a flash drum to remove residual hydrocarbons. Hydrocarbon gases usually return to the Sulfur Recovery Unit (SRU) for additional processing.

From the flash drum the sour water goes to a stabilization tank. The purpose of this step is to increase residence time, further separating any leftover liquid hydrocarbons and solids while slowing the flowrate into the stripper. From the stabilization tank, the degassed sour water passes through a heat exchanger for preheating prior to entering the stripper column.

Steam entering the lower part of the stripper column partially originates from condensate that has collected at the bottom of the column; this is passed through a reboiler before being injected back into the column. As the steam mingles with the sour water it removes any dissolved gases.

The steam, together with gaseous ammonia and H_2S, flows from the top of the stripper column back to the SRU for additional processing. The newly stripped water is either used to produce steam in the reboiler or is pumped off to the waste treatment plant or desalter for additional processing.



Measurement challenges

pH control is essential to the effective processing of both H_2S and ammonia. A refinery often injects caustic into the stripper column to help maintain correct pH values. Some refineries measure the pH leading into the stripper, but the high concentrations of hydrogen sulfide and ammonia make this a maintenance intensive application. Most refineries make the pH measurement on the stripped-water line coming from the bottom of the stripper, as indicated.

Column temperatures of 82 °C (180 °F) mean this a high temperature application. Trace amounts of sulfides, ammonia and cyanides may also collect at the pH measurement point. These chemicals poison pH sensor reference junctions by reacting with the silver ions present.

The ABB solution – TB(X)5 pH sensors

ABB recommends that pH is measured on the condensate collected from the bottom of the stripper column. Pressures at this point are typically less than 20 psig (1.3 bar) but, because of the high temperatures, ABB recommends that this pH measurement be made on a conditioned sample line or fast loop. ABB's Next Step Wood Reference is the best solution to the problem of reference poisoning by sulfide and ammonia attack; the TB(X)5 sensors have double or even triple the lifespan of conventional double-junction gel filled pH sensors. The ABB coat-resistant J-glass electrode is the preferred measurement electrode style. These measurements often take place in hazardous areas; suitable instruments include the ABB TB82PH transmitter with intrinsic safety barriers or the new APA592 Endura transmitter with Exd housing.

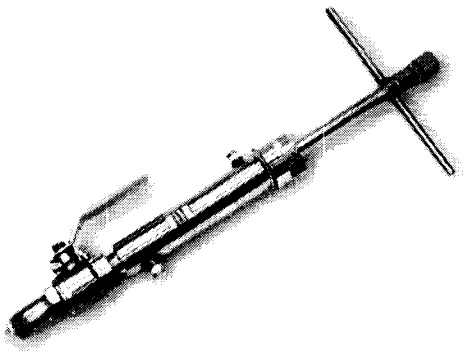


Fig. 1 The TB(X)587 is ideal for retractable installations up to 150 psig (10 bar)



Fig. 2 The TB(X)551 can be mounted into 1 inch tees in sample line installations

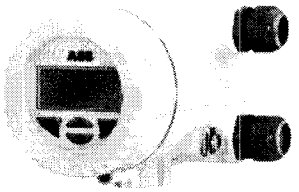


Fig. 3 New APA592 Endura transmitter with Exd housing

For more information please contact:

ABB Limited
Process Automation
Oldends Lane
Stonehouse
Gloucestershire GL10 3TA
UK
Tel: +44 1453 826 661
Fax: +44 1453 829 671

ABB Inc.
Process Automation
843 N Jefferson Street
PO Box 831
Lewisburg 24901-9509
USA
Tel: +1 800 HELP 365 (435 7365)
Fax: +1 304 647 1862

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AD/ANAINST/008-EN 10.2011

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Process developed for enhanced H2S recovery from sour-water strippers

05/11/2009

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The Super Sour design configuration is being implemented at Gujarat refinery with start-up planned by yearend 2009.

The design has applications for other processes with high concentrations of H_2S in water.

Controlling emissions

Stringent environmental regulations that emphasize controlling H_2S/SO_2 emissions in turn necessitate higher recovery of H_2S from sour water in sour water stripper unit designs. Usually some amount of H_2S is lost along with vent gases from the feed stabilization tank of stripper unit. This article describes a process design of a sour-water stripper to arrest the loss of H_2S and recover it through simple and safe design.

Typically the feed stabilization tanks are designed according to API-650/620 to operate at a low pressure of 0.015-0.02 kg/sq cm (g) (0.21-0.28 psig). At this pressure, considerable amounts of hydrogen sulfide (H_2S) are released from the tank due to its high vapor pressure. Traditionally, these vent gases from the tank are routed to the incinerator or stack of sulfur recovery units and are lost. The quantity of the unrecovered acid gas from the feed tank is around 10% of the sour-water feed's H_2S (depending on operating conditions). Some of the licensors utilize steam jet ejectors on the feed stabilization tank to suck these gases from the tank and recover H_2S after employing a small amine scrubber downstream of the ejector with precise tank pressure-control system. In such designs, steam is required continuously for operation of ejectors, and the pressure of the tank must be controlled delicately at very low pressure.

Late in 2007, the process design engineering group of Indian Oil Corp. Ltd. developed a new and safe design process called "Super Sour" for one of its refineries' new sour-water stripper plant. The new design ensures minimum H_2S loss from the unit and meets environmental regulations.

This process employs installation of an additional hot-feed flash drum upstream of the cold-feed surge drum. The H_2S rich vapors from the hot flash drum are routed to a small amine scrubber to absorb the liberated H_2S. The H_2S lean gas containing primarily hydrocarbons is then routed to the incinerator of the sulfur-recovery unit. The absorbed H_2S in rich amine is recovered in the amine regenerator and is fed to the sulfur unit for converting to sulfur. Liquid hydrocarbon will continue to be separated in the cold-feed surge drum downstream to the hot flash drum.

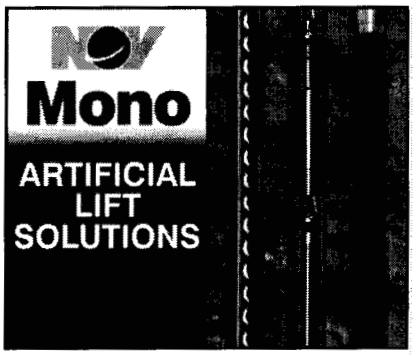
The purpose of the hot flash drum is to liberate enough H_2S from the feed sour water so that when the same is cooled and routed to the feed stabilization tank operating at almost atmospheric pressure, no H_2S is lost from the tank.

This process does not involve additional continuous utility consumption (i.e., ejector steam) and precise suction pressure control scheme for the tank-ejector system. This will offer an intrinsically safe, simple, and efficient solution to arrest the loss of H_2S and recover the same from feed stabilization tank.

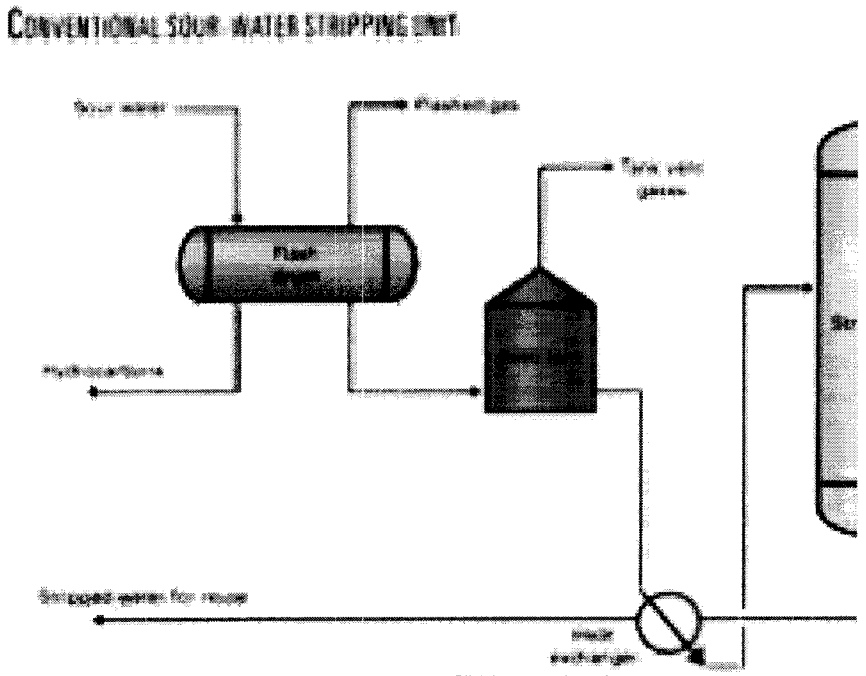
Background

Refineries that process crudes containing sulfur will liberate the sulfur in various unit operations as H_2S. Water-containing H_2S (sour water) may contain other impurities, such as ammonia (NH_3), phenol, CO_2, and cyanides. Sour water is produced from most of the refinery process units, such as atmospheric and vacuum distillation units, hydrotreating units, hydrocrackers, steam crackers, and fluid catalytic cracking (FCC) units. Concentrations of both H_2S and ammonia contaminants are highest in sour water generated from hydrotreating, hydrocracking, and FCC units.

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Reuse or disposal of such sour water containing H_2S, ammonia, phenol, and cyanides requires removal of these contaminants from the water by the stripping process. The typical stripping process (Fig. 1) uses steam at the bottom of the stripper through a reboiler to force both the dissolved H_2S and ammonia (NH_3) out of the water into the gas phase for recovery of H_2S in a sulfur-recovery unit (SRU).

The stripped water is usually reused as process water in other parts of the refinery units or otherwise sent to the waste-water treatment plant for further treatment before reutilization.

Conventional process

Fig. 1 shows a typical conventional sour-water stripper design. Before the stripper tower, sour-water feed is first pumped into the flash drum. This has two purposes:

1. To remove hydrocarbon vapors.
2. To remove hydrocarbon liquids.

The flash drum typically operates at low pressure (~0.7-1.0 kg/cc (g)) to flash off the lighter hydrocarbons. The flashed vapors are routed to a low-pressure system such as stripper column overhead, incinerator stack of an SRU after burning or acid flare. The liquid hydrocarbons are separated in the flash drum by gravity separation into the drum's hydrocarbon collection compartment.

Sour water is then pumped to feed stabilization tank that is used to provide adequate residence time for additional hydrocarbon removal and for minimizing feed composition fluctuations because sour water is produced from different sources in a refinery. Significant compositional fluctuations cause poor stripping operation in the tower, resulting in either not consistently meeting product specification or wasting steam by overstripping. The constant feed composition and flow rate from the feed stabilization tank enables better control of the stripper tower and consistent stripped sour-water quality.

Sour water from the stabilization tank is heated in a feed-bottom heat exchanger by hot-stripped water from the stripper bottoms and fed to the tower as feed. As the sour water flows down the tower, H_2S and ammonia are stripped off by steam or reboiled vapor from the bottom of the tower. Use of live steam as stripping agent adds more water to the tower.

Normally low-pressure steam is used in the bottom reboiler to generate vapor in the tower operating in the range of 0.7 –1.2 kg/sq cm (g) top pressure. H_2S, ammonia, and steam rise to the tower cooling section, which is controlled at 90° C. by pumped around cooler at the top of the tower. Low overhead temperatures, less than 80° C. can cause problems due to formation of ammonium salts that may plug process lines.

Sour gases containing H_2S and ammonia from the top of the stripping tower are routed to the SRU.

The problem

Indian Oil's refinery, in the state of Gujarat, was installing a new sour-water stripper unit as a part of residue upgrade. Currently the refinery operates four old sour-water stripping units based on convectional striping process designs.

The process objective of new sour-water stripper units in the residue upgrade project was to treat the sour water generated from the diesel hydro-desulfurization unit, vacuum gas oil hydrotreater, and isomerization unit for removing H_2S and ammonia to meet stripped-water specification of less than 50 ppm (wt) H_2S and ammonia.

FEED TO SOUR-WATER STI

Stream No.	Parameters	I
1	Temperature	'
2	Pressure	I
3	Vapor fraction	
4	Mole weight	

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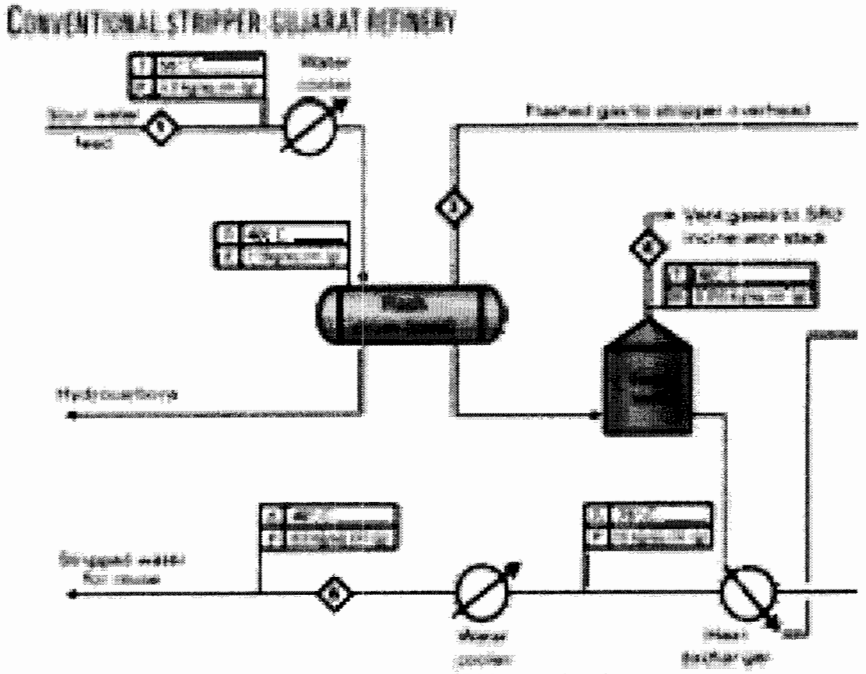
The new unit was to be designed to handle a total sour-water feed rate of 57,402 kg/hr (5.7 tonnes/hr) with composition as summarized in Tables 1 and 2.

FEED COMPOSITION OF SOUR-WATER STRIPPEI

Stream No.	Compo-nents	Mi
1	Ammonia	1
2	H_2S	2
3	Water	53
	Total	**57**

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Because the Gujarat refinery is already operating with four conventional units of sour-water striping process, the same was considered for the initial design of the new stripper.



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Fig. 2 shows flow of the initial design configuration of sour-water stripper unit for the Gujarat refinery, according to the traditional configuration.

SIMULATED RESULTS FOR CONVENTIONAL SOUR-WATER STRIPPER

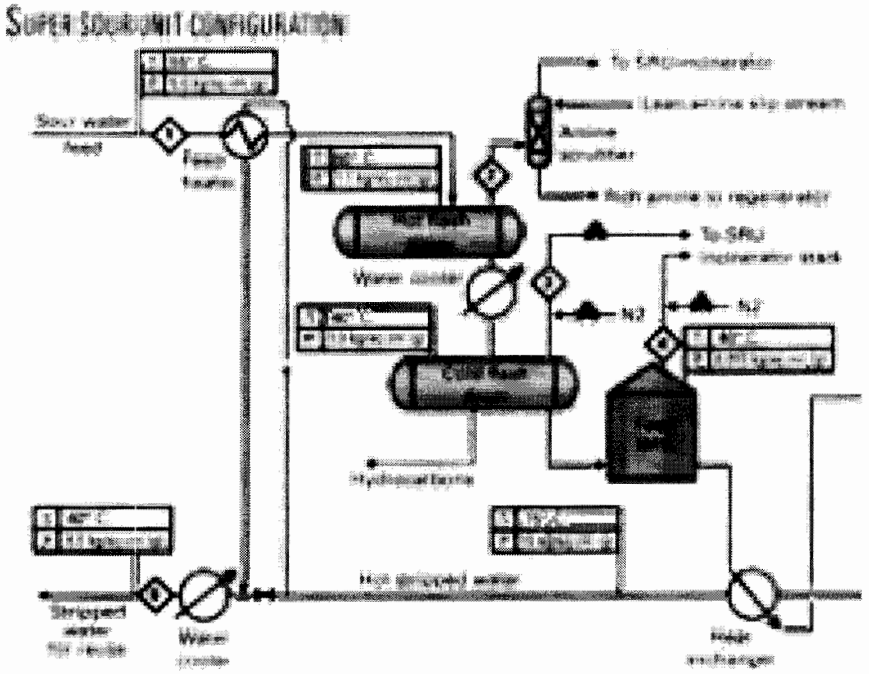
Stream No.		1 Feed	3 Flashed gas from cold flash drum
1	Temperature, °C.	55.0	40.0
2	Pressure, kg/sq cm (g)	5.0	1.1
	Component flow rate		
3	Ammonia, kg/hr	1,058.10	0.122
4	H_2S, kg/hr	2,348.60	45.0
5	H_2O, kg/hr	53,995.3	0.854
	Total	57,402.0	46,976

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In the conventional design, sour-water feed to unit arrives in the flash drum after cooling to 40° C. from 55° C. The feed is cooled to reduce the vapor pressure of sour water to minimize H_2S loss from storage tank. The flash drum is floated with stripper column overhead, which is operating at pressure of 1.1 kg/sq cm (g). After hydrocarbon vapors are flashed off in the flash drum, feed enters the feed stabilization tank operating at almost atmospheric pressure condition (i.e., at 0.21335 psig pressure). The tank is designed according to API-650. At this low pressure, a considerable amount of H_2S is released from the storage tank due to its high vapor pressure. The vent gases from the tank are routed to the incinerator of SRU and are lost. The loss is around 7.5% of the feed H_2S (Table 3). Environmental regulations do not allow emissions of these vent gases containing H_2S to incinerator stack or atmosphere because it leads to higher emissions of H_2S and SO_2.

New design

The new process design developed by Indian Oil, called Super Sour, for sour-water stripping ensures minimum or no H_2S loss from the unit resulting in enhanced recovery of H_2S compared with the traditional designs.



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This process (Fig. 3) employs installation of an additional small-diameter hot feed flash drum (essentially, a typical vapor-liquid separator) upstream of cold-feed surge drum. The purpose of the hot flash drum is to liberate enough H_2S from the sour-water feed so that, when it is cooled and routed to the feed stabilization tank (operating at almost atmospheric pressure) there will be no bleed of H_2S from the tank, resulting in no loss of H_2S from the tank.

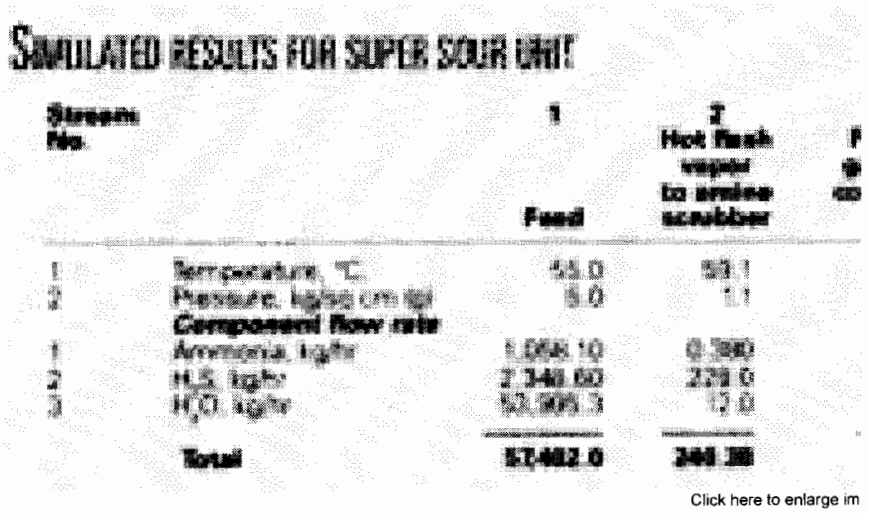
In this design, the hot flash drum is held at around 60° C. by heating the sour-water feed with hot-stripped water coming from the outlet of feed bottom exchanger. This requires no additional hot utility.

The H_2S rich vapors from hot flash drum are routed to a small amine scrubber to absorb the liberated H_2S. The lean gas from absorber containing primarily hydrocarbons is then routed to the incinerator of the SRU. The absorbed H_2S in rich amine is recovered in the amine regenerator and fed to the sulfur unit for conversion to sulfur.

Flashed feed from hot drum is cooled to 40° C. before being routed to the cold-feed surge drum for separation of hydrocarbon oil from water. This also reduces the vapor pressure of sour water. After separation of liquid hydrocarbon in cold-feed surge drum, sour water is routed to the stripper tower through the feed stabilization tank. The cold-surge drum and feed tank pressure is maintained by the nitrogen makeup.

Results

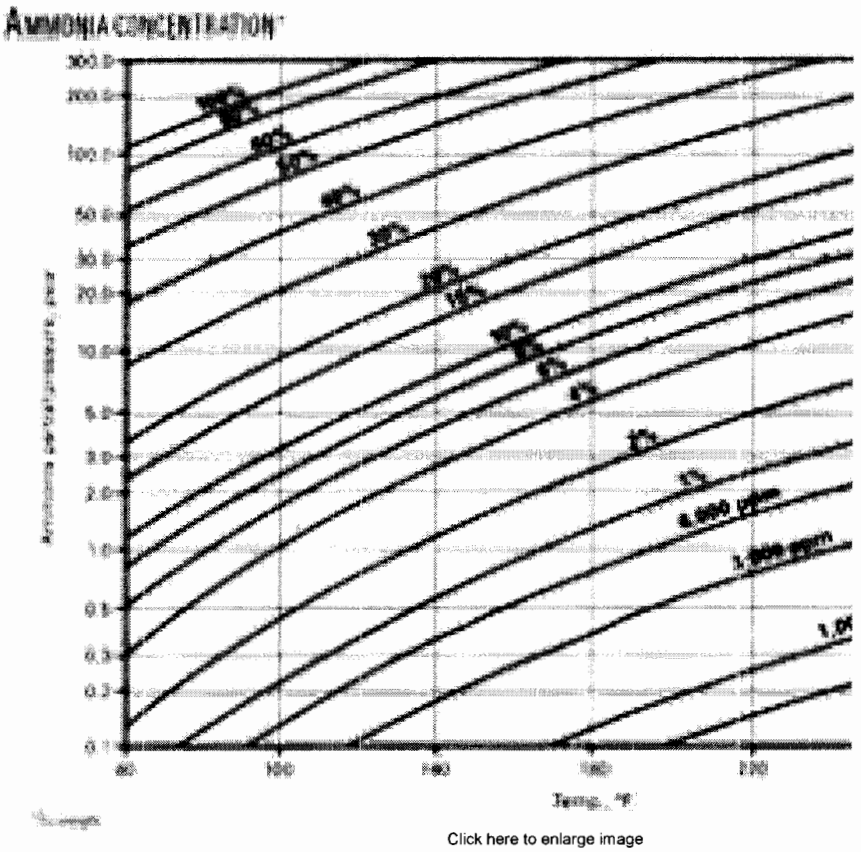
This design results in no loss of H_2S from the feed stabilization tank, as the simulated numbers of Table 4 show. The electrolyte package of Chemstations USA (Chemcad V. 6.1) was used to model and simulate the sour-water stripper unit.



Stream No.		1 Feed	2 Hot flash vapor to amine scrubber	F
1	Temperature, °C.	45.0	57.1	
2	Pressure, kg/sq cm (g)	5.0	1.1	
	Component flow rate			
1	Ammonia, kg/hr	1,066.10	0.380	
2	H_2S, kg/hr	2,348.60	278.0	
3	H_2O, kg/hr	53,985.3	13.0	
	Total	57,402.0	341.38	

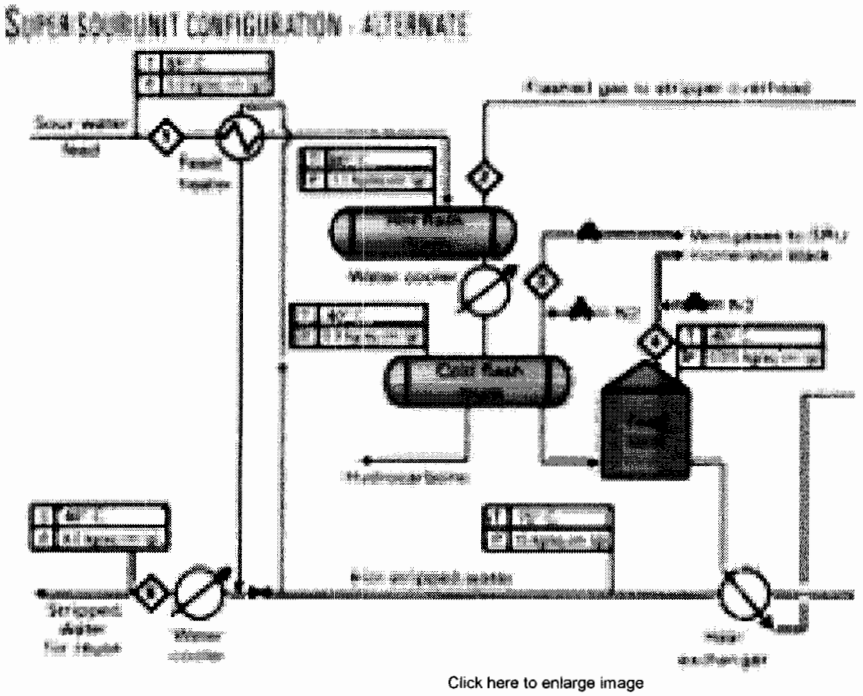
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At the elevated temperature of around 60° C. of hot flash drum, the ammonia going to the gas phase from the hot drum will be very marginal (stream No. 2 of Table 4) due to its high solubility in water as compared with the H_2S. Thus the ammonia buildup in the amine regenerator due to this approach will be insignificant. However, an ammonia purge stream from the amine overhead accumulator back to the cold surge drum of sour-water stripper is to knock off any ammonia buildup. Fig. 4 may be referred to for partial pressure of ammonia over aqueous solution.



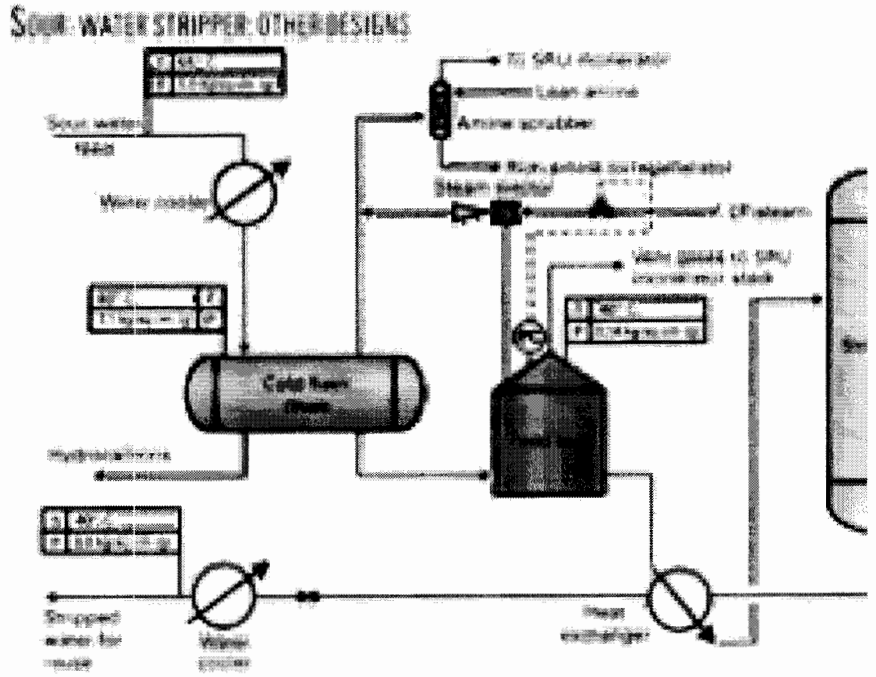
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In an alternative configuration, vapors from the hot flash drum containing primarily H_2S may be directly routed to the stripper overhead line for recovery of sulfur along with the stripper overhead vapors. This configuration does not require installation of a small amine scrubber column for absorbing the H_2S from hot flash drum vapors. Fig. 5 shows the schematic of this configuration.



Click here to enlarge image

This configuration can be adopted where the likelihood of lighter hydrocarbon coming along with sour water is minimum or nil. Otherwise these hydrocarbons may find their way to the SRU, which will be detrimental to its operation.



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2. Newman, Stephen A., Sour Water Design by Charts (Part-1, Part-2, & Part 3), Hydrocarbon Processing, September 1991, October 1991, & November 1991.

The authors



Mukesh Kumar Sharma (sharmamk2@iocl.co.in) is deputy manager (process design) for Indian Oil Corp. Ltd., New Delhi. He has 9 years of varied experience in process engineering, process simulations and design, troubleshooting, and optimization of various gas-liquid treating processes in petroleum refineries. Before joining the process design engineering group, he had worked as a senior process engineer at the Panipat refinery. He has also worked as a process engineer for crude & vacuum distillation units of the refinery. Sharma obtained his BTech (honors; 1999) in chemical engineering from the Institute of Technology, Varanasi, India.

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Ashis Nag (naga@iocl.co.in) has worked for Indian Oil for almost 32 years and at present heads its process design section. He has worked on different refinery units including reformers and hydrocrackers and carried out assignments in commissioning, operations, process design, and technical services. Nag obtained his BS (1976) in chemical engineering from Jadavpur University, Calcutta.

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Process developed for enhanced H2S recovery from sour-water strippers

05/11/2009

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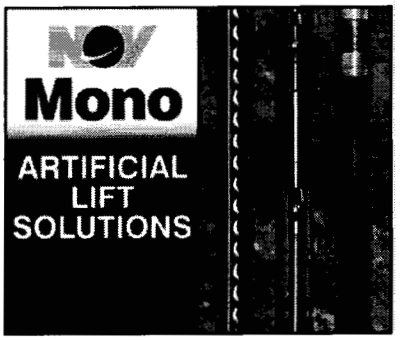
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Background

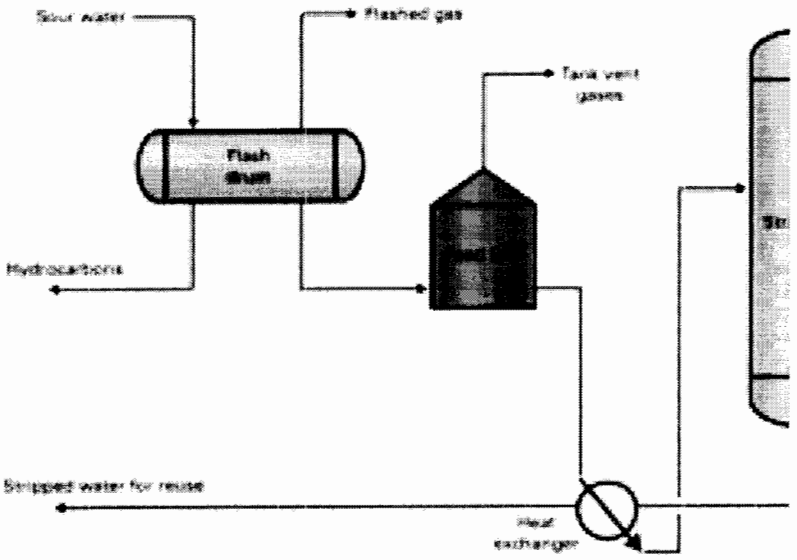
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CONVENTIONAL SOUR-WATER STRIPPING UNIT



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The flash drum typically operates at low pressure (~0.7-1.0 kg/cc (g)) to flash off the lighter hydrocarbons. The flashed vapors are routed to a low-pressure system such as stripper column overhead, incinerator stack of an SRU after burning or acid flare. The liquid hydrocarbons are separated in the flash drum by gravity separation into the drum's hydrocarbon collection compartment.

Sour water is then pumped to feed stabilization tank that is used to provide adequate residence time for additional hydrocarbon removal and for minimizing feed composition fluctuations because sour water is produced from different sources in a refinery. Significant compositional fluctuations cause poor stripping operation in the tower, resulting in either not consistently meeting product specification or wasting steam by overstripping. The constant feed composition and flow rate from the feed stabilization tank enables better control of the stripper tower and consistent stripped sour-water quality.

Sour water from the stabilization tank is heated in a feed-bottom heat exchanger by hot-stripped water from the stripper bottoms and fed to the tower as feed. As the sour water flows down the tower, H_2S and ammonia are stripped off by steam or reboiled vapor from the bottom of the tower. Use of live steam as stripping agent adds more water to the tower.

Normally low-pressure steam is used in the bottom reboiler to generate vapor in the tower operating in the range of 0.7 –1.2 kg/sq cm (g) top pressure. H_2S, ammonia, and steam rise to the tower cooling section, which is controlled at 90° C. by pumped around cooler at the top of the tower. Low overhead temperatures, less than 80° C. can cause problems due to formation of ammonium salts that may plug process lines.

Sour gases containing H_2S and ammonia from the top of the stripping tower are routed to the SRU.

The problem

Indian Oil's refinery, in the state of Gujarat, was installing a new sour-water stripper unit as a part of residue upgrade. Currently the refinery operates four old sour-water stripping units based on convectional striping process designs.

The process objective of new sour-water stripper units in the residue upgrade project was to treat the sour water generated from the diesel hydro-desulfurization unit, vacuum gas oil hydrotreater, and isomerization unit for removing H_2S and ammonia to meet stripped-water specification of less than 50 ppm (wt) H_2S and ammonia.

FEED TO SOUR-WATER STI

Stream No.	Parameters	I
1	Temperature	°
2	Pressure	I
3	Vapor fraction	
4	Mole weight	

Click here to enlarge ima

The new unit was to be designed to handle a total sour-water feed rate of 57,402 kg/hr (5.7 tonnes/hr) with composition as summarized in Tables 1 and 2.

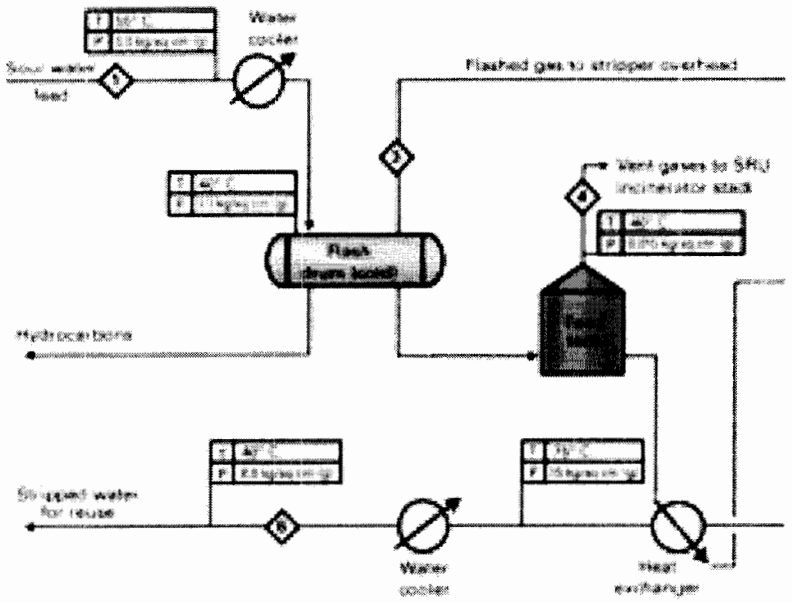
FEED COMPOSITION OF SOUR-WATER STRIPPEF

Stream No.	Compo-nents	Ma
1	Ammonia	1
2	H_2S	2
3	Water	53
	Total	**57**

Click here to enlarge imag

Because the Gujarat refinery is already operating with four conventional units of sour-water striping process, the same was considered for the initial design of the new stripper.

CONVENTIONAL STRIPPER: GUJARAT REFINERY



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Fig. 2 shows flow of the initial design configuration of sour-water stripper unit for the Gujarat refinery, according to the traditional configuration.

SIMULATED RESULTS FOR CONVENTIONAL SOUR-WATER STRIPPER

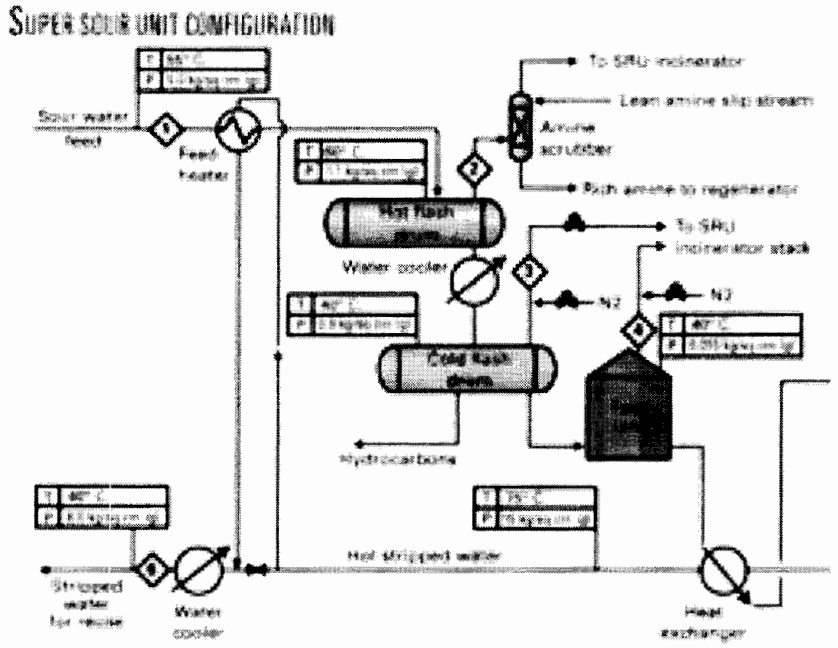
Stream No.		1 Feed	3 Flashed gas from acid flash drum
1	Temperature, °C	55.0	40.0
2	Pressure, kg/sq cm (g)	5.0	1.1
	Component flow rate		
3	Ammonia, kg/hr	1,058.10	0.122
4	H_2S, kg/hr	2,348.60	45.0
5	H_2O, kg/hr	53,995.3	0.854
	Total	57,402.0	45.976

Click here to enlarge im

In the conventional design, sour-water feed to unit arrives in the flash drum after cooling to 40° C. from 55° C. The feed is cooled to reduce the vapor pressure of sour water to minimize H_2S loss from storage tank. The flash drum is floated with stripper column overhead, which is operating at pressure of 1.1 kg/sq cm (g). After hydrocarbon vapors are flashed off in the flash drum, feed enters the feed stabilization tank operating at almost atmospheric pressure condition (i.e., at 0.21335 psig pressure). The tank is designed according to API-650. At this low pressure, a considerable amount of H_2S is released from the storage tank due to its high vapor pressure. The vent gases from the tank are routed to the incinerator of SRU and are lost. The loss is around 7.5% of the feed H_2S (Table 3). Environmental regulations do not allow emissions of these vent gases containing H_2S to incinerator stack or atmosphere because it leads to higher emissions of H_2S and SO_2.

New design

The new process design developed by Indian Oil, called Super Sour, for sour-water stripping ensures minimum or no H_2S loss from the unit resulting in enhanced recovery of H_2S compared with the traditional designs.



Click here to enlarge image

This process (Fig. 3) employs installation of an additional small-diameter hot feed flash drum (essentially, a typical vapor-liquid separator) upstream of cold-feed surge drum. The purpose of the hot flash drum is to liberate enough H_2S from the sour-water feed so that, when it is cooled and routed to the feed stabilization tank (operating at almost atmospheric pressure) there will be no bleed of H_2S from the tank, resulting in no loss of H_2S from the tank.

In this design, the hot flash drum is held at around 60° C. by heating the sour-water feed with hot-stripped water coming from the outlet of feed bottom exchanger. This requires no additional hot utility.

The H_2S rich vapors from hot flash drum are routed to a small amine scrubber to absorb the liberated H_2S. The lean gas from absorber containing primarily hydrocarbons is then routed to the incinerator of the SRU. The absorbed H_2S in rich amine is recovered in the amine regenerator and fed to the sulfur unit for conversion to sulfur.

Flashed feed from hot drum is cooled to 40° C. before being routed to the cold-feed surge drum for separation of hydrocarbon oil from water. This also reduces the vapor pressure of sour water. After separation of liquid hydrocarbon in cold-feed surge drum, sour water is routed to the stripper tower through the feed stabilization tank. The cold-surge drum and feed tank pressure is maintained by the nitrogen makeup.

Results

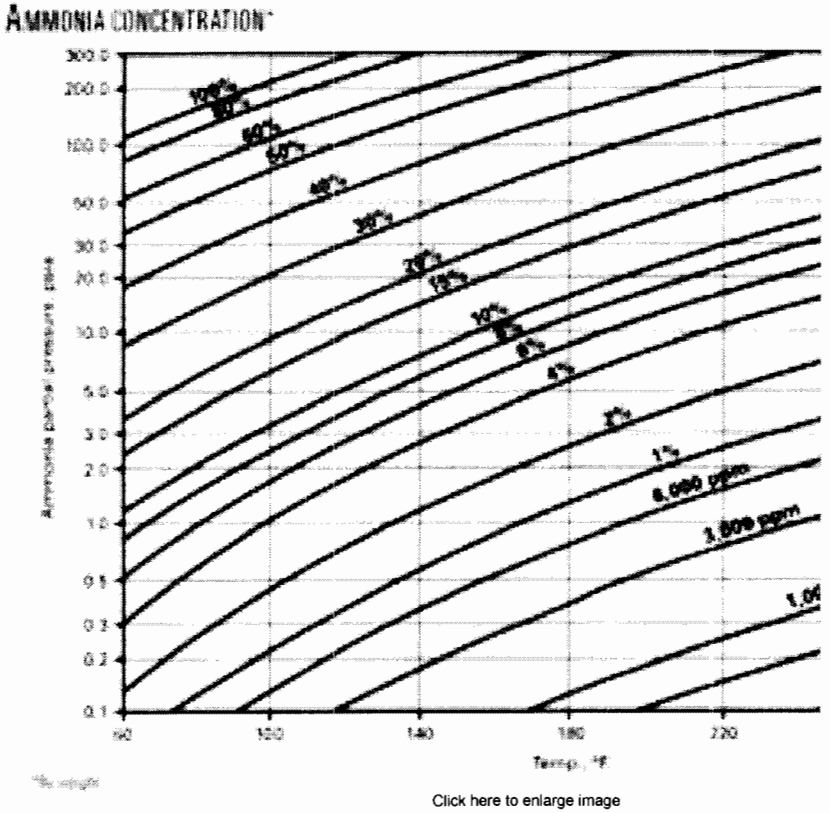
This design results in no loss of H_2S from the feed stabilization tank, as the simulated numbers of Table 4 show. The electrolyte package of Chemstations USA (Chemcad V. 6.1) was used to model and simulate the sour-water stripper unit.

SIMULATED RESULTS FOR SUPER SOUR UNIT

Stream No.		1 Feed	2 Hot flash vapor to amine scrubber
1	Temperature, °C	55.0	59.1
2	Pressure, kg/sq cm (g)	5.0	1.1
	Component flow rate		
1	Ammonia, kg/hr	1,056.10	0.356
2	H_2S, kg/hr	2,348.60	228.0
3	H_2O, kg/hr	53,995.3	12.0
	Total	**57,402.0**	**240.36**

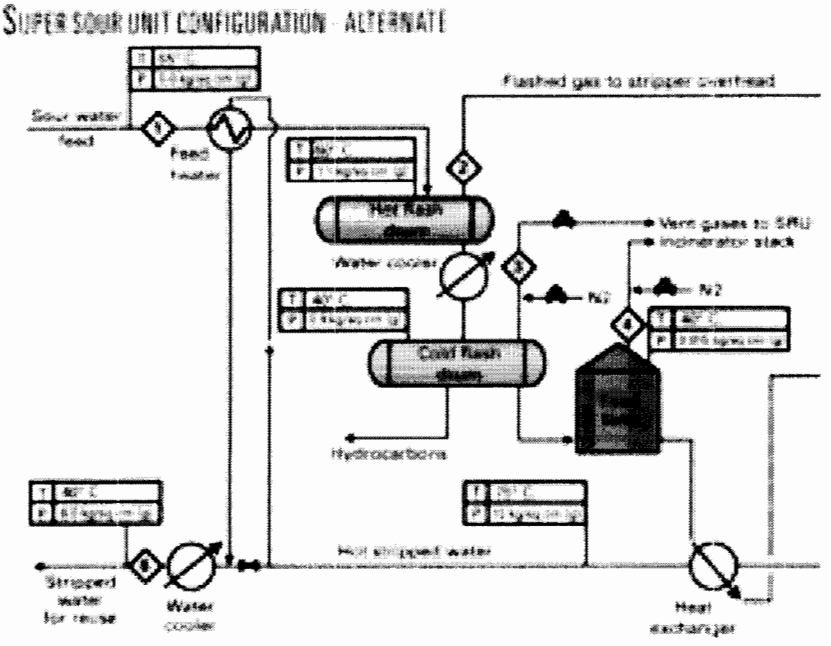
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At the elevated temperature of around 60° C. of hot flash drum, the ammonia going to the gas phase from the hot drum will be very marginal (stream No. 2 of Table 4) due to its high solubility in water as compared with the H_2S. Thus the ammonia buildup in the amine regenerator due to this approach will be insignificant. However, an ammonia purge stream from the amine overhead accumulator back to the cold surge drum of sour-water stripper is to knock off any ammonia buildup. Fig. 4 may be referred to for partial pressure of ammonia over aqueous solution.



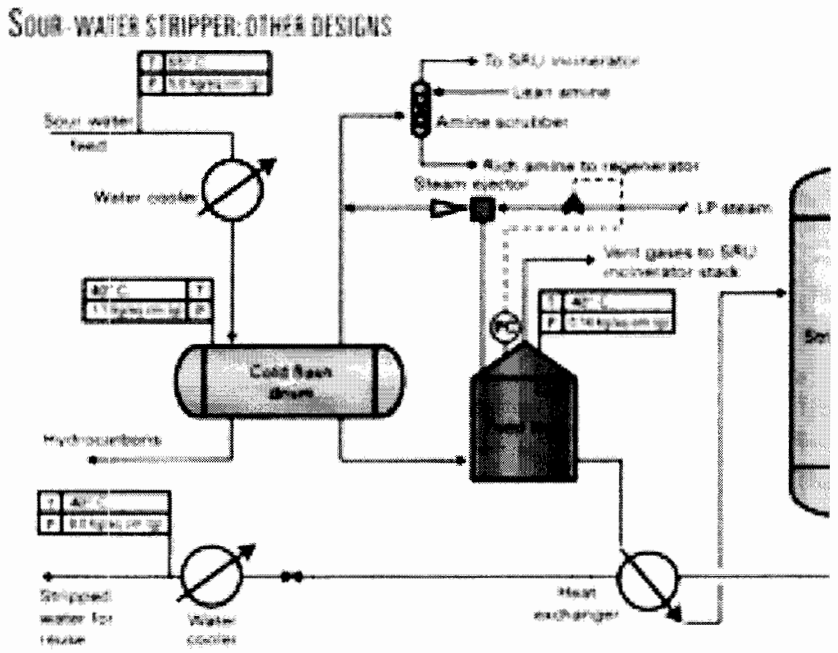
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In an alternative configuration, vapors from the hot flash drum containing primarily H_2S may be directly routed to the stripper overhead line for recovery of sulfur along with the stripper overhead vapors. This configuration does not require installation of a small amine scrubber column for absorbing the H_2S from hot flash drum vapors. Fig. 5 shows the schematic of this configuration.



Click here to enlarge image

This configuration can be adopted where the likelihood of lighter hydrocarbon coming along with sour water is minimum or nil. Otherwise these hydrocarbons may find their way to the SRU, which will be detrimental to its operation.



Click here to enlarge image

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2. Newman, Stephen A., Sour Water Design by Charts (Part-1, Part-2, & Part 3), Hydrocarbon Processing, September 1991, October 1991, & November 1991.

The authors



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Mukesh Kumar Sharma (sharmamk2@iocl.co.in) is deputy manager (process design) for Indian Oil Corp. Ltd., New Delhi. He has 9 years of varied experience in process engineering, process simulations and design, troubleshooting, and optimization of various gas-liquid treating processes in petroleum refineries. Before joining the process design engineering group, he had worked as a senior process engineer at the Panipat refinery. He has also worked as a process engineer for crude & vacuum distillation units of the refinery. Sharma obtained his BTech (honors; 1999) in chemical engineering from the Institute of Technology, Varanasi, India.



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Ashis Nag (naga@iocl.co.in) has worked for Indian Oil for almost 32 years and at present heads its process design section. He has worked on different refinery units including reformers and hydrocrackers and carried out assignments in commissioning, operations, process design, and technical services. Nag obtained his BS (1976) in chemical engineering from Jadavpur University, Calcutta.

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ENCYCLOPEDIA OF CHEMICAL ENGINEERING EQUIPMENT

SEPARATIONS: MECHANICAL

CENTRIFUGES

CYCLONES / HYDROCYCLONES

ELECTROSTATIC PRECIPITATORS

FILTERS

GRAVITY SEPARATORS

MIST ELIMINATORS

SCREENERS

STEAM TRAPS

THICKENERS / CLARIFIERS

SOURCES

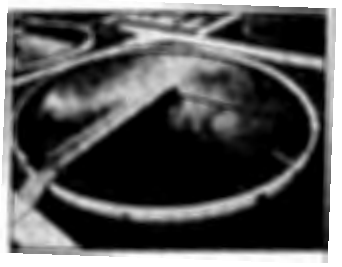
THICKENERS / CLARIFIERS

CIRCLULAR CLARIFIERS

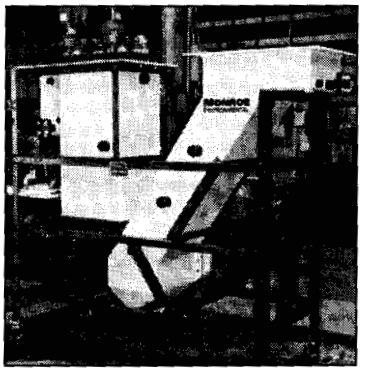
PARALLEL PLATE CLARIFIERS

THICKENERS / CLARIFIERS

Thickeners and clarifiers are both used to separate liquids and solids by settling. Thickeners are used to concentrate solids, while clarifiers are used to purify liquids. Clarifiers can be circular clarifiers, pictured on the left, or parallel plate clarifiers, pictured on the right.



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CIRCULAR CLARIFIERS

GENERAL INFORMATION

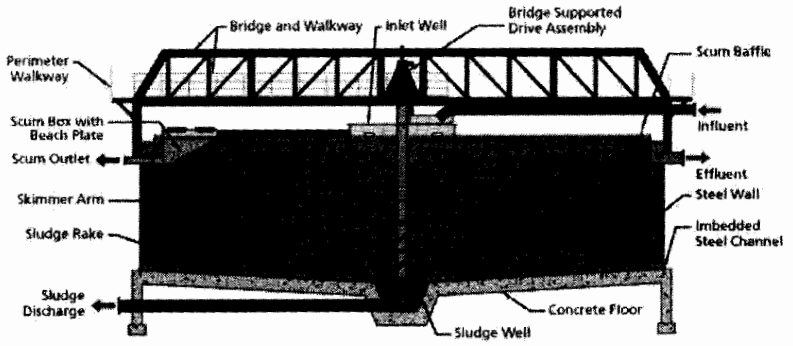
Thickeners and clarifiers use slowly rotating rake arms to separate solid particulate. A liquid feed with suspended solids is fed into a tank with a diameter of 5 to 500 feet. As the particles settle, angled rake arms move the concentrated slurry toward the center of the tank, where it is removed. Clear liquid overflows the top of the tank and is collected in a *trough*.



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EQUIPMENT DESIGN

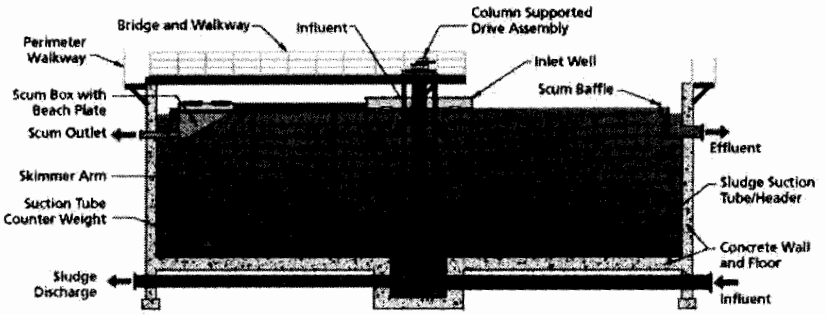
There are three main types of thickeners/clarifiers: bridge support, column support, and traction. In a bridge support thickener, such as the one shown below, the rakes and drive mechanism are suspended from a bridge that spans the diameter of the tank. They are usually only economical for diameters of fewer than 100 feet.



(Copyright Monroe Environmental Corporation, Monroe, MI)

The bridge-supported clarifier pictured above is used for primary wastewater treatment. After large objects and grit have been screened out of the water, raw wastewater is fed into the primary clarifier. In this stage, floating material and material that easily settles out will be removed, resulting in a homogeneous effluent that can be further treated biologically in the secondary clarifier, and a sludge discharge that can be treated or processed.

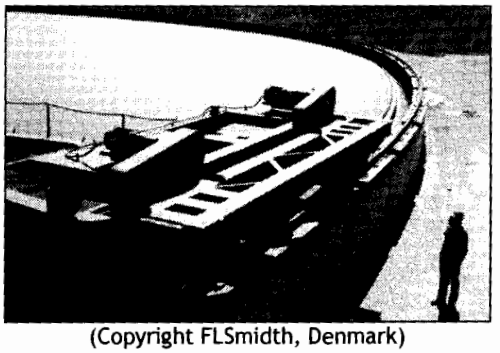
In column support thickeners, such as the one shown below, the drive and raking mechanisms are attached to a central column. The feed usually enters through an overhead pipe supported by an access bridge that leads to the center column.



(Copyright Monroe Environmental Corporation, Monroe, MI)

The column-supported clarifier pictured above is used for secondary wastewater treatment. In this stage, bacteria consumes up to 90% of the organic matter in the wastewater. After the minimum removal standards for biochemical oxygen demand (BOD), total suspended solids (TSS), and pH are met, the effluent can be discharged to the environment or treated further.

Traction units also have a center column, but the drive power is supplied by a trolley that rides along a track at the tank wall. Unlike center drives, traction drive units are able to efficiently provide a very high amount of torque for high demand applications.

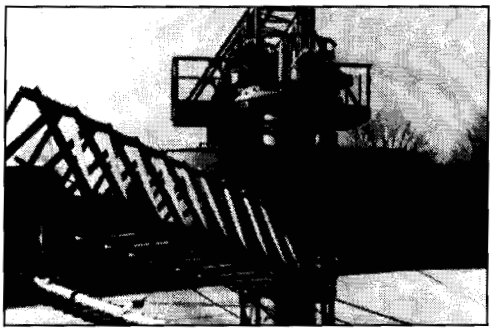


(Copyright FLSmidth, Denmark)

In the thickener shown below, cables control the height of the rake arms. When heavy sludge builds up at the bottom, the rakes are raised slightly. Once the blockage has been dispersed, the rake arms are lowered back to normal position. Adjustable rake arms increase operating efficiency by reducing maintenance downtime.



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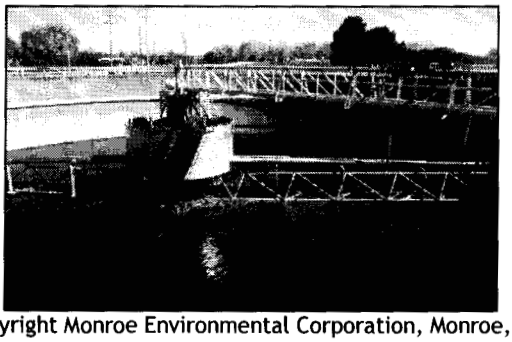


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A thickener/clarifier drive unit supplies the torque to rotate the rake arms through the thick sludge. The drive is usually made of cast iron because of its durability.

USAGE EXAMPLES

Thickeners and clarifiers are often used in water and wastewater treatment plants to remove solids, chemicals, microbes and other impurities.



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Thickeners and clarifiers are also used in the paper industry, the uranium industry, and in alumina, coal, copper, and iron ore production.

ADVANTAGES

- Effective solid-liquid separation.
- Can be used for a variety of liquid-solid separations.

DISADVANTAGES

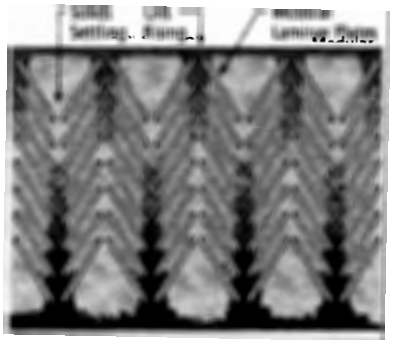
- Inefficient for small scale operation.
- Large initial investment.
- Requires large installation area.

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PARALLEL PLATE CLARIFIERS

GENERAL INFORMATION

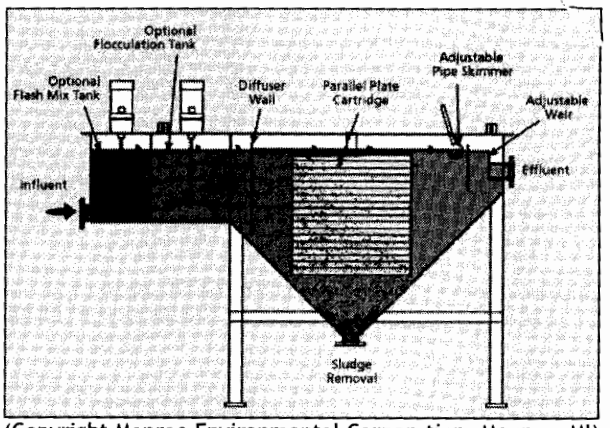
Parallel plate clarifiers are designed to create laminar flow, allowing gravity to separate heavier elements from the rest of the fluid, as shown below.



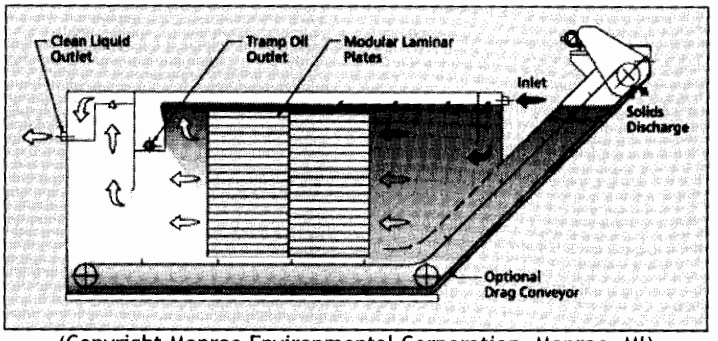
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EQUIPMENT DESIGN

Parallel plate clarifiers can be structured horizontally or vertically. Horizontal parallel plate clarifiers can have a cone bottom configuration which is recommended to remove solids that cannot be transported with a conveyor. They also can be configured similar to a settling tank, with a drag conveyor that continuously removes settled solids. Diagrams of both configurations are shown below.



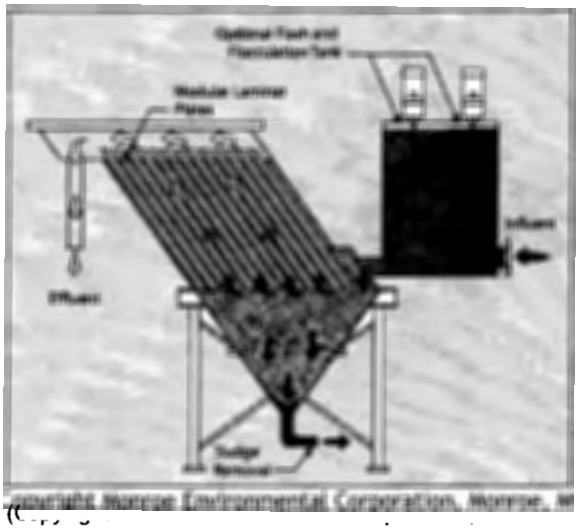
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In horizontal clarifiers, raw material enters at one end of the tank, and goes into a flocculation tank where the fluid is mixed and suspended particles are brought together to create larger and heavier particles that are easier to separate out. In the settling zone, fluid flows though plates that are typically spaced 1 to 4 inches apart. The effluent passes though weirs into collection troughs. Sludge that is settled out is removed though piping by means of pumps or hydraulic head pressure, or with the use of mechanical drag conveyors. The configuration used depends on the application.

Vertical parallel plate clarifiers operate using the same laminar flow principle, but the liquid flows vertically. The influent flows to the lower area of the laminar plate sections. Waste fluid flows up the plates under laminar conditions, and then particulates settle onto the plates and slide down to the removal area. Weirs at the top of the plate section maintain a balanced flow though the plates. Effluent flows out the top of the clarifier.



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USAGE EXAMPLES

Parallel plate clarifiers are often used to separate solids and low density liquids, such as oils. They can be suitable for many applications, including chemical processing, coolant systems, food processing, oil refinery, paper making, and industrial waste management. The horizontal clarifier pictured below operates at 40 GPM and is used to treat plating wastewater.



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ADVANTAGES

- Low space requirement.
- No moving parts in settling area.
- No filter media required.

DISADVANTAGES

- Cannot be used operations larger than 2000 GPM.

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ACKNOWLEDGEMENTS

FLSmidth, Denmark
Monroe Environmental Corporation, Monroe, MI
Water Technologies Business Unit of Siemens Industry, Inc., Warrendale, PA

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DEVELOPERS

Michael Fein
Kelsey Kaplan

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HOME INDEX COMMENTS

- **UICI-008 Class I (NH) WDWs 1, 2 & 3 Wells Navajo Artesia Refinery:**
  - Carl issued on 11/1 ACOW-6 Section III Monitoring & Reporting Requirements schedule to Glenn for tracking compliance with the Order with copy to DO2.
  - Carl responded on 11/6 to a release notification on 11/5 at ~ 16:06 from Mike Holder regarding the 10/31 sampling event and exceedance of the ACOW-6 with Tot. Se at 0.996 mg/L and Se TCLP at 1.23 mg/L. No abatement contemplated. Carl directed Mike via e-mail to resample per ACOW-6 Sec. III. Carl notified OCD Mgt. of the exceedance.
  - Carl met with Bill Brancard on 11/6 to discuss the ACOW-6 notification on 11/5 and the penalty assessment portion of the CO.
  - Carl developed on 11/6 an ACOW-6 Penalty Assessment Tracking Spreadsheet placed on the P:\ drive at the request of Bill Brancard. Carl incorporated Bill's comments on the spreadsheet on the same day.
  - Carl received on 11/6 at 20:52 voice mail notification from Mike Holder of confirmed discharge on 11/6 from single lab results (11/4-5) Total Se of 0.98 mg/L and Se TCLP of 1.13 mg/L. On 11/6 data from 2 labs (11/4-5) indicated Total Se of 0.974 mg/L and Se TCLP of 1.13 mg/L. No discharge from Tk 836, since 11/5. Chem2M Hill retained to assess exceedances.
  - Carl updated on 11/7 the ACOW-6 penalty assessment spreadsheet.
  - Carl met on 11/7 with Bill B. and Glenn regarding meeting late morning tomorrow with the operator regarding the Se exceedance problem. Glenn said injection of hazardous waste was a SNC under the EPA 7520 reporting scheme.
  - Carl prepared on 11/8 for a late morning meeting to discuss the Se monitoring and progress on treatment system.
  - Carl received on 11/7 at 17:27 voice mail notification from Mike Holder of confirmed discharge from 11/5 sample data results indicated Total Se of 0.51 mg/L and Se TCLP of 1.2 mg/L. No discharge from Tk 836, since 11/5. Chem2M Hill retained to assess exceedances.

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- **UICI-008 Class I (NH) WDWs 1, 2 & 3 Wells Navajo Artesia Refinery:**
  - Carl issued on 11/1 ACOW-6 Section III Monitoring & Reporting Requirements schedule to Glenn for tracking compliance with the Order with copy to DO2.
  - Carl responded on 11/6 to a release notification on 11/5 at ~ 16:06 from Mike Holder regarding the 10/31 sampling event and exceedance of the ACOW-6 with Tot. Se at 0.996 mg/L and Se TCLP at 1.23 mg/L. No abatement contemplated. Carl directed Mike via e-mail to resample per ACOW-6 Sec. III. Carl notified OCD Mgt. of the exceedance.
  - Carl met with Bill Brancard on 11/6 to discuss the ACOW-6 notification on 11/5 and the penalty assessment portion of the CO.
  - Carl developed on 11/6 an ACOW-6 Penalty Assessment Tracking Spreadsheet placed on the P:\ drive at the request of Bill Brancard. Carl incorporated Bill's comments on the spreadsheet on the same day.
  - Carl received on 11/6 at 20:52 voice mail notification from Mike Holder of confirmed discharge on 11/6 from single lab results (11/4-5) Total Se of 0.98 mg/L and Se TCLP of 1.13 mg/L. On 11/6 data from 2 labs (11/4-5) indicated Total Se of 0.974 mg/L and Se TCLP of 1.13 mg/L. No discharge from Tk 836, since 11/5. Chem2M Hill retained to assess exceedances.
  - Carl updated on 11/7 the ACOW-6 penalty assessment spreadsheet.
  - Carl met on 11/7 with Bill B. and Glenn regarding meeting late morning tomorrow with the operator regarding the Se exceedance problem. Glenn said injection of hazardous waste was a SNC under the EPA 7520 reporting scheme.
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Sample Date	Report Date	Notification Date	Injection Volume	Injection Stop Date	Total Violation Days	Penalty per Day	Penalty Amount	Total Se (mg/L)	TCLP Se (mg/L)	Notes
10/31/13 0:00		11/5/13 16:06	?		1	$ 2,000.00	$ 2,000.00	0.996	1.23	Samples taken 10/31 with data results recvd. 11/4-5: Se Totals and TCLPs collected from 2 separate labs and averaged for final reported concentration
11/1/13 0:00					1	$ 2,000.00	$ 2,000.00	0.974	1.13	Samples taken 11/1 Se Totals and TCLPs collected from 2 separate labs and averaged for final reported concentration. No discharge.
					1	$ 2,000.00	$ 2,000.00			
					1	$ 2,000.00	$ 2,000.00			
					1	$ 2,000.00	$ 2,000.00			
				11/5/13 16:06	1	$ 2,000.00	$ 2,000.00			Stopped injection.
11/4-5/2013		11/6/13 20:52	?					0.98	1.1	Samples collected from single lab.
11/5/13 0.00		11/7/13 17:27	?					0.51	1.2	Communication meeting with operator to discuss situation.
11/14/13 0.00							$ -			
11/21/13 0.00	11/21/13 0:00						$ -			On or before 11/21/13: Complete Engr. Eval. ST process changes to reduce Se in process water and Engr. Eval. Of potential ST enhanced WW treatment options.
	11/23/13 0:00	[redacted]					$ 14,000.00			**Initial Civil Penalty Amount Precipitating the ACO due to the State of NM General Fund by this date**
11/28/13 0.00										
	11/30/13 0:00									Beginning 11/30/2013: On or before 1st day of mo., provide OCD SF w/ mo. interim progress reports detailing status and timeline for actions taken during preceding calendar mo. under Order.
12/6/13 0:00										
	12/7/13 0:00									On or before 12/7/2013: Provide OCD SF w/ Summary of Operator's engineering eval. On 11/21/13 and include selection of ST remedies w/ proposed implementation schedule.
12/13/13 0:00										
12/20/13 0:00										
	5/30/13 0:00									On or before 5/30/2014: Advise OCD SF of its selection of LT options for addressing Se concentrations in WW.
Total Amount Due		[redacted]					$ 12,000.00			**Due within 30-days of OCD making a written demand for payment of stialted penalties minus the $14,000 Civil Penalty already assessed on 11/23/13**



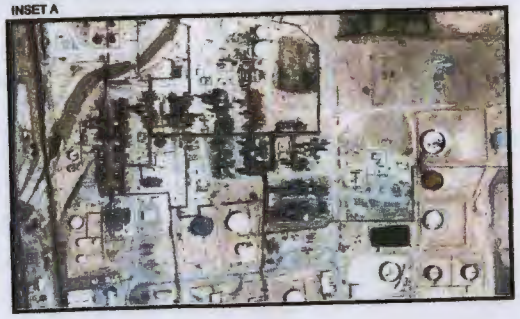



TEXAS AVENUE
MOSELEY AVENUE
ADAMS DRIVE
EAST 9TH STREET





INSET A



INSET B



SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

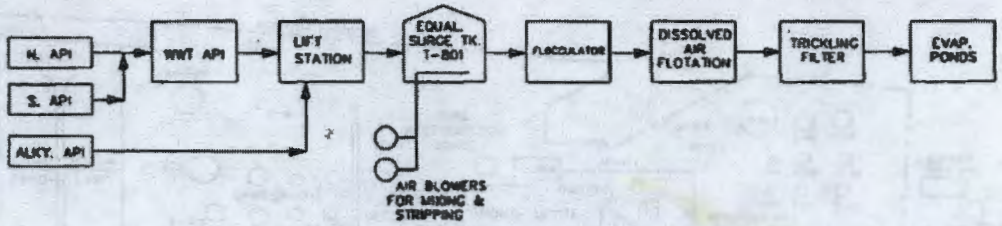
DRAWING 1

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

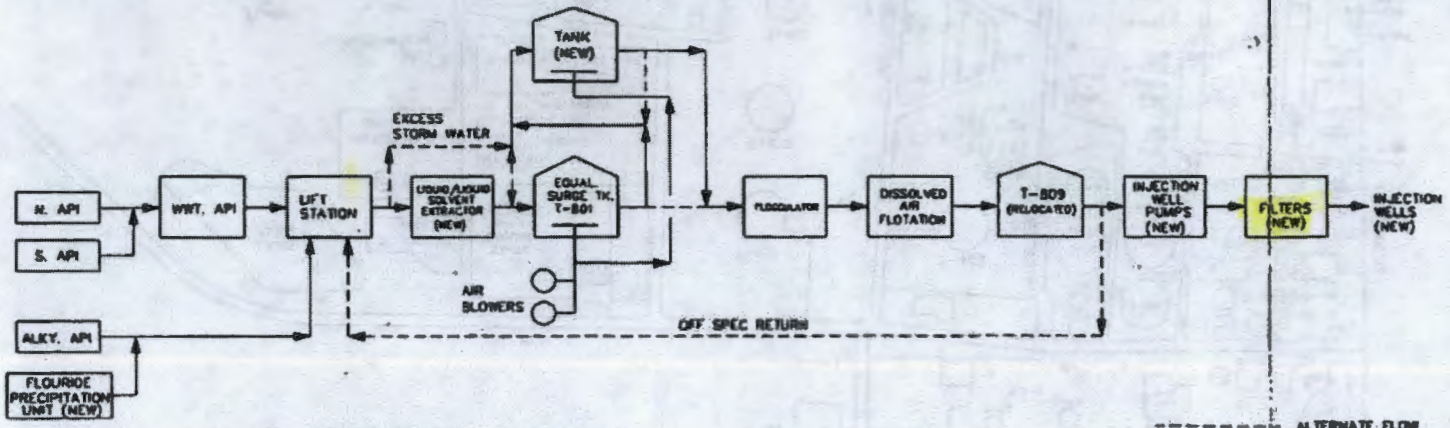
FACILITY MAP

DATE: 05/05/12	CHECKED BY:	JOB NO: 80467B1
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

WASTE WATER TREATMENT BLOCK FLOW DIAGRAMS

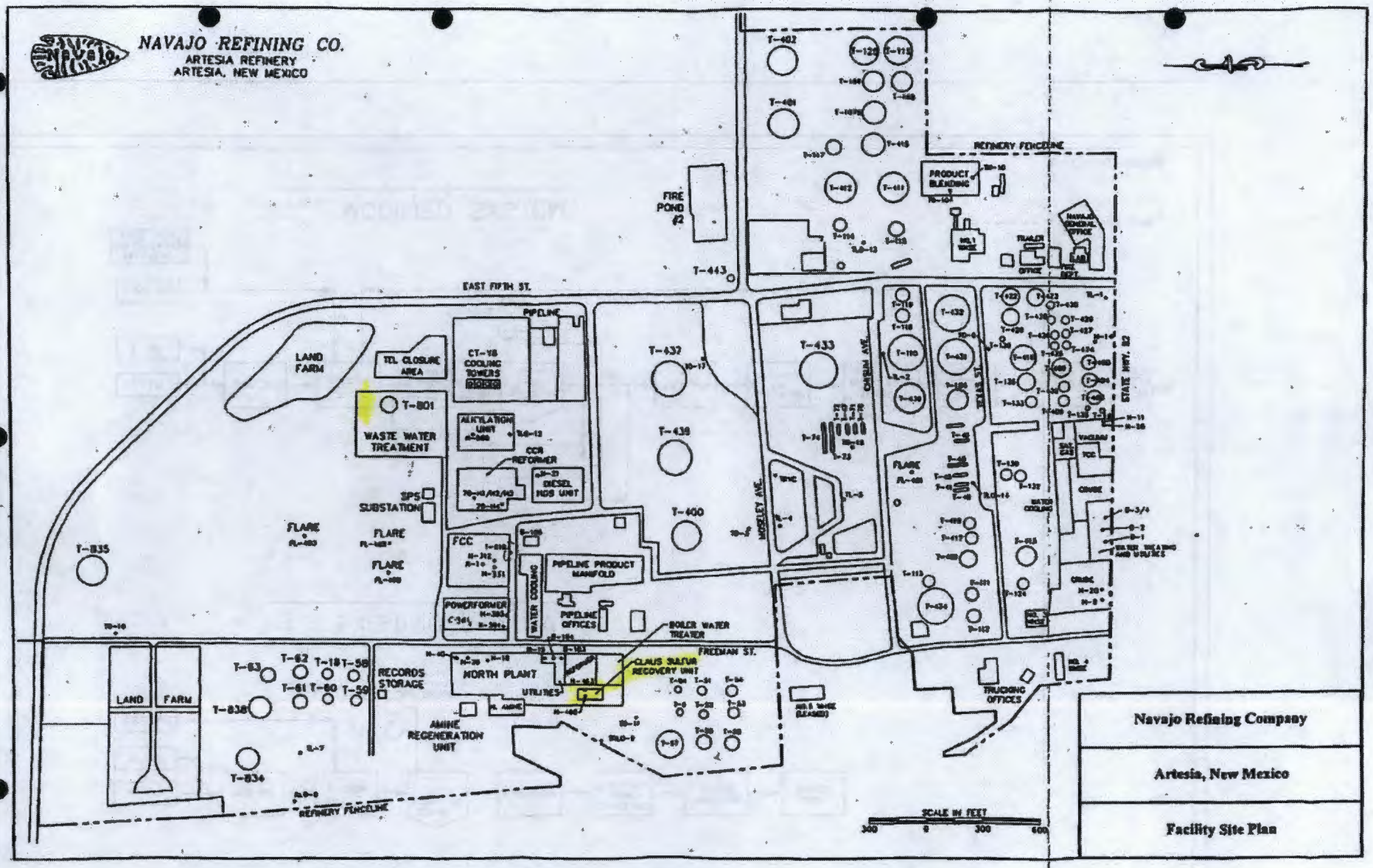


1. EXISTING SYSTEM



2. MODIFIED SYSTEM

DGJ
06-17-96 REV.0


NAVAJO REFINING CO.
ARTESIA REFINERY
ARTESIA, NEW MEXICO
REFINERY FENCELINE
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PIPELINE
LAND FARM
TEL CLOSURE AREA
CT-YB COOLING TOWERS
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WASTE WATER TREATMENT
ALKYLATION UNIT
CCR REFORMER
DIESEL HDS UNIT
SPS SUBSTATION
FLARE
FLARE
FLARE
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AMINE REGENERATION UNIT
TRUCKING OFFICES
REFINERY FENCELINE
SCALE IN FEET
300 0 300 600
Navajo Refining Company
Artesia, New Mexico
Facility Site Plan

ATTACHMENT 2, January 2009

Navajo Refining Company

Page 1 of 1

DISCHARGE PERMIT (DP-499)
NAVAJO REFINING COMPANY
PROPOSED TRACER LEAK TEST PROJECT

ARTESIA

Priority 1
2008

Tank ID	TYPICAL LIQUID STORED	TYPE	VOLUME (bbl)	YEAR BUILT	Last Integrity Test Date
T-101	Gasoline	IFR	80,000	1967	2008
T-102	Gasoline	IFR	80,000	1967	2008
T-106	Gasoline	IFR	80,000	1951	2008
T-108	Gasoline	IFR	80,000	1951	2008
T-131	Gasoline	IFR	80,000	1973	2008
T-136	Gasoline	IFR	80,000	1951	2008
T-137	Gasoline	IFR	80,000	1951	2008
T-413	Gasoline	VFR	19,000	1973	2008
T-414	Gasoline	VFR	19,000	1973	2008
T-417	Gasoline	VFR	19,000	1973	2008
T-421	Gasoline	VFR	80,000	1996	2008
T-422	Gasoline	VFR	80,000	1996	2008
T-423	Gasoline	VFR	80,000	1996	2008
T-424	Gasoline	VFR	80,000	1996	2008

18 Tanks

Priority 2
2010

Tank ID	TYPICAL LIQUID STORED	TYPE	VOLUME (bbl)	YEAR BUILT	Last Integrity Test Date
T-111	Naphtha	IFR	8,100	1973	2001
T-112	Naphtha	IFR	12,600	1973	2008
T-56	Naphtha	IFR	10,500	1973	1992
T-439	Crude Oil	IFR	166,900	1978	2007
T-437	Crude Oil	EFR	85,000	1973	2006
T-57	Naphtha	EFR	5,000	1981	1997
T-418	Distillate	VFR	19,000	1973	2001
T-419	Distillate	VFR	19,000	1973	2001
T-420	Distillate	VFR	19,000	1973	2001
T-423	Distillate	VFR	19,000	1973	2001
T-902	Sour water	EFR	15,000	2002	2002 New
T-435	Water Drawn	EFR	5,000	1997	2000

12 Tanks

Priority 3
2011

Tank ID	TYPICAL LIQUID STORED	TYPE	VOLUME (bbl)	YEAR BUILT	Last Integrity Test Date
T-103	Gasoline	EFR	80,000	1973	2008
T-422	Gasoline	VFR	80,000	1973	2008
T-134	Gasoline	VFR	80,000	1973	2008
T-58	Gasoline	VFR	80,000	1973	2008
T-59	Gasoline	VFR	80,000	1973	2008
T-60	Gasoline	VFR	80,000	1973	2008
T-61	Gasoline	VFR	80,000	1973	2008
T-62	Gasoline	VFR	80,000	1973	2008
T-63	Gasoline	VFR	80,000	1973	2008
T-64	Gasoline	VFR	80,000	1973	2008
T-65	Light Crude Oil	VFR	80,000	1973	2008

10 Tanks

Priority 4
2012

Tank ID	TYPICAL LIQUID STORED	TYPE	VOLUME (bbl)	YEAR BUILT	Last Integrity Test Date
T-401	Gas Oils	VFR	38,500	1947	2003
T-433	Gas Oils	VFR	79,800	<1973	2003
T-438	Gas Oils	VFR	94,500	1978	2003
T-99	Carbon Black Oil	VFR	5,150	<1973	2008
T-93	Carbon Black Oil	VFR	10,700	<1973	2003
T-43	Carbon Black Oil	VFR	66,150	1996	2008
T-75	Carbon Black Oil	VFR	19,900	2005	2007 New
T-426	Waste Water	VFR	91,540	1996	1996 New
T-901	Waste Water	VFR	94,200	1987	1996
T-409	Gas Oils	VFR	25,136	<1973	Out of Service

10 Tanks

LOVINGTON

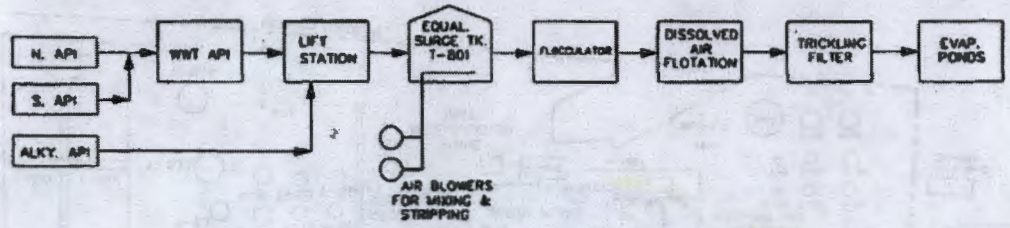
Priority 3
2013

Tank ID	TYPICAL LIQUID STORED	TYPE	VOLUME (bbl)	YEAR BUILT	Last Integrity Test Date
T-1101	Raw Naphtha	IFR	79,800	1973	1995
T-1102	Straight Run Gasoline	IFR	35,000	1973	2003
T-1103A	Crude Oil	EFR	164,500	1973	2003
T-1103B	Crude Oil	EFR	164,500	1973	2008
T-1103A	Raw Diesel	VFR	36,800	1973	1997
T-1103B	Raw Diesel	VFR	80,990	1973	1991
T-1104	Raw Diesel	VFR	63,480	1973	1991
T-1202	Crude Oil	EFR	108,150	1972	2003
T-1204	Waste Slop	VFR	20,000	1980	2003
T-1210	Waste Slop	VFR	32,800	1980	2003
T-1207	Light Slop Oil	IFR	10,800	1972	2003

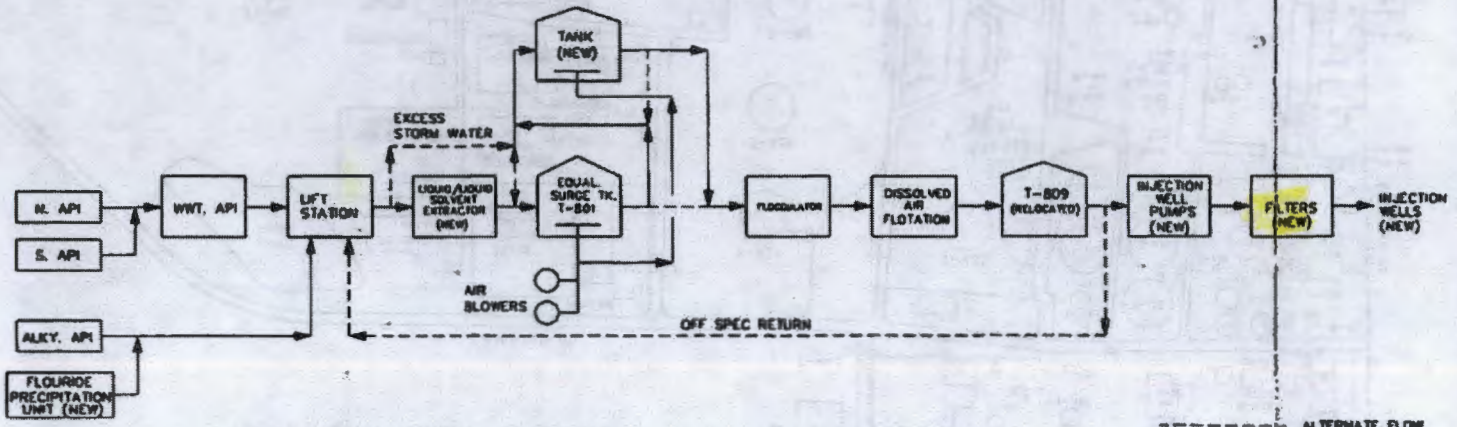
Priority 3
					Last Integrity Test Date
T-1102A	Raw Kerosene	EFR	35,000	1973	1991
T-1103	Aprox Gas Oil	EFR	63,900	1973	2008
T-1104A	Raw Kerosene	VFR	15,000	1973	1991
T-1104B	Aprox Gas Oil	VFR	12,600	1973	1991
T-1205	Heavy Vacuum Gas Oil	VFR	30,700	1973	2008
T-1206	Aprox Gas Oil	VFR	57,190	1973	2003
T-1209	Light Slop Oil	EFR	10,500	1973	Out of Service
T-1210	Waste Water	VFR	97,000	1973	New 2008
T-1212	Waste Water	VFR	97,000	1973	2007
T-1208	Wastewater	IFR	5,380	1973	2004

21 Tanks

WASTE WATER TREATMENT BLOCK FLOW DIAGRAMS

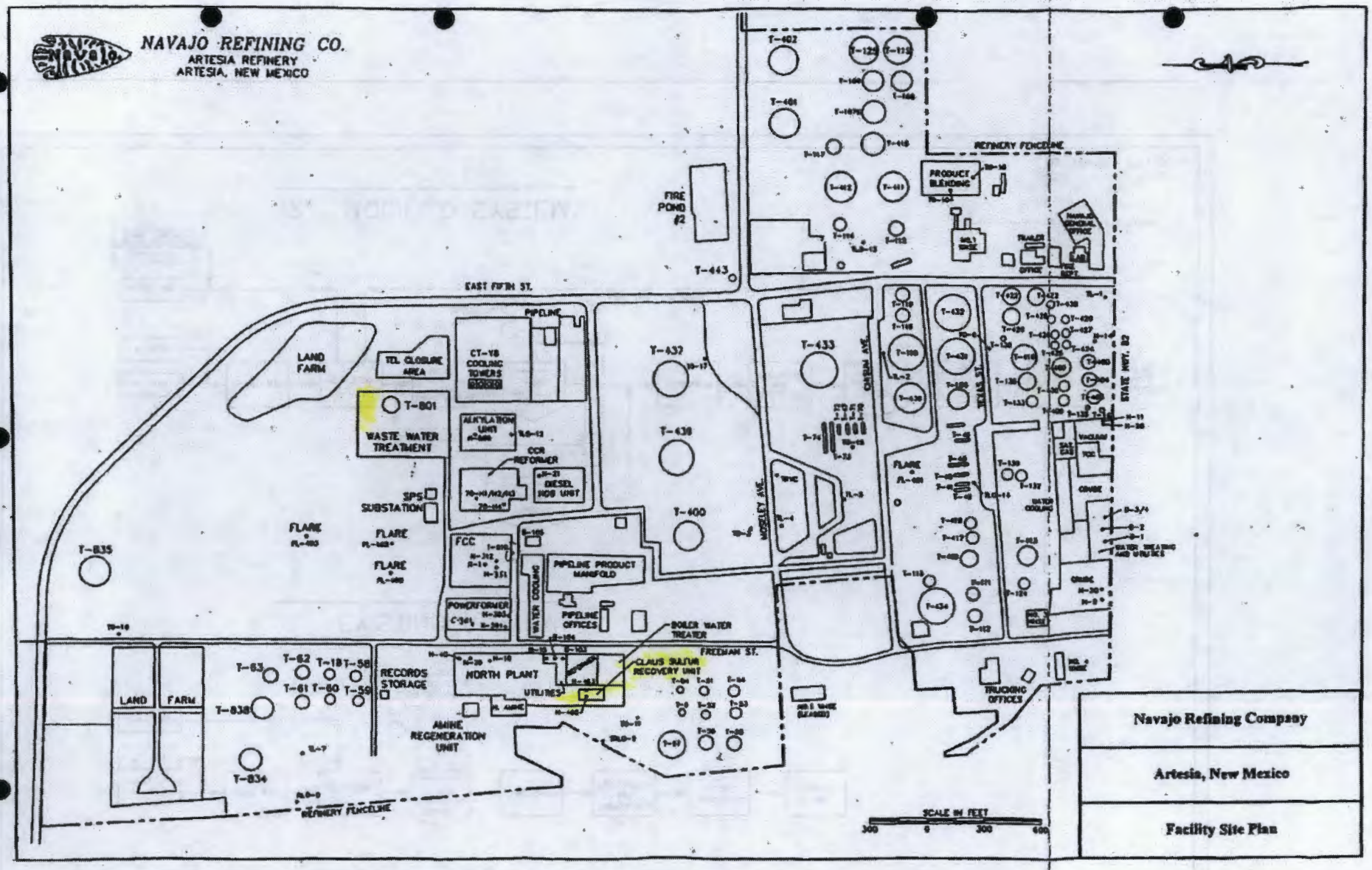


1. EXISTING SYSTEM

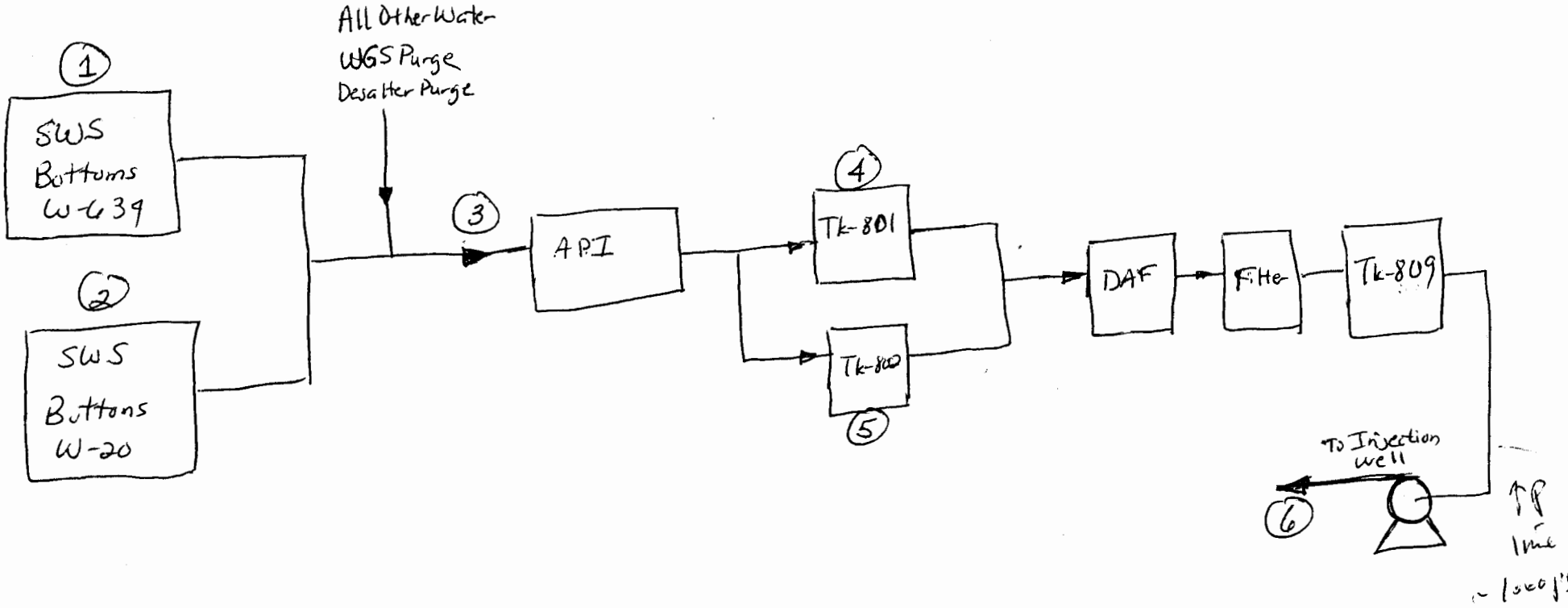


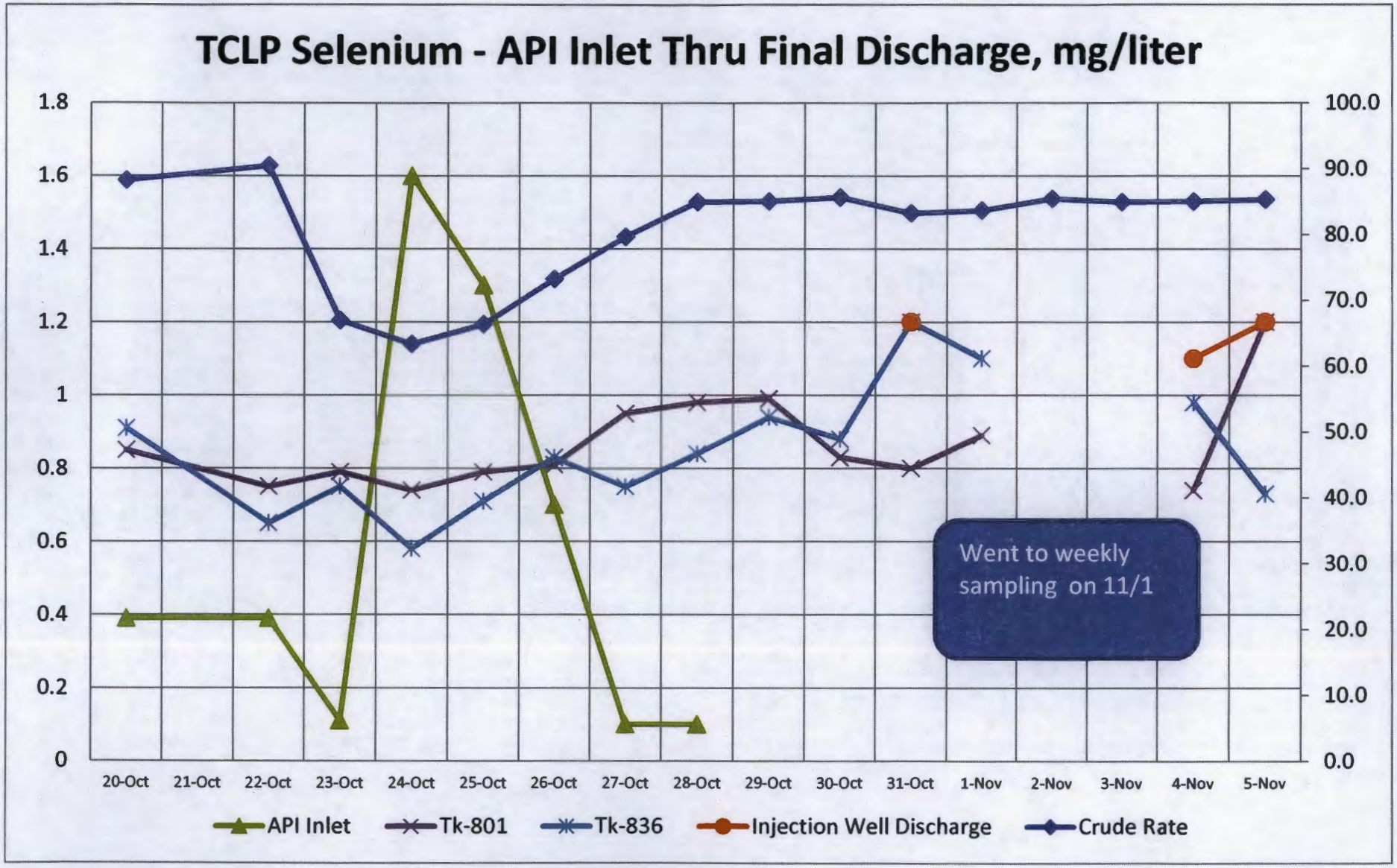
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DGJ
06-17-96 REV.0


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ARTESIA, NEW MEXICO
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REFINERY FENCELINE
SCALE IN FEET
300
0
300
600
Navajo Refining Company
Artesia, New Mexico
Facility Site Plan

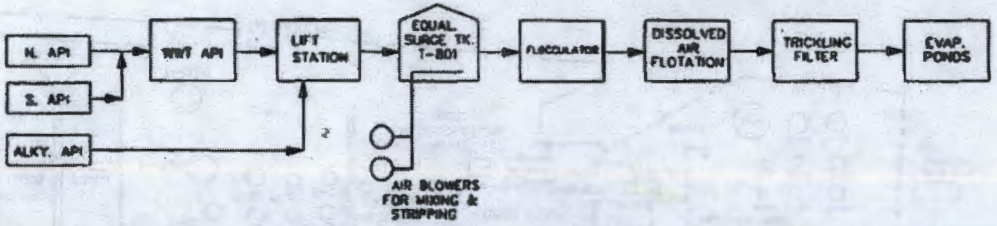
	① SWS Bottoms (W-634)	② SWS Bottoms (W-20)	③ API Inlet	④ Tk-801	⑤ Tk-836	⑥ Injection Well Discharge
Average	**4.54**	**3.87**	**0.59**	**0.87**	**0.85**	**1.17**
Deviation from Mean	**0.62**	**0.16**	**0.46**	**0.10**	**0.13**	**0.04**



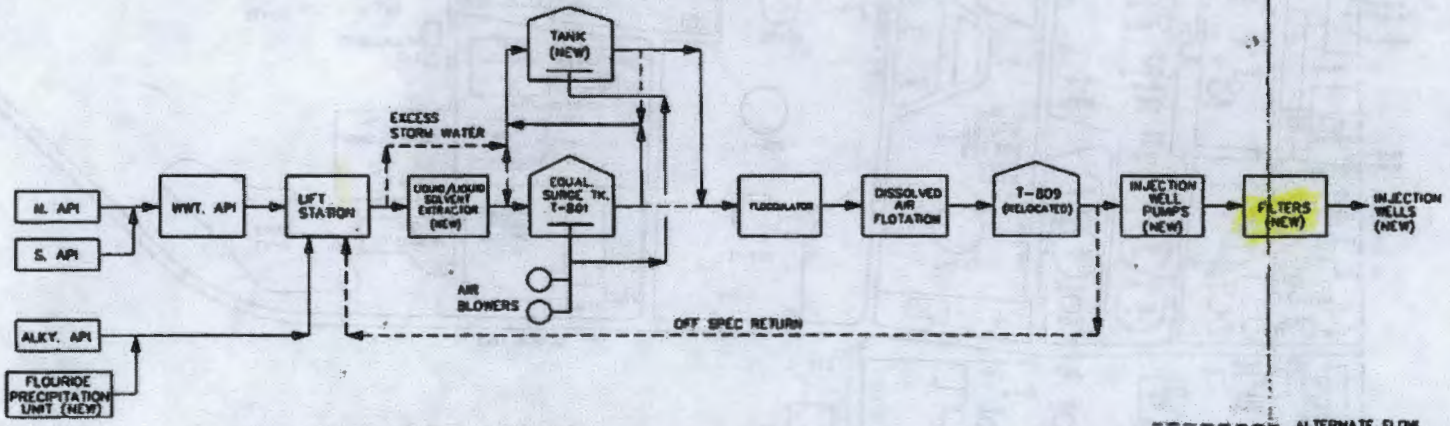


Data above was above and beyond compliance requirement. Data gathered by company for investigative analysis.

WASTE WATER TREATMENT BLOCK FLOW DIAGRAMS

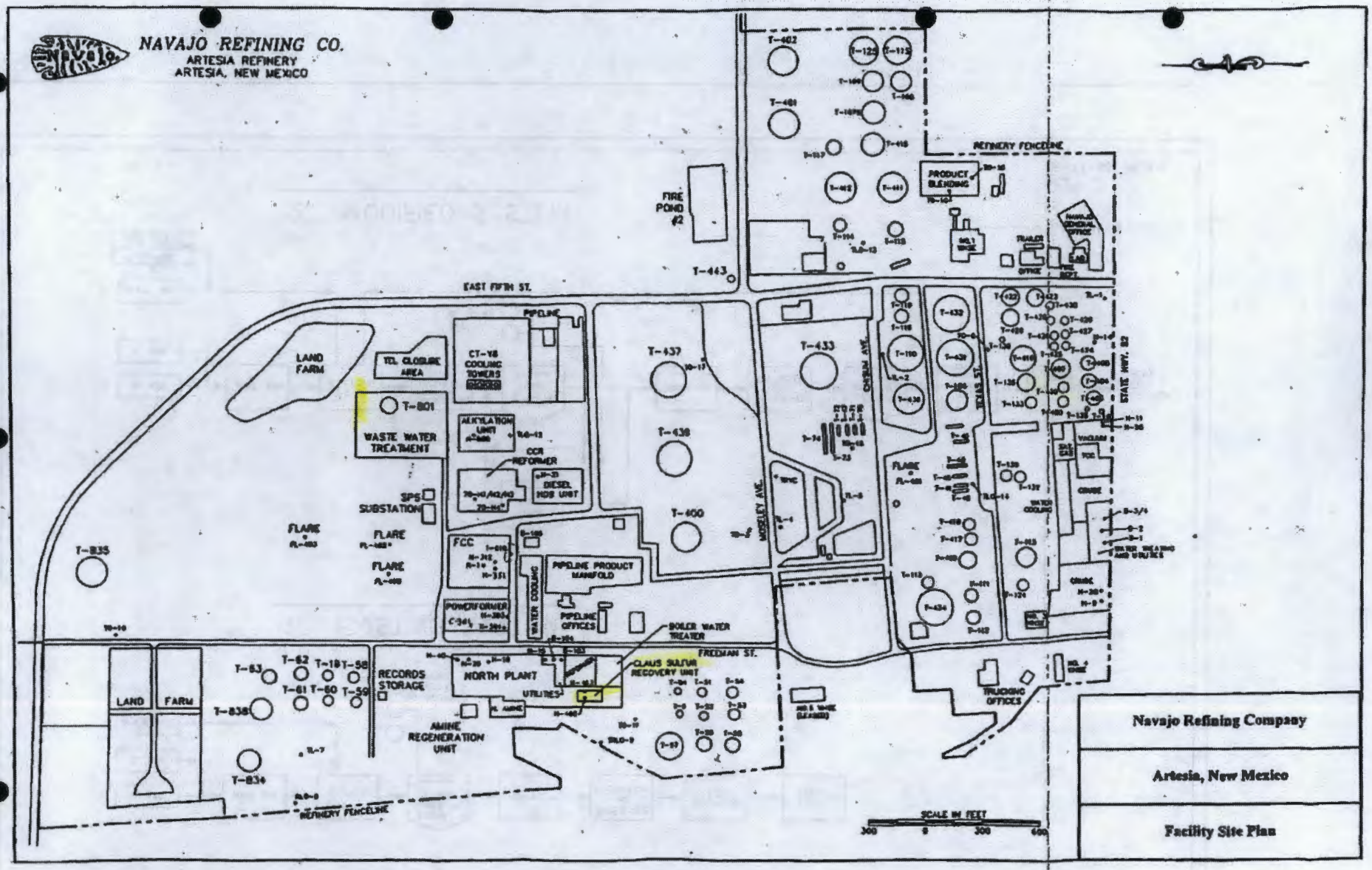


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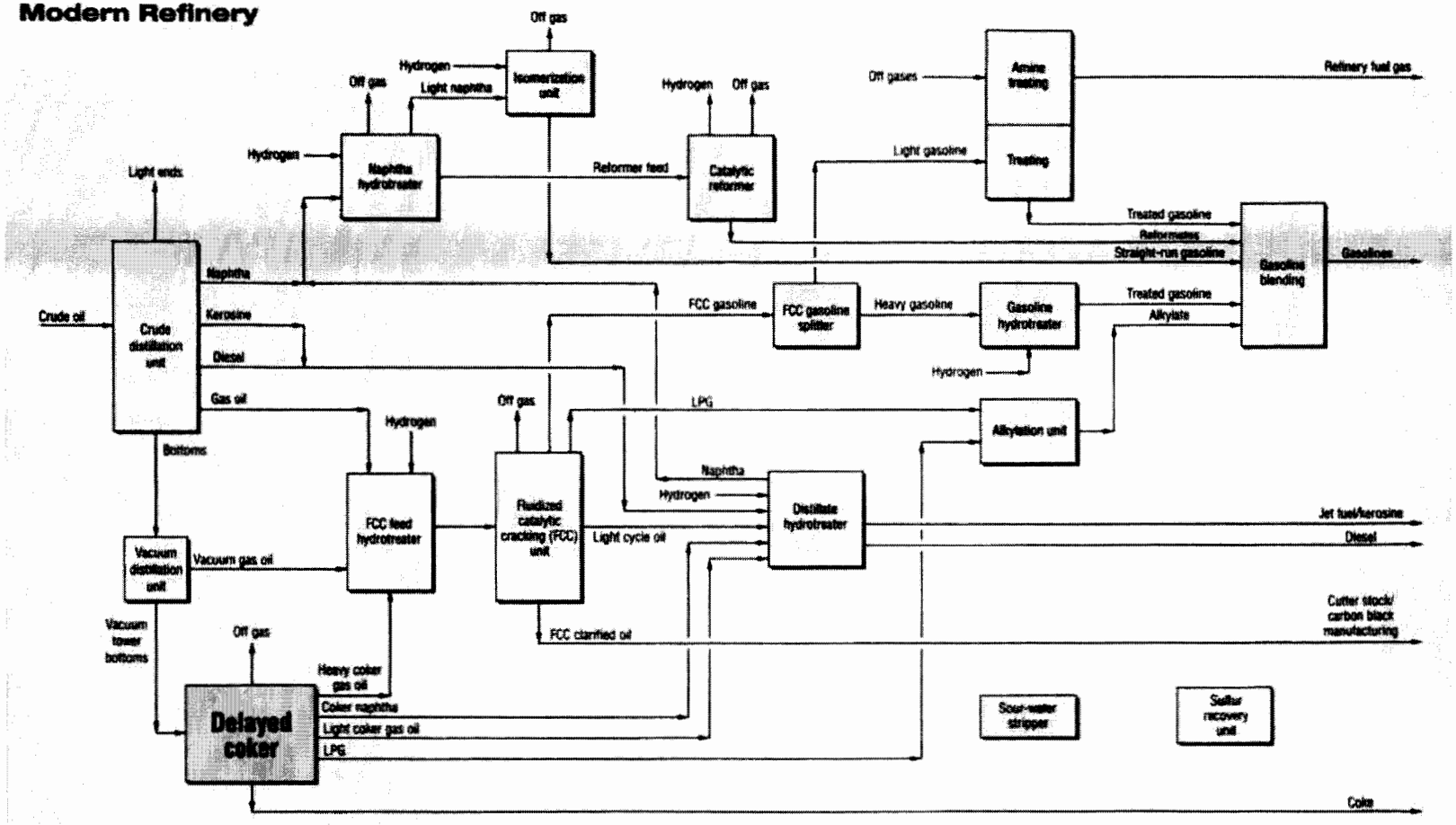


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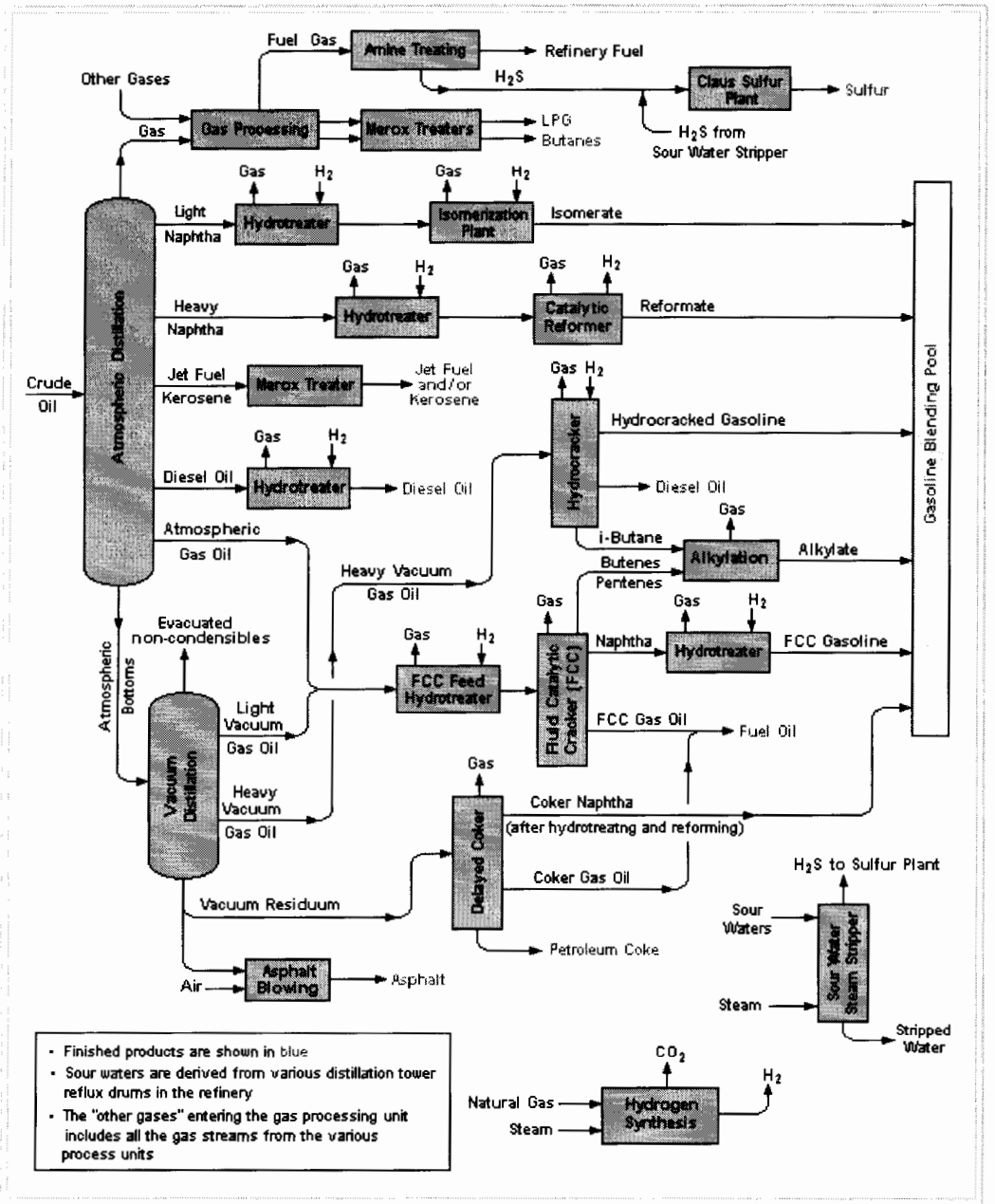
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SCALE IN FEET
300
0
300
600
Navajo Refining Company
Artesia, New Mexico
Facility Site Plan

Modern Refinery



The image below is a schematic flow diagram of a typical oil refinery that depicts the various unit processes and the flow of intermediate product streams that occurs between the inlet crude oil feedstock and the final end products. The diagram depicts only one of the literally hundreds of different oil refinery configurations. The diagram also does not include any of the usual refinery facilities providing utilities such as steam, cooling water, and electric power as well as storage tanks for crude oil feedstock and for intermediate products and end products.[1][4][5][6]



Schematic flow diagram of a typical oil refinery

There are many process configurations other than that depicted above. For example, the vacuum distillation unit may also produce fractions that can be refined into endproducts such as: spindle oil used in the textile industry, light machinery oil, motor oil, and various waxes.

The crude oil distillation unit

Oil refineries also produce various intermediate products such as hydrogen, light hydrocarbons, reformate and pyrolysis gasoline. These are not usually transported but instead are blended or processed further on-site. Chemical plants are thus often adjacent to oil refineries. For example, light hydrocarbons are steam-cracked in an ethylene plant, and the produced ethylene is polymerized to produce polyethene.

Common process units found in a refinery



Storage tanks and towers at Shell Puget Sound Refinery (Shell Oil Company), Anacortes, Washington

- Desalter unit washes out salt from the crude oil before it enters the atmospheric distillation unit.
- Atmospheric distillation unit distills crude oil into fractions. See Continuous distillation.
- Vacuum distillation unit further distills residual bottoms after atmospheric distillation.
- Naphtha hydrotreater unit uses hydrogen to desulfurize naphtha from atmospheric distillation. Must hydrotreat the naphtha before sending to a Catalytic Reformer unit.
- Catalytic reformer unit is used to convert the naphtha-boiling range molecules into higher octane reformate (reformer product). The reformate has higher content of aromatics and cyclic hydrocarbons). An important byproduct of a reformer is hydrogen released during the catalyst reaction. The hydrogen is used either in the hydrotreaters or the hydrocracker.
- Distillate hydrotreater unit desulfurizes distillates (such as diesel) after atmospheric distillation.
- Fluid catalytic cracker (FCC) unit upgrades heavier fractions into lighter, more valuable products.
- Hydrocracker unit uses hydrogen to upgrade heavier fractions into lighter, more valuable products.
- Visbreaking unit upgrades heavy residual oils by thermally cracking them into lighter, more valuable reduced viscosity products.
- Merox unit treats LPG, kerosene or jet fuel by oxidizing mercaptans to organic disulfides.
- Alternative processes for removing mercaptans are known, e.g. doctor sweetening process and caustic washing.
- Coking units (delayed coking, fluid coker, and flexicoker) process very heavy residual oils into gasoline and diesel fuel, leaving petroleum coke as a residual product.
- Alkylation unit produces high-octane component for gasoline blending.
- Dimerization unit converts olefins into higher-octane gasoline blending components. For example, butenes can be dimerized into isooctene which may subsequently be hydrogenated to form isooctane. There are also other uses for dimerization.
- Isomerization unit converts linear molecules to higher-octane branched molecules for blending into gasoline or feed to alkylation units.
- Steam reforming unit produces hydrogen for the hydrotreaters or hydrocracker.
- Liquified gas storage vessels store propane and similar gaseous fuels at pressure sufficient to maintain them in liquid form. These are usually spherical vessels or "bullets" (i.e., horizontal vessels with rounded ends).
- Storage tanks store crude oil and finished products, usually cylindrical, with some sort of vapor emission control and surrounded by an earthen berm to contain spills.
- Amine gas treater, Claus unit, and tail gas treatment convert hydrogen sulfide from hydrodesulfurization into elemental sulfur.
- Utility units such as cooling towers circulate cooling water, boiler plants generates steam, and instrument air systems include pneumatically operated control valves and an electrical substation.
- Wastewater collection and treating systems consist of API separators, dissolved air flotation (DAF) units and further treatment units such as an activated sludge biotreater to make water suitable for reuse or for disposal.[3]
- Solvent refining units use solvent such as cresol or furfural to remove unwanted, mainly aromatics from lubricating oil stock or diesel stock.
- Solvent dewaxing units remove the heavy waxy constituents petrolatum from vacuum distillation products.

Flow diagram of typical refinery

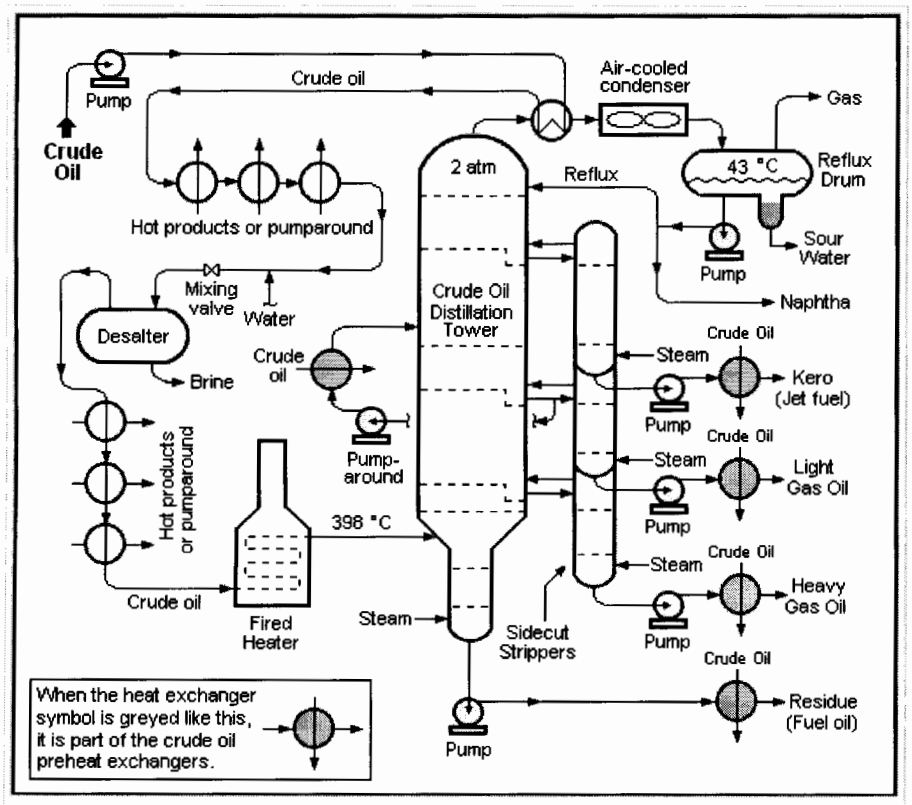
The crude oil distillation unit (CDU) is the first processing unit in virtually all petroleum refineries. The CDU distills the incoming crude oil into various fractions of different boiling ranges, each of which are then processed further in the other refinery processing units. The CDU is often referred to as the *atmospheric distillation unit* because it operates at slightly above atmospheric pressure.[1][2][7]

Below is a schematic flow diagram of a typical crude oil distillation unit. The incoming crude oil is preheated by exchanging heat with some of the hot, distilled fractions and other streams. It is then desalted to remove inorganic salts (primarily sodium chloride).

Following the desalter, the crude oil is further heated by exchanging heat with some of the hot, distilled fractions and other streams. It is then heated in a fuel-fired furnace (fired heater) to a temperature of about 398 °C and routed into the bottom of the distillation unit.

The cooling and condensing of the distillation tower overhead is provided partially by exchanging heat with the incoming crude oil and partially by either an air-cooled or water-cooled condenser. Additional heat is removed from the distillation column by a pumparound system as shown in the diagram below.

As shown in the flow diagram, the overhead distillate fraction from the distillation column is naphtha. The fractions removed from the side of the distillation column at various points between the column top and bottom are called *sidecuts*. Each of the sidecuts (i.e., the kerosene, light gas oil and heavy gas oil) is cooled by exchanging heat with the incoming crude oil. All of the fractions (i.e., the overhead naphtha, the sidecuts and the bottom residue) are sent to intermediate storage tanks before being processed further.



Schematic flow diagram of a typical crude oil distillation unit as used in petroleum crude oil refineries.

Specialty end products

These require blending various feedstocks, mixing appropriate additives, providing short term storage, and preparation for bulk loading to trucks, barges, product ships, and railcars:

- Gaseous fuels such as propane, stored and shipped in liquid form under pressure in specialized railcars to distributors.
- Lubricants (produces light machine oils, motor oils, and greases, adding viscosity stabilizers as required), usually shipped in bulk to an offsite packaging plant.
- Wax (paraffin), used in the packaging of frozen foods, among others. May be shipped in bulk to a site to prepare as packaged blocks.
- Sulfur (or sulfuric acid), byproducts of sulfur removal from petroleum which may have up to a couple percent sulfur as organic sulfur-containing compounds. Sulfur and sulfuric acid are useful industrial materials. Sulfuric acid is usually prepared and shipped as the acid precursor oleum.
- Bulk tar shipping for offsite unit packaging for use in tar-and-gravel roofing.
- Asphalt unit. Prepares bulk asphalt for shipment.
- Petroleum coke, used in specialty carbon products or as solid fuel.
- Petrochemicals or petrochemical feedstocks, which are often sent to petrochemical plants for further processing in a variety of ways. The petrochemicals may be olefins or their precursors, or various types of aromatic petrochemicals.

Siting/locating of petroleum refineries

A party searching for a site to construct a refinery or a chemical plant needs to consider the following issues:

- The site has to be reasonably far from residential areas.
- Infrastructure should be available for supply of raw materials and shipment of products to markets.
- Energy to operate the plant should be available.
- Facilities should be available for waste disposal.

Refineries which use a large amount of steam and cooling water need to have an abundant source of water. Oil refineries therefore are often located nearby navigable rivers or on a sea shore, nearby a port. Such location also gives access to transportation by river or by sea. The advantages of transporting crude oil by pipeline are evident, and oil companies often transport a large volume of fuel to distribution terminals by pipeline. Pipeline may not be practical for products with small output, and rail cars, road tankers, and barges are used.

Petrochemical plants and solvent manufacturing (fine fractionating) plants need spaces for further processing of a large volume of refinery products for further processing, or to mix chemical additives with a product at source rather than at blending terminals.

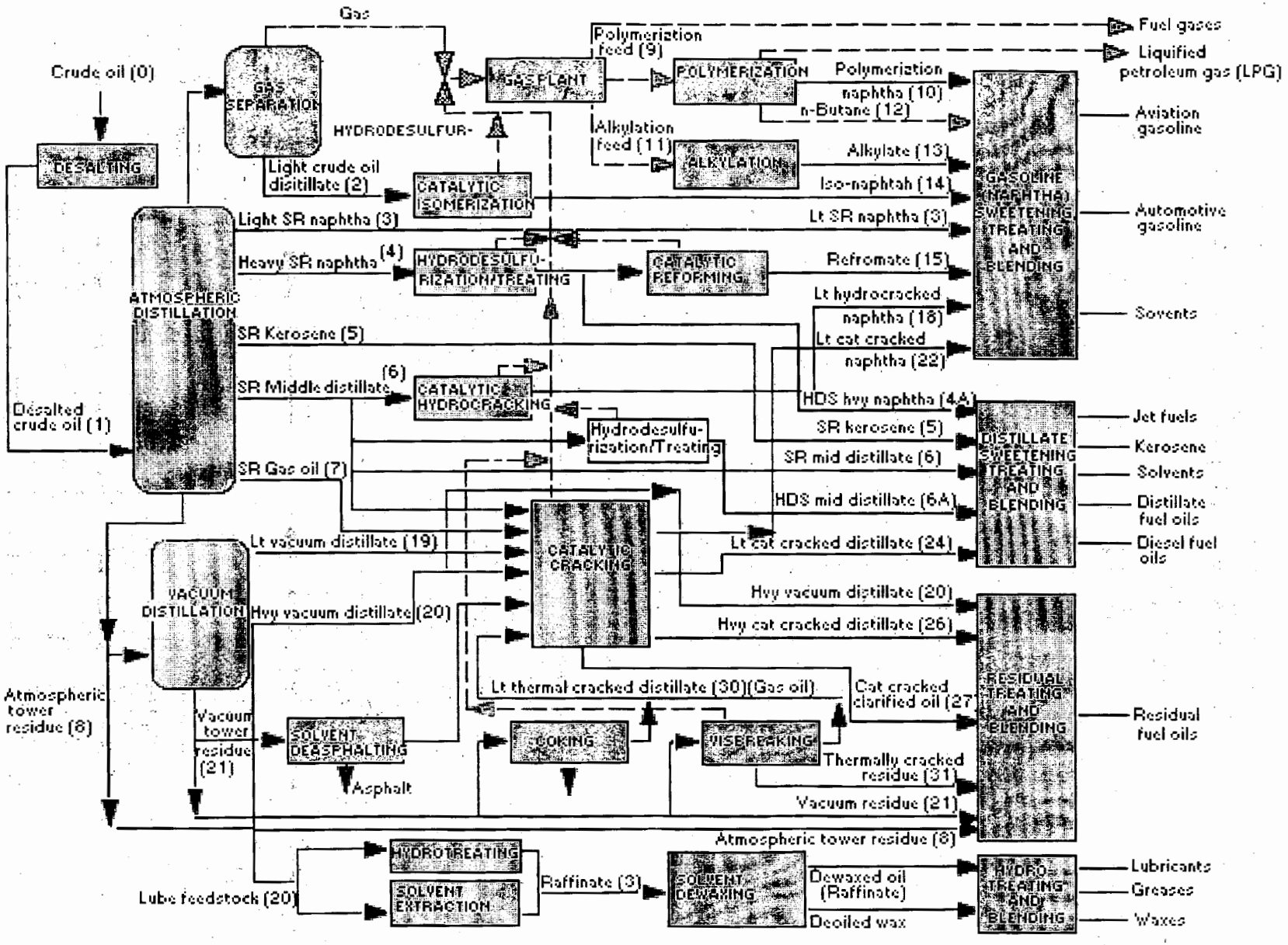
Safety and environmental concerns

The refining process releases a number of different chemicals into the atmosphere (see AP 42 Compilation of Air Pollutant Emission Factors) and a notable odor normally accompanies the presence of a refinery. Aside from air pollution impacts there are also wastewater concerns,[3] risks of industrial accidents such as fire and explosion, and noise health effects due to industrial noise.



Fire-extinguishing operations after the Texas City refinery explosion.

Many governments worldwide have mandated restrictions on contaminants that refineries release, and most refineries have installed the equipment needed to comply with the requirements of the pertinent environmental protection regulatory agencies. In the United States, there is strong pressure to prevent the development of new refineries, and no major refinery has been built in the country since Marathon's Garyville, Louisiana facility in 1976. However, many existing refineries have been expanded


Gas
Crude oil (0)
GAS SEPARATION
DESALTING
HYDRODESULFUR-
Light crude oil distillate (2)
CATALYTIC ISOMERIZATION
GAS PLANT
Polymerization feed (9)
POLYMERIZATION
Polymerization naphtha (10)
n-Butane (12)
Alkylation feed (11)
ALKYLATION
Alkylate (13)
Iso-naphtah (14)
Fuel gases
Liquified petroleum gas (LPG)
Aviation gasoline
GASOLINE (NAPHTHA) SWEETENING TREATING AND BLENDING
Automotive gasoline
Solvents
ATMOSPHERIC DISTILLATION
Light SR naphtha (3)
Heavy SR naphtha (4)
HYDRODESULFU-RIZATION/TREATING
CATALYTIC REFORMING
Lt SR naphtha (3)
Refromate (15)
Lt hydrocracked naphtha (18)
Lt cat cracked naphtha (22)
SR Kerosene (5)
SR Middle distillate (6)
CATALYTIC HYDROCRACKING
HDS hvy naphtha (4A)
Desalted crude oil (1)
Hydrodesulfu-rization/Treating
SR kerosene (5)
SR mid distillate (6)
SR Gas oil (7)
HDS mid distillate (6A)
DISTILLATE SWEETENING TREATING AND BLENDING
Jet fuels
Kerosene
Solvents
Distillate fuel oils
Diesel fuel oils
Lt vacuum distillate (19)
CATALYTIC CRACKING
Lt cat cracked distillate (24)
VACUUM DISTILLATION
Hvy vacuum distillate (20)
Hvy vacuum distillate (20)
Hvy cat cracked distillate (26)
Atmospheric tower residue (8)
Lt thermal cracked distillate (30)(Gas oil)
Cat cracked clarified oil (27)
RESIDUAL TREATING AND BLENDING
Residual fuel oils
Vacuum tower residue (21)
SOLVENT DEASPHALTING
Asphalt
COKING
VISEBREAKING
Thermally cracked residue (31)
Vacuum residue (21)
Atmospheric tower residue (8)
HYDROTREATING
SOLVENT EXTRACTION
Lube feedstock (20)
Raffinate (3)
SOLVENT DEWAXING
Dewaxed oil (Raffinate)
Dewaxed wax
HYDRO-TREATING AND BLENDING
Lubricants
Greases
Waxes

Chavez, Carl J, EMNRD

From:	Brancard, Bill, EMNRD
Sent:	Monday, November 11, 2013 3:36 PM
To:	Bailey, Jami, EMNRD; Dawson, Scott, EMNRD; Chavez, Carl J, EMNRD; VonGonten, Glenn, EMNRD
Subject:	FW: Navajo Refining Company draft NMED settlement agreement and order and proposed Exhibit A to OCD order
Attachments:	Settlement agreement final draft 20121111 (00517056-2xB76D6).docx; OCD order Exhibit A final draft 20131111 (00517096xB76D6).docx

From: Louis W. Rose [mailto:lrose@montand.com]
Sent: Monday, November 11, 2013 3:37 PM
To: Brancard, Bill, EMNRD
Subject: Navajo Refining Company draft NMED settlement agreement and order and proposed Exhibit A to OCD order

Bill:

Attached is Navajo Refining Company's draft NMED settlement agreement and order for the selenium issue at the Artesia Refinery. Also attached is proposed Exhibit A to a revised OCD order. We are drafting revisions to the OCD order to conform to the NMED draft agreement and order. If you have any questions, let me know.

Also, Denise asked that I confirm our 9 PM meeting with you tomorrow to discuss the drafts. If we need to move that back, let me know.

Thanks for your patience.

Louis W. Rose
Montgomery & Andrews, P.A.
P.O. Box 2307
Santa Fe, NM 87504-2307
lrose@montand.com
www.montand.com
(505) 986-2506 (direct)
(505) 982-4289 (fax)

Street address:
325 Paseo de Peralta
Santa Fe, NM 87501

THIS COMMUNICATION MAY BE IN CONFIDENCE OR SUBJECT TO ATTORNEY-CLIENT PRIVILEGE OR CONTAIN ATTORNEY WORK PRODUCT. UNLESS YOU ARE THE ADDRESSEE (OR AUTHORIZED TO RECEIVE FOR THE ADDRESSEE), YOU MAY NOT USE, COPY OR DISCLOSE TO ANYONE THE COMMUNICATION OR ANY INFORMATION CONTAINED IN THE MESSAGE. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE ADVISE THE SENDER BY REPLY E-MAIL TO lrose@montand.com, AND DELETE THE COMMUNICATION. THANK YOU.

STATE OF NEW MEXICO
ENVIRONMENT DEPARTMENT

ENVIRONMENTAL HEALTH DIVISION OF THE NEW MEXICO ENVIRONMENT DEPARTMENT,

Complainant,

v. **No.**

NAVAJO REFINING COMPANY, LLC,

Respondent.

SETTLEMENT AGREEMENT AND STIPULATED FINAL ORDER

This Settlement Agreement and Stipulated Final Order ("Agreement") is made by and between the Environmental Health Division ("Division") of the New Mexico Environment Department ("NMED"), and Navajo Refining Company, LLC ("Navajo") (collectively the "Parties"). The Parties enter into this Agreement to resolve alleged violations of the New Mexico Hazardous Waste Act ("HWA"), NMSA 1978, §§ 74-4-1 to 74-4-14, and the Hazardous Waste Management Regulations ("HWMR"), 20.4.1 NMAC, at Navajo's Artesia, New Mexico refinery and to place Navajo on a compliance schedule requiring it to return to full compliance with the HWA and the HWMR as specified below.

I. BACKGROUND

A. PARTIES

1. Pursuant to NMSA 1978, § 9-7A-4, NMED is an executive agency within the government of the State of New Mexico.

2. Pursuant to NMSA 1978, § 9-7A-6.B, the Secretary of NMED has every power expressly enumerated in the laws, whether granted to the secretary, the department or any

division of the department.

3. Pursuant to NMSA 1978, § 74-1-7.A(13), NMED may enforce the HWA and its correlated regulations.

4. Pursuant to NMSA 1978, § 9-7A-6.B(2), the Secretary of NMED may delegate authority to subordinates as he deems necessary and appropriate. The Division is an organizational unit of NMED that was created pursuant to the authority granted the Secretary of NMED under NMSA 1978, § 9-7A-6.B(3). Pursuant to a delegation of authority from the Secretary of NMED, the Director of the Division has the authority to seek administrative enforcement, including injunctive relief and civil penalties, for violations of the HWA and the Hazardous Waste Management Regulations.

5. Navajo is a "person" as defined in NMSA 1978, § 74-4-3.M.

6. Navajo owns and operates a petroleum refinery located at 501 East Main Street, Artesia, New Mexico ("Facility"), including an onsite wastewater treatment plant ("WWTP").

7. Pursuant to the HWA and Hazardous Waste Management Regulations, NMED issued Navajo a hazardous waste permit for closure and post-closure care of certain units at the Facility. The hazardous waste permit does not authorize Navajo to dispose of hazardous waste at the site.

8. Pursuant to the New Mexico Water Quality Act and the Water Quality Control Commission Regulations, the Oil Conservation Division of the New Mexico Energy, Minerals & Natural Resources Department ("OCD") issued permits OCD Permit Nos. UIC-CLI-008 (I-008) (WDW-1), UIC-CLI-008-1 (I-008-1) (WDW-2), and UICI-008-0 (WDW-3) to Navajo for the injection of non-hazardous refinery wastewater at Underground Injection Control

Class I wells at the Facility (the "wells"). Wastewater is directed to two WWTP intermediate tanks, identified as Tanks 801 and Tank 836, prior to discharge to the wells.

9. Pursuant to 42 U.S.C. § 6926(b), the U.S. Environmental Protection Agency ("EPA") provided final authorization to the State of New Mexico to maintain a hazardous waste program in lieu of the federal program under the Resource Conservation and Recovery Act. 72 Fed. Reg. 46,165 (Aug. 17, 2007).

B. HISTORY AND ALLEGED VIOLATIONS

10. On October 15, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on September 27, 2013 above the permit limit of less than 1.0 mg/L of selenium, based on the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311 (the "Se Limit"). Navajo advised the OCD and NMED that it was investigating the reasons for the selenium concentrations and possible corrective actions.

11. On October 20, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on October 15, 2013 above the Se Limit. Navajo took prompt steps to reduce selenium concentrations, such as changing to different crude oil and reducing refinery throughput. Furthermore, injection was halted and wastewater was only subsequently injected after receipt of data indicating that selenium concentrations in Tanks 801 and 836 were below the Se Limit.

12. On October 24, 2013, the Director of the OCD issued Navajo an Agreed Compliance Order specifying further actions to assure that the wastewater injected at the wells did not exceed the selenium concentration allowed under the permits and assessing a civil

penalty for past alleged violations. The Order requires Navajo to conduct sampling of wastewater for selenium on a specified schedule and to report the results to OCD. It also requires Navajo to evaluate potential remedial options.

13. Navajo immediately took steps to commence complying with the Agreed Compliance Order, including implementing a rigorous sampling regimen, further working with an outside engineering firm to address short-term selenium reduction measures, and developing a written refinery action plan, among other measures.

14. On November 5, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on October 31, 2013 above the Se Limit. Upon receiving the sampling results on November 5, Navajo ceased discharging wastewater to the wells.

15. On November 6, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on November 4, 2013 above the Se Limit and indicated the same for the discharge on November 2, 2013.

16. On November 7, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on November 5, 2013 above the Se Limit.

17. Navajo subsequently advised the OCD and NMED that it is investigating the reasons for the reported selenium concentrations, including possible additional corrective actions to prevent future wastewater concentrations in excess of the Se Limit. Navajo has been, and is continuing to, actively reviewing short-term and long-term engineering options for reducing selenium concentrations in the Facility wastewater.

18. In the course of further assessing the data, Navajo, OCD and NMED have recognized certain anomalies in the results, including that selenium levels based on Method 1311 are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze the results and to share the outcome of such analysis with OCD and NMED before the results are deemed fully valid and reliable. Therefore, although Navajo will continue to pursue immediate corrective action based on the reported results at this time, Navajo reserves its right to assert that the prior results were invalid or unreliable in any future proceeding.

19. NMED has determined that based on the reported results the discharges identified in Paragraphs 10, 11, and 14 through 16 above violate the HWA and HWMR unless subsequent information demonstrates to the satisfaction of NMED that the selenium data was unreliable or invalid.

II. NO HARM TO PUBLIC HEALTH OR ENVIRONMENT

20. There is no known or anticipated damage or injury to public health or the environment resulting from the discharges identified in Paragraphs 10, 11, and 14 through 16 above, since (1) the discharges were to Class I injection wells in formations that may not be used as a public drinking water supply and that are beneath the lowermost formation that contains 10,000 milligrams per liter or less total dissolved solids (TDS); and (2) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the Se Limit.

III. COMPROMISE AND SETTLEMENT

21. The Parties have engaged in settlement discussions in an effort to resolve the alleged violations identified in this Agreement. As a result of these discussions, the Parties

enter into this Agreement for the purpose of settling the violations alleged herein.

22. The Parties enter into this Agreement for the sole purpose of resolving all of the alleged violations described above and any other violations that could have been asserted from the facts and legal conclusions alleged therein.

23. In order to settle the alleged violations as set forth above, the Parties agree that Navajo shall take the actions and meet the schedule set forth in the OCD's Agreed Compliance Order, which is attached hereto as Exhibit A.

24. Navajo will pay a civil penalty of $_____ to resolve all of the alleged violations. Payment of this amount shall be remitted to the Division no later than 30 days after the effective date of this Agreement. Payment must be made to "State of New Mexico-Hazardous Waste Emergency Fund" and shall be sent to the following address:

Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

25. Navajo shall pay stipulated penalties in the amounts set forth below if the following violations of the Agreement occur:

a. For violation of the Se Limit until the remedy approved pursuant to paragraphs ___ and ___ under Exhibit A to such OCD Order (the "Remediation Project") is implemented: $_____ per violation, if less than [number] of violations in any calendar quarter; $_____ per violation, if equal to or greater than [number] of violations in any calendar quarter.

b. For violation of the Se Limit after the Remediation Project is implemented: $_____ per violation.

c. For violation of any requirement of this Agreement other than (a) or (b): $_____.

Stipulated penalties shall be due within 30 days from the date that the HWB makes a written demand for payment of stipulated penalties. Payment shall be by corporate check, certified check, or other guaranteed negotiable instrument made payable to the "State of New Mexico", and shall be sent to the following address:

Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

26. Until the Remediation Project is completed, Navajo shall submit monthly status reports to HWB. All submittals shall be sent to the HWB at the following addresses:

Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505
[email address]

Report submissions shall include an electronic version in both pdf and Word and two paper copies.

27. Based on the facts presented above, the lack of known or anticipated damage or injury to public health or the environment, the commitments made herein by Navajo, the company's long history of compliance with the OCD permits prior to the events described above, the lack of future anticipated damage or injury resulting from compliance with this Agreement, and other relevant considerations, the Division has determined Navajo need not be ordered to cease using wells WDW-1, WDW-2, or WDW-3 during the period of this Agreement. However, this paragraph shall not apply in the event: (A) new information not known by the

Division at the time of this Agreement causes the Division to believe that Navajo will not be able to return to compliance pursuant to this Agreement; or (B) the Division determines that the continued use of the wells presents an imminent and substantial endangerment to human health and the environment.

IV. OTHER TERMS AND CONDITIONS

A. ENFORCEMENT

28. NMED retains the right to pursue any relief authorized by the HWA, the Hazardous Waste Management Regulations or other law for any violation not addressed herein.

29. NMED retains the right to enforce this Agreement by administrative or judicial action, which decision shall be in its sole discretion.

30. In the event that NMED elects to file a judicial action to enforce this Agreement, the Parties agree that the First Judicial District Court of Santa Fe County, New Mexico shall have exclusive jurisdiction over the Parties and the Agreement. The Parties agree to waive any right to challenge that jurisdiction or venue lies with the First Judicial District Court of Santa Fe County, New Mexico.

31. The laws of the State of New Mexico shall govern the construction and interpretation of this Agreement.

B. BINDING EFFECT

32. This Agreement shall be binding upon NMED and its successor agencies and shall be binding upon Navajo and its officers, directors, employees, agents, subsidiaries, successors, heirs, assigns, trustees, or receivers.

C. EFFECTIVE DATE

33. This Agreement shall become effective upon execution by Navajo,

through its duly authorized representatives, and upon execution by the Director of the Environmental Health Division.

D. INTEGRATION

34. This Agreement merges all prior written and oral communications between the Parties concerning the subject matter of this Settlement Agreement and contains the entire agreement between the Parties.

E. MODIFICATION

35. This Agreement shall not be modified except by express written agreement of the Parties.

F. RESERVATION OF RIGHTS AND DEFENSES

36. This Agreement shall not be construed to prohibit or limit NMED in any way from requiring Navajo to comply with any state or federal requirements applicable to the Facility except as provided herein.

37. This Settlement Agreement shall not be construed to prohibit or limit NMED in any way from seeking any relief authorized by the HWA or the HWMR for violations of any state or federal requirements that occur in the future at the Facility except as provided herein.

38. This Agreement shall not be construed to prohibit or limit Navajo in any way from raising any defense to any action by NMED for violations of the HWA or the Hazardous Waste Management Regulations.

G. WAIVER OF STATE LIABILITY

39. Navajo shall assume all costs and liabilities incurred in performing any obligation under this Agreement.

40. NMED, on its own behalf, and on behalf of the State of New Mexico, shall not assume any liability for the performance of any obligation under this Agreement.

H. DISCLOSURE TO SUCCESSORS-IN-INTEREST

41. Until such time as Navajo complies with the terms and conditions of the Agreement or it is terminated by written agreement of the parties, Navajo shall disclose this Agreement to any successor-in-interest to the facility and shall advise such successor-in-interest that the Agreement and Stipulated Final Order are binding on the successor-in-interest.

I. FORCE MAJEURE

42. Navajo's obligation to comply with this Agreement shall be deferred only to the extent and only for the duration that the failure in compliance is caused by "force majeure." For purposes of this Agreement, "force majeure" is defined as an event or set of circumstances which are beyond Navajo's control and could not have been prevented by Navajo's reasonable action or due diligence, including any delay in required approvals, issuance of any necessary permits or other similar items. "Force majeure" shall not apply to any failure in compliance due to increased costs or Navajo's financial inability to carry out this Agreement. Navajo shall submit notification to the Division within 10 days after the date when it first knows or should have known that a failure in compliance is reasonably foreseeable. Such written notice shall include the nature, cause and anticipated length of the delay associated with the failure of compliance and all steps that Navajo has taken and will take to avoid or minimize the failure of compliance, with a schedule of implementation. If the Division agrees that the failure in compliance is attributable to "force majeure," it shall extend the time for compliance only to the extent and only for the duration necessary to accommodate the "force majeure."

J. EXTENSION OF DEADLINES

43. The Division may grant an extension of any deadline to perform any activity required under this Agreement. Navajo shall submit all requests for an extension of a deadline in writing to the Division. The request shall propose a new deadline for the activity and shall include the basis for the request. The Division shall respond by approving, approving in part or denying the request as soon as possible, but no later than fifteen days after receipt. If the Division approves in part or denies the request, the response shall specify the reasons for the Division's actions.

K. AUTHORITY OF SIGNATORIES

44. The persons executing this Agreement represent that they have the requisite authority to bind either NMED or Navajo, as appropriate, to this Agreement, and that their representation shall be legally sufficient evidence of actual or apparent authority to bind NMED or Navajo to this Agreement.

L. COUNTERPARTS

45. This Agreement may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Environmental Health Division
New Mexico Environment Department

BY: _____ DATE: _____

Tom Blaine, Division Director
Environmental Health Division
New Mexico Environment Department

Navajo Refining Company, LLC

BY: _____ DATE: _____

Michael G. McKee
Vice President and Refinery Manager

FINAL ORDER

Pursuant to Section 20.1.5.600.B(2) NMAC, this Settlement Agreement is hereby APPROVED and ORDERED.

BY: _____ DATE: _____

Ryan Flynn
Secretary-Designate
New Mexico Environment Department

Exhibit A to Agreed Order

Sampling and Interim Operational Requirements

1. Beginning on the effective date of the Agreement, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks using Method 1311.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per quarter.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all sampling results.

3. If, at any time during the 18-month period described at Paragraph 5, below, a sample of the injection fluid exceeds the Se Limit using Method 1311, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

    a) notify OCD and NMED within twenty-four (24) hours;

    b) promptly take appropriate action to reduce selenium loading or concentrations, including potentially reducing refinery crude rate by an amount sufficient to return the Facility to compliance with the Se Limit;

    c) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the WWTP;

    d) take such other actions as may be appropriate to address the exceedance;

    e) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Remedy Selection and Implementation of Short Term Plan

4. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process changes to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation including:

a) its selection of short-term remedies;

b) dates for completion of any necessary bench scale or other trials ;

c) dates of anticipated installation of any selected technologies; and

d) dates of anticipated startup of any selected technologies.

5. Navajo shall complete construction of the remedy selected pursuant to paragraph 4 above (the "Remediation Project") within 12 months after the later of (a) OCD approval of such remedy or (b) the issuance of any necessary permits for construction of same. Thereafter, Navajo shall achieve compliance with the Se Limit within 6 months after completion of the construction of such remedy.

Reporting

6. Beginning November 30, 2013, on or before the last day of the month, Navajo shall provide NMED with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Agreement.

7. On or before November 30, 2013, Navajo shall advise OCD of the results of the further review of the sampling data and address any anomalies or discrepancies.

Long Term Project

8. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. The project manager has been assigned and is currently working to purchase an existing SeRT® unit or to build a new unit a soon as possible. On or before May 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including its decision regarding the implementation of the SeRT® technology.

Chavez, Carl J, EMNRD

From: Brancard, Bill, EMNRD
Sent: Monday, November 11, 2013 6:27 PM
To: Bailey, Jami, EMNRD; Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Subject: FW: Navajo Refining Company draft NMED settlement agreement and order and proposed Exhibit A to OCD order
Attachments: Amended and supplemental OCD order clean 20131111 (00517132xB76D6).docx

Here's another amended Order to review. Navajo is planning to come by at 9 am tomorrow. Let me know if that is a problem and I will communicate with them.

From: Louis W. Rose [mailto:lrose@montand.com]
Sent: Monday, November 11, 2013 6:05 PM
To: Brancard, Bill, EMNRD
Subject: RE: Navajo Refining Company draft NMED settlement agreement and order and proposed Exhibit A to OCD order

Bill:

Sorry for the delay. Attached is a revised OCD order that adds the more recent sampling results and revises the stipulated penalty provision and remedial measures to correspond to the draft NMED order. As you will note, I took out the specifics for the remedial measures and included them in Exhibit A that I sent earlier. That made it easier to reference in the draft NMED order.

If you have any questions, let me know.

Louis W. Rose
Montgomery & Andrews, P.A.
P.O. Box 2307
Santa Fe, NM 87504-2307
lrose@montand.com
www.montand.com
(505) 986-2506 (direct)
(505) 982-4289 (fax)

Street address:
325 Paseo de Peralta
Santa Fe, NM 87501

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From: Brancard, Bill, EMNRD [mailto:bill.brancard@state.nm.us]
Sent: Monday, November 11, 2013 3:42 PM
To: Louis W. Rose
Subject: RE: Navajo Refining Company draft NMED settlement agreement and order and proposed Exhibit A to OCD order

9 PM not good; 9 AM better.

From: Louis W. Rose [mailto:lrose@montand.com]
Sent: Monday, November 11, 2013 3:37 PM
To: Brancard, Bill, EMNRD
Subject: Navajo Refining Company draft NMED settlement agreement and order and proposed Exhibit A to OCD order

Bill:

Attached is Navajo Refining Company's draft NMED settlement agreement and order for the selenium issue at the Artesia Refinery. Also attached is proposed Exhibit A to a revised OCD order. We are drafting revisions to the OCD order to conform to the NMED draft agreement and order. If you have any questions, let me know.

Also, Denise asked that I confirm our 9 PM meeting with you tomorrow to discuss the drafts. If we need to move that back, let me know.

Thanks for your patience.

Louis W. Rose
Montgomery & Andrews, P.A.
P.O. Box 2307
Santa Fe, NM 87504-2307
lrose@montand.com
www.montand.com
(505) 986-2506 (direct)
(505) 982-4289 (fax)

Street address:
325 Paseo de Peralta
Santa Fe, NM 87501

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PRIVILEGED AND CONFIDENTIAL – INTERNAL DRAFT – 11/11/2013; 5:10 p.m. (lwr)

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended (Act), and the regulations promulgated under the Act, the Chairman of the Oil Conservation Commission and the Director of the Oil Conservation Division of the Energy Minerals and Natural Resources Department of the State of New Mexico (Director) issues this Amended and Supplemental Agreed Compliance Order (Order) to Navajo Refining Company, L.L.C. (Navajo), directing compliance with the Act, the Water Quality Control Commission (WQCC) Regulations and permits issued under the Act. This Order supersedes the Agreed Compliance Order issued October 24, 2013.

I. FINDINGS & DETERMINATIONS BY THE DIRECTOR

1. The Oil Conservation Commission is a "constituent agency" under the Act and is charged with administration and enforcement of the Act and regulations promulgated in accordance with the Act. NMSA 1978, Section 74-6-3 (K). The Oil Conservation Division of the Energy, Minerals and Natural Resources Department (OCD) has concurrent authority with the Commission. NMSA 1978, Section 70-2-6(B).

2. Navajo is a Limited Liability Company doing business in New Mexico. Navajo is an active entity with a principal address of 501 East Main Street, Artesia, New Mexico 88210.

3. Navajo owns and operates a petroleum refinery located at 501 East Main Street, Artesia, New Mexico ("Facility"), including an onsite wastewater treatment plant ("WWTP").

4. The WQCC has adopted regulations, pursuant to the Act, requiring permits for the injection of fluids and the operation of underground injection wells in New Mexico. 20.6.2.5004 NMAC. For wells at oil and gas operations, including refineries, the WQCC has delegated administration and enforcement of those regulations to the OCC and OCD.

5. Pursuant to the New Mexico Water Quality Act and the Water Quality Control Commission Regulations, the Oil Conservation Division of the New Mexico Energy, Minerals & Natural Resources Department ("OCD") issued permits OCD Permit Nos. UIC-CLI-008 (I-008) (WDW-1), UIC-CLI-008-1 (I-008-1) (WDW-2), and UICI-008-0 (WDW-3) to Navajo for the injection of non-hazardous refinery wastewater at Underground Injection Control Class I wells at the Facility (the "wells"). Wastewater is directed to two WWTP intermediate tanks, identified as Tanks 801 and Tank 836, prior to discharge to the wells.

6. Pursuant to 42 U.S.C. § 6926(b), the U.S. Environmental Protection Agency ("EPA") provided final authorization to the State of New Mexico to maintain a hazardous waste program in lieu of the federal program under the Resource Conservation and Recovery Act. 72 Fed. Reg. 46,165 (Aug. 17, 2007).

7. On October 15, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on September 27, 2013 above the permit limit of less than 1.0 mg/L of selenium, based on the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311 (the "Se Limit").

Navajo advised the OCD and NMED that it was investigating the reasons for the selenium concentrations and possible corrective actions.

8. On October 20, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on October 15, 2013 above the Se Limit. Navajo took prompt steps to reduce selenium concentrations, such as changing to different crude oil and reducing refinery throughput. Furthermore, injection was halted and wastewater was only subsequently injected after receipt of data indicating that selenium concentrations in Tanks 801 and 836 were below the Se Limit.

9. On October 24, 2013, the Director of the OCD issued Navajo an Agreed Compliance Order specifying further actions to assure that the wastewater injected at the wells did not exceed the selenium concentration allowed under the permits and assessing a civil penalty for past alleged violations. The Order requires Navajo to conduct sampling of wastewater for selenium on a specified schedule and to report the results to OCD. It also requires Navajo to evaluate potential remedial options.

10. Navajo immediately took steps to commence complying with the Agreed Compliance Order, including implementing a rigorous sampling regimen, further working with an outside engineering firm to address short-term selenium reduction measures, and developing a written refinery action plan, among other measures.

11. On November 5, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on October 31, 2013 above the Se Limit. Upon receiving the sampling results on November 5, Navajo ceased discharging wastewater to the wells.

12. On November 6, 2013, Navajo orally notified the OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on November 4, 2013 above the Se Limit and indicated the same for the discharge on November 2, 2013.

13. On November 7, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the permitted wells on November 5, 2013 above the Se Limit.

14. Navajo subsequently advised the OCD and NMED that it is investigating the reasons for the reported selenium concentrations, including possible additional corrective actions to prevent future wastewater concentrations in excess of the Se Limit. Navajo has been, and is continuing to, actively reviewing short-term and long-term engineering options for reducing selenium concentrations in the Facility wastewater.

15. In the course of further assessing the data, Navajo, OCD and NMED have recognized certain anomalies in the results, including that selenium levels based on Method 1311 are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze the results and to share the outcome of such analysis with OCD and NMED before the results are deemed fully valid and reliable. Therefore, although Navajo will continue to pursue immediate corrective action based on the reported results at this time, Navajo reserves its right to assert that the prior results were invalid or unreliable in any future proceeding.

16. There is no known or anticipated damage or injury to public health or the environment resulting from the discharges identified above, since (1) the discharges were to

Class I injection wells in formations that may not be used as a public drinking water supply and that are beneath the lowermost formation that contains 10,000 milligrams per liter or less total dissolved solids (TDS); and (2) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the Se Limit.

II. CONCLUSIONS OF THE DIRECTOR

1. The Director has jurisdiction over the parties and subject matter in this proceeding.

2. Navajo is a person as defined by NMSA 1978, Section 74-6-2.I.

3. Based on the facts presented above, the lack of known or anticipated damage or injury to public health or the environment, the commitments made herein by Navajo, the company's long history of compliance with the OCD permits prior to the events described above, the lack of future anticipated damage or injury resulting from compliance with this Agreement, and other relevant considerations, the Director has determined Navajo need not be ordered to cease using wells WDW-1, WDW-2, or WDW-3 during the period of this Agreement. However, this paragraph shall not apply in the event: (A) new information not known by OCD at the time of this Agreement causes OCD to believe that Navajo will not be able to return to compliance pursuant to this Agreement; or (B) OCD determines that the continued use of the wells presents an imminent and substantial endangerment to human health and the environment.

III. ORDER

1. Compliance Schedule

a. Navajo shall take the actions and meet the schedule set forth in Exhibit A to this Order.

b. Navajo's obligation to comply with this Order shall be deferred only to the extent and only for the duration that the failure in compliance is caused by "force majeure." For purposes of this Agreement, "force majeure" is defined as an event or set of circumstances which are beyond Navajo's control and could not have been prevented by Navajo's reasonable action or due diligence, including any delay in required approvals, issuance of any necessary permits or other similar items. "Force majeure" shall not apply to any failure in compliance due to increased costs or Navajo's financial inability to carry out this Agreement. Navajo shall promptly notify OCD of any force majeure event that has resulted or will result in the inability of Navajo to comply with any obligation under this Order and shall provide OCD with a schedule for completing the obligations.

c. Until the Remediation Project is completed, Navajo shall submit monthly status reports to the OCD. All submittals shall be sent to the OCD at the following address:

Director, Oil Conservation Division
New Mexico Energy, Mineral & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: CO 2013-001

Report submissions shall include an electronic version in both PDF and Word and two paper copies.

2. Civil Penalties

a. Navajo will pay a civil penalty of $_____ to resolve all of the alleged violations. Payment of this amount shall be remitted to OCD no later than 30 days after the effective date of this Agreement. Payment must be made to "State of New Mexico- General Fund" and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Mineral & Natural Resources Department

1220 South St. Francis Drive
Santa Fe, NM 87505
Re: CO 2013-001

b. Navajo shall pay stipulated penalties in the amounts set forth below if the following violations of the Agreement occur:

(1) For violation of the Se Limit until the remedy approved pursuant to paragraphs __ and __ of the Remediation Project (as defined on Exhibit A) is implemented: $_____ per violation, if less than [number] of violations in any calendar quarter; $_____ per violation, if equal to or greater than [number] of violations in any calendar quarter.

(2) For violation of the Se Limit after the Remediation Project is implemented: $_____ per violation.

(3) For violation of any requirement of this Agreement other than (a) or (b): $_____.

Stipulated penalties shall be due within 30 days from the date that the OCD makes a written demand for payment of stipulated penalties. Payment shall be by corporate check, certified check, or other guaranteed negotiable instrument made payable to the "State of New Mexico", and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Mineral & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: CO 2013-001

IV. OTHER TERMS AND CONDITIONS

1. By signing this Order, Navajo expressly:

a. acknowledges the authority of the Director to render the above Findings &

Determinations, Conclusions and Order;

b. agrees to comply with the Order;

c. waives any right, pursuant to the Act or otherwise, to a hearing either prior or subsequent to the entry of this Order or to an appeal from this Order; and

d. agrees that if it fails to comply with this Order, the Order may be enforced by suit or otherwise to the same extent and with the same effect as a final Order entered after notice and hearing in accordance with all terms and provisions of the Water Quality Act.

2. Nothing in this Order relieves Navajo of its liability should its operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, nothing in this Order relieves Navajo of its responsibility for compliance with any other federal, state or local laws and/or regulations, including all other obligations under the Permits.

4. OCD may grant an extension of any deadline to perform any activity required pursuant to this Agreement. Navajo shall submit all requests for an extension of a deadline in writing to OCD. The request shall propose a new deadline for the activity and shall include the basis for the request. OCD shall respond by approving, approving in part or denying the request as soon as possible, but no later than fifteen days after receipt. If OCD approves in part or denies the request, the response shall specify the reasons for OCD's actions.

5. This Order may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this __ day of November, 2013.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMIS SION
OIL CONSERVATION DIVISION

By: _____

Name: Jami Baley_____

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Order, and agrees to all of the terms and provisions as set forth in the Order,

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: _____

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Exhibit A to Amended and Supplemental Agreed Compliance Order

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo stops injection to the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting to the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

c) take such other actions as may be appropriate to address the exceedance; and

d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo stops injection to the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. Navajo shall notify OCD by e-mail that it has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

b) a summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

c) the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the causes of the exceedences of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

a) its selection of a short-term remedy(ies);

b) dates for completion of any necessary bench scale or other trials;

c) dates of anticipated installation of any selected technology(ies); and

d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall commence permitting (if required) and construction of the remedy selected pursuant to paragraph 12 above (the "Remediation Project") following OCD approval of same. Thereafter, Navajo shall complete construction of the Remediation Project within 12 months after the later of (a) OCD approval of such remedy or (b) the issuance of any necessary permits for construction of same. Thereafter, Navajo shall achieve compliance with the Se Limit as measured at the Sampling Location within 6 months after completion of the construction of such remedy. Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion."

14. Upon OCD approval of the selected remedy, OCD and Navajo shall amend this Exhibit A to establish milestones and deadlines for the construction and completion of the Remediation Project.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. The project manager has been assigned and is currently working to purchase an existing SeRT® unit or to build a new unit as soon as possible. On or before May 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, November 01, 2013 2:03 PM
To: VonGonten, Glenn, EMNRD
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; Dade, Randy, EMNRD
Subject: Navajo Refining WDWs 1, 2 &3 (UICI-8) Selenium Exceedances & Operator Reporting Schedule per ACOW-6 issued 10/24/2013

Glenn:

FYI: ACOW-6

Section III of the order requires 4 weekly sampling events to be conducted by the operator, on or before 10/31; 11/7; 11/14 and 11/21. Notification is only required within 24-hours for exceedances of the Se limit of 1 ppm. No news is good news for the weekly monitoring. Based on weekly monitoring schedule, if below Se limit, testing may be reduced to 1 x/mo (~12/21/13; 1/21/14; 2/21/13 & 3/21/13). If Se limit remains below limit for 4 consecutive months (~ 3/21/2014), sampling frequency may be reduced back to quarterly.

Deadlines*:

On or before 11/21/13: Complete Engr. Eval. ST process changes to reduce Se in process water and Engr. Eval. Of potential ST enhanced WW treatment options.

On or before 12/7/2013: Provide OCD SF w/ Summary of Operator's engineering eval. On 11/21/13 and include selection of ST remedies w/ proposed implementation schedule.

Beginning 11/30/2013: On or before lst day of mo., provide OCD SF w/ mo. interim progress reports detailing status and timeline for actions taken during preceding calendar mo. under Order.

On or before 5/30/2014: Advise OCD SF of its selection of LT options for addressing Se concentrations in WW.

* Notwithstanding "Force majeure" the operator shall meet the above deadlines of the Order.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended ("Act"), and the regulations promulgated under the Act, the Oil Conservation Commission and the Oil Conservation Division of the Energy Minerals and Natural Resources Department of the State of New Mexico (together, "OCD") issues this Amended and Supplemental Agreed Compliance Order, including Exhibit A attached hereto (together, the "Order") to Navajo Refining Company, L.L.C. ("Navajo"), directing compliance with the Act, the Water Quality Control Commission ("WQCC") Regulations and permits issued under the Act. As of the effective date hereof, this Order supersedes the Agreed Compliance Order issued on October 24, 2013 (the "October 24 Order").

I. FINDINGS AND DETERMINATIONS

1. The Oil Conservation Commission is a "constituent agency" under the Act and is charged with administration and enforcement of the Act and regulations promulgated in accordance with the Act. NMSA 1978, Section 74-6-3 (K). The Oil Conservation Division of the Energy, Minerals and Natural Resources Department has concurrent authority with the Commission. NMSA 1978, Section 70-2-6(B).

2. Navajo is a Limited Liability Company doing business in New Mexico. Navajo is

an active entity with a principal address of 501 East Main Street, Artesia, New Mexico 88210.

3. Navajo owns and operates a petroleum refinery located at 501 East Main Street, Artesia, New Mexico ("Facility"), including an onsite wastewater treatment plant ("WWTP").

4. The WQCC has adopted regulations, pursuant to the Act, requiring permits for the injection of fluids and the operation of underground injection wells in New Mexico. 20.6.2.5004 NMAC. For wells at oil and gas operations, including refineries, the WQCC has delegated administration and enforcement of those regulations to OCD.

5. Pursuant to the New Mexico Water Quality Act and the Water Quality Control Commission Regulations, OCD issued permits OCD Permit Nos. UICI-008-01 (WDW-1), UICI-008-2 (WDW-2), and UICI-008-3 (WDW-3) to Navajo for the injection of non-hazardous refinery wastewater at Underground Injection Control Class I wells at the Facility (the "wells").

6. Pursuant to 42 U.S.C. § 6926(b), the U.S. Environmental Protection Agency ("EPA") provided final authorization to the State of New Mexico to maintain a hazardous waste program in lieu of the federal program under the Resource Conservation and Recovery Act. 72 Fed. Reg. 46,165 (Aug. 17, 2007).

7. On October 15, 2013, Navajo orally notified OCD and the New Mexico Environment Department ("NMED") that it received sampling results that reported selenium concentrations from wastewater injected at the wells on September 27, 2013 above the limit of less than 1.0 mg/L of selenium, based on the Toxicity Characteristic Leaching Procedure ("TCLP"), EPA Method 1311 (the "Se Limit"). Navajo advised OCD and NMED that it was investigating the reasons for the selenium concentrations and possible corrective actions.

8. On October 20, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on

October 15, 2013 above the Se Limit. Navajo took prompt steps to reduce selenium concentrations, such as changing to different crude oil and reducing refinery throughput. Furthermore, injection was halted and wastewater was only subsequently injected after receipt of data indicating that selenium concentrations were below the Se Limit.

9. On October 24, 2013, OCD issued Navajo an Agreed Compliance Order specifying further actions to assure that the wastewater injected at the wells did not exceed the selenium concentration allowed under the permits and assessing a civil penalty for past alleged violations. The October 24 Order requires Navajo to conduct sampling of wastewater for selenium on a specified schedule and to report the results to OCD. It also requires Navajo to evaluate potential remedial options.

10. Navajo immediately took steps to commence complying with the October 24 Order, including implementing a rigorous sampling regimen, continuing working with an outside engineering firm to address short-term selenium reduction measures, and developing a written refinery action plan, among other measures.

11. On November 5, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on October 31, 2013 above the Se Limit. Upon receiving the sampling results on November 5, Navajo ceased discharging wastewater to the wells.

12. On November 6, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on November 4, 2013 above the Se Limit and indicated the same for the discharge on November 2, 2013.

13. On November 7, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on November 5, 2013 above the Se Limit.

14. Navajo subsequently advised OCD and NMED that it is investigating the reasons for the reported selenium concentrations, including possible additional corrective actions to prevent future wastewater concentrations in excess of the Se Limit. Navajo has reviewed, and is continuing to actively review, short-term and long-term engineering options for reducing selenium concentrations in the Facility wastewater.

15. In the course of further assessing the data, Navajo, OCD and NMED have recognized certain anomalies in the results, including that selenium levels based on Method 1311 are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze the results and to share the outcome of such analysis with OCD and NMED before the results are deemed fully valid and reliable. Therefore, although Navajo will continue to pursue immediate corrective action based on the reported results at this time, Navajo reserves its right to assert that the prior results were invalid or unreliable in any future proceeding.

16. There is no known or anticipated damage or injury to public health or the environment resulting from the discharges identified above, since (1) the discharges were to Class I injection wells in formations that may not be used as a public drinking water supply and that are beneath the lowermost formation that contains 10,000 milligrams per liter or less total dissolved solids (TDS); and (2) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the Se Limit.

II. CONCLUSIONS

1. OCD has jurisdiction over the parties and subject matter in this proceeding.

2. Navajo is a person as defined by NMSA 1978, Section 74-6-2.I.

3. Based on the facts presented above, the lack of known or anticipated damage or injury to public health or the environment, the commitments made herein by Navajo, the company's long history of compliance with the OCD permits prior to the events described above, the lack of future anticipated damage or injury resulting from compliance with this Order, and other relevant considerations, OCD has determined Navajo need not be ordered to cease using wells WDW-1, WDW-2, or WDW-3 during the period of this Order. However, this paragraph shall not apply in the event: (A) new information not known by OCD at the time of this Order causes OCD to believe that Navajo will not be able to return to compliance pursuant to this Order; or (B) OCD determines that the continued use of the wells presents an imminent and substantial endangerment to human health and the environment; or (C) Navajo fails to diligently pursue the development and implementation of a remedy to reduce selenium concentrations as provided in Exhibit A to this Order.

III. ORDER

1. Compliance Schedule

a. Navajo shall take the actions and meet the schedule set forth in Exhibit A to this Order.

b. Except where otherwise modified or extended pursuant to Section IV, Paragraph 1, Navajo's obligation to comply with this Order shall be deferred only to the extent and only for the duration that the failure in compliance is caused by "force majeure." For purposes of this Order, "force majeure" is defined as an event or set of circumstances which are

beyond Navajo's control and could not have been prevented by Navajo's reasonable action or due diligence, including any delay in required approvals, issuance of any necessary permits or other similar items. "Force majeure" shall not apply to any failure in compliance due to increased costs or Navajo's financial inability to carry out this Order. Navajo shall promptly notify OCD of any force majeure event that has resulted or will result in the inability of Navajo to comply with any obligation under this Order and shall provide OCD with a schedule for completing the obligations.

c. All reports, notifications and other submittals required under this Order shall be sent to OCD at the following address:

Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6
e-mail: scott.dawson@state.nm.us
carlj.chavez@state.nm.us

All such submittals shall be made electronically. Written amendment to this Order is not required for a change in the e-mail addresses specified above, and any such change in addresses may be made by e-mail.

2. Civil Penalties

a. Navajo will pay a civil penalty of $26,000 (Twenty-six thousand dollars) to resolve all of the alleged violations set forth in this Order and the October 24 Order. Payment of this amount shall be remitted to OCD no later than 30 days after the effective date of this Order. Payment must be made to "State of New Mexico - General Fund" and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive

Santa Fe, NM 87505
Re: ACOW-6

b. Navajo shall pay stipulated penalties in the amounts set forth below if the following violations of the Order occur:

(1) For violation of the Se Limit at the Sample Location until Remediation Project Completion (as defined at Paragraph 13 of Exhibit A): $2,000 per violation for each of the first 20 violations in any calendar month and $4,000 per violation for any additional violations in the same calendar month.

(2) For violation of the Se Limit after Remediation Project Completion until this Order is terminated: $5,000 per violation for the first 10 violations in any calendar month; $10,000 per violation for 11 or more violations in any calendar month.

(3) For the failure to meet the deadline for completion of construction of the Remediation Project (as defined at Paragraph 13 of Exhibit A) or for Remediation Project Completion: $5,000 per day.

(4) For the failure to timely conduct sampling as required at Exhibit A: $2,000 per day.

(5) For the failure to timely submit any report or notification as required at Exhibit A: $1,000 per day.

(6) For violation of any requirement of this Order other than subparagraphs (1) – (5) above: $500 per violation.

For purposes of subparagraphs (1) and (2) above, beginning on the sampling date for a sample that exceeds the Se Limit, every day of injection to the wells shall constitute a separate violation until the sampling date of the next sample that is below the Se Limit. For avoidance of doubt, stipulated penalties for an exceedance of the Se Limit shall not be assessed for days that injection

to the wells does not occur. A calculation of stipulated penalties shall be made by Navajo and included in each monthly progress report submitted to OCD under this Order, and payment shall be due within 30 days after each monthly progress report submittal. Should OCD object to a given penalty calculation, OCD shall notify Navajo within five (5) business days after receipt of the monthly progress report, and Navajo shall make payment within 10 days after the resolution of any such dispute. Any overpayment by Navajo shall be credited to further amounts due to OCD. Payment shall be by corporate check, certified check, or other guaranteed negotiable instrument made payable to the "State of New Mexico", and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

IV. OTHER TERMS AND CONDITIONS

1. Termination, Modification and Extension.

a. Navajo and OCD have the right to modify or terminate this Order by written instrument signed by both parties. In addition, this Order will terminate when selenium concentrations remain below the Se Limit for four (4) consecutive quarters after Remediation Project Completion.

b. OCD may grant an extension of any deadline to perform any activity required pursuant to this Order. Navajo shall submit all requests for an extension of a deadline in writing to OCD. The request shall propose a new deadline for the activity and shall include the basis for the request. OCD shall respond in writing by approving, approving in part or denying the request as soon as possible, but no later than fifteen days after receipt. If OCD

approves in part or denies the request, the response shall specify the reasons for OCD's actions.

2. By signing this Order, Navajo expressly:

a. acknowledges the authority of OCD to render the above Findings And Determinations, Conclusions and Order;

b. agrees to comply with the Order;

c. waives any right, pursuant to the Act or otherwise, to a hearing either prior or subsequent to the entry of this Order or to an appeal from this Order; and

d. agrees that if it fails to comply with this Order, the Order may be enforced by suit or otherwise to the same extent and with the same effect as a final Order entered after notice and hearing in accordance with all terms and provisions of the Water Quality Act.

3. Nothing in this Order relieves Navajo of its liability should its operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, nothing in this Order relieves Navajo of its responsibility for compliance with any other federal, state or local laws and/or regulations, including all other obligations under the Permits.

4. This Order may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this 14th day of November, 2013.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Order, and agrees to all of the terms and provisions as set forth in the Order.

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 14 November 2013

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Exhibit A to Amended and Supplemental Agreed Compliance Order

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo stops injection to the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting to the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

c) take such other actions as may be appropriate to address the exceedance; and

d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo stops injection to the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. Navajo shall notify OCD by e-mail that it has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

    a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

b) a summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

c) the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the causes of the exceedences of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

a) its selection of a short-term remedy(ies);

b) dates for completion of any necessary bench scale or other trials;

c) dates of anticipated installation of any selected technology(ies); and

d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall commence permitting (if required) and construction of the remedy selected pursuant to paragraph 12 above (the "Remediation Project") following OCD approval of same. Thereafter, Navajo shall complete construction of the Remediation Project within 12 months after the later of (a) OCD approval of such remedy or (b) the issuance of any necessary permits for construction of same. Thereafter, Navajo shall achieve compliance with the Se Limit as measured at the Sampling Location within 6 months after completion of the construction of such remedy. Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion."

14. Upon OCD approval of the selected remedy, OCD and Navajo shall amend this Exhibit A to establish milestones and deadlines for the construction and completion of the Remediation Project.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. The project manager has been assigned and is currently working to purchase an existing SeRT® unit or to build a new unit as soon as possible. On or before May 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended ("Act"), and the regulations promulgated under the Act, the Oil Conservation Commission and the Oil Conservation Division of the Energy Minerals and Natural Resources Department of the State of New Mexico (together, "OCD") issues this Amended and Supplemental Agreed Compliance Order, including Exhibit A attached hereto (together, the "Order") to Navajo Refining Company, L.L.C. ("Navajo"), directing compliance with the Act, the Water Quality Control Commission ("WQCC") Regulations and permits issued under the Act. As of the effective date hereof, this Order supersedes the Agreed Compliance Order issued on October 24, 2013 (the "October 24 Order").

I. FINDINGS AND DETERMINATIONS

1. The Oil Conservation Commission is a "constituent agency" under the Act and is charged with administration and enforcement of the Act and regulations promulgated in accordance with the Act. NMSA 1978, Section 74-6-3 (K). The Oil Conservation Division of the Energy, Minerals and Natural Resources Department has concurrent authority with the Commission. NMSA 1978, Section 70-2-6(B).

2. Navajo is a Limited Liability Company doing business in New Mexico. Navajo is

an active entity with a principal address of 501 East Main Street, Artesia, New Mexico 88210.

3. Navajo owns and operates a petroleum refinery located at 501 East Main Street, Artesia, New Mexico ("Facility"), including an onsite wastewater treatment plant ("WWTP").

4. The WQCC has adopted regulations, pursuant to the Act, requiring permits for the injection of fluids and the operation of underground injection wells in New Mexico. 20.6.2.5004 NMAC. For wells at oil and gas operations, including refineries, the WQCC has delegated administration and enforcement of those regulations to OCD.

5. Pursuant to the New Mexico Water Quality Act and the Water Quality Control Commission Regulations, OCD issued permits OCD Permit Nos. UICI-008-01 (WDW-1), UICI-008-2 (WDW-2), and UICI-008-3 (WDW-3) to Navajo for the injection of non-hazardous refinery wastewater at Underground Injection Control Class I wells at the Facility (the "wells").

6. Pursuant to 42 U.S.C. § 6926(b), the U.S. Environmental Protection Agency ("EPA") provided final authorization to the State of New Mexico to maintain a hazardous waste program in lieu of the federal program under the Resource Conservation and Recovery Act. 72 Fed. Reg. 46,165 (Aug. 17, 2007).

7. On October 15, 2013, Navajo orally notified OCD and the New Mexico Environment Department ("NMED") that it received sampling results that reported selenium concentrations from wastewater injected at the wells on September 27, 2013 above the limit of less than 1.0 mg/L of selenium, based on the Toxicity Characteristic Leaching Procedure ("TCLP"), EPA Method 1311 (the "Se Limit"). Navajo advised OCD and NMED that it was investigating the reasons for the selenium concentrations and possible corrective actions.

8. On October 20, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on

October 15, 2013 above the Se Limit. Navajo took prompt steps to reduce selenium concentrations, such as changing to different crude oil and reducing refinery throughput. Furthermore, injection was halted and wastewater was only subsequently injected after receipt of data indicating that selenium concentrations were below the Se Limit.

9. On October 24, 2013, OCD issued Navajo an Agreed Compliance Order specifying further actions to assure that the wastewater injected at the wells did not exceed the selenium concentration allowed under the permits and assessing a civil penalty for past alleged violations. The October 24 Order requires Navajo to conduct sampling of wastewater for selenium on a specified schedule and to report the results to OCD. It also requires Navajo to evaluate potential remedial options.

10. Navajo immediately took steps to commence complying with the October 24 Order, including implementing a rigorous sampling regimen, continuing working with an outside engineering firm to address short-term selenium reduction measures, and developing a written refinery action plan, among other measures.

11. On November 5, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on October 31, 2013 above the Se Limit. Upon receiving the sampling results on November 5, Navajo ceased discharging wastewater to the wells.

12. On November 6, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on November 4, 2013 above the Se Limit and indicated the same for the discharge on November 2, 2013.

13. On November 7, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on November 5, 2013 above the Se Limit.

14. Navajo subsequently advised OCD and NMED that it is investigating the reasons for the reported selenium concentrations, including possible additional corrective actions to prevent future wastewater concentrations in excess of the Se Limit. Navajo has reviewed, and is continuing to actively review, short-term and long-term engineering options for reducing selenium concentrations in the Facility wastewater.

15. In the course of further assessing the data, Navajo, OCD and NMED have recognized certain anomalies in the results, including that selenium levels based on Method 1311 are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze the results and to share the outcome of such analysis with OCD and NMED before the results are deemed fully valid and reliable. Therefore, although Navajo will continue to pursue immediate corrective action based on the reported results at this time, Navajo reserves its right to assert that the prior results were invalid or unreliable in any future proceeding.

16. There is no known or anticipated damage or injury to public health or the environment resulting from the discharges identified above, since (1) the discharges were to Class I injection wells in formations that may not be used as a public drinking water supply and that are beneath the lowermost formation that contains 10,000 milligrams per liter or less total dissolved solids (TDS); and (2) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the Se Limit.

II. CONCLUSIONS

1. OCD has jurisdiction over the parties and subject matter in this proceeding.

2. Navajo is a person as defined by NMSA 1978, Section 74-6-2.I.

3. Based on the facts presented above, the lack of known or anticipated damage or injury to public health or the environment, the commitments made herein by Navajo, the company's long history of compliance with the OCD permits prior to the events described above, the lack of future anticipated damage or injury resulting from compliance with this Order, and other relevant considerations, OCD has determined Navajo need not be ordered to cease using wells WDW-1, WDW-2, or WDW-3 during the period of this Order. However, this paragraph shall not apply in the event: (A) new information not known by OCD at the time of this Order causes OCD to believe that Navajo will not be able to return to compliance pursuant to this Order; or (B) OCD determines that the continued use of the wells presents an imminent and substantial endangerment to human health and the environment; or (C) Navajo fails to diligently pursue the development and implementation of a remedy to reduce selenium concentrations as provided in Exhibit A to this Order.

III. ORDER

1. Compliance Schedule

a. Navajo shall take the actions and meet the schedule set forth in Exhibit A to this Order.

b. Except where otherwise modified or extended pursuant to Section IV, Paragraph 1, Navajo's obligation to comply with this Order shall be deferred only to the extent and only for the duration that the failure in compliance is caused by "force majeure." For purposes of this Order, "force majeure" is defined as an event or set of circumstances which are

beyond Navajo's control and could not have been prevented by Navajo's reasonable action or due diligence, including any delay in required approvals, issuance of any necessary permits or other similar items. "Force majeure" shall not apply to any failure in compliance due to increased costs or Navajo's financial inability to carry out this Order. Navajo shall promptly notify OCD of any force majeure event that has resulted or will result in the inability of Navajo to comply with any obligation under this Order and shall provide OCD with a schedule for completing the obligations.

c. All reports, notifications and other submittals required under this Order shall be sent to OCD at the following address:

Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6
e-mail: scott.dawson@state.nm.us
carlj.chavez@state.nm.us

All such submittals shall be made electronically. Written amendment to this Order is not required for a change in the e-mail addresses specified above, and any such change in addresses may be made by e-mail.

2. Civil Penalties

a. Navajo will pay a civil penalty of $26,000 (Twenty-six thousand dollars) to resolve all of the alleged violations set forth in this Order and the October 24 Order. Payment of this amount shall be remitted to OCD no later than 30 days after the effective date of this Order. Payment must be made to "State of New Mexico - General Fund" and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive

Santa Fe, NM 87505
Re: ACOW-6

b. Navajo shall pay stipulated penalties in the amounts set forth below if the following violations of the Order occur:

(1) For violation of the Se Limit at the Sample Location until Remediation Project Completion (as defined at Paragraph 13 of Exhibit A): $2,000 per violation for each of the first 20 violations in any calendar month and $4,000 per violation for any additional violations in the same calendar month.

(2) For violation of the Se Limit after Remediation Project Completion until this Order is terminated: $5,000 per violation for the first 10 violations in any calendar month; $10,000 per violation for 11 or more violations in any calendar month.

(3) For the failure to meet the deadline for completion of construction of the Remediation Project (as defined at Paragraph 13 of Exhibit A) or for Remediation Project Completion: $5,000 per day.

(4) For the failure to timely conduct sampling as required at Exhibit A: $2,000 per day.

(5) For the failure to timely submit any report or notification as required at Exhibit A: $1,000 per day.

(6) For violation of any requirement of this Order other than subparagraphs (1) – (5) above: $500 per violation.

For purposes of subparagraphs (1) and (2) above, beginning on the sampling date for a sample that exceeds the Se Limit, every day of injection to the wells shall constitute a separate violation until the sampling date of the next sample that is below the Se Limit. For avoidance of doubt, stipulated penalties for an exceedance of the Se Limit shall not be assessed for days that injection

to the wells does not occur. A calculation of stipulated penalties shall be made by Navajo and included in each monthly progress report submitted to OCD under this Order, and payment shall be due within 30 days after each monthly progress report submittal. Should OCD object to a given penalty calculation, OCD shall notify Navajo within five (5) business days after receipt of the monthly progress report, and Navajo shall make payment within 10 days after the resolution of any such dispute. Any overpayment by Navajo shall be credited to further amounts due to OCD. Payment shall be by corporate check, certified check, or other guaranteed negotiable instrument made payable to the "State of New Mexico", and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

IV. OTHER TERMS AND CONDITIONS

1. Termination, Modification and Extension.

a. Navajo and OCD have the right to modify or terminate this Order by written instrument signed by both parties. In addition, this Order will terminate when selenium concentrations remain below the Se Limit for four (4) consecutive quarters after Remediation Project Completion.

b. OCD may grant an extension of any deadline to perform any activity required pursuant to this Order. Navajo shall submit all requests for an extension of a deadline in writing to OCD. The request shall propose a new deadline for the activity and shall include the basis for the request. OCD shall respond in writing by approving, approving in part or denying the request as soon as possible, but no later than fifteen days after receipt. If OCD

approves in part or denies the request, the response shall specify the reasons for OCD's actions.

2. By signing this Order, Navajo expressly:

a. acknowledges the authority of OCD to render the above Findings And Determinations, Conclusions and Order;

b. agrees to comply with the Order;

c. waives any right, pursuant to the Act or otherwise, to a hearing either prior or subsequent to the entry of this Order or to an appeal from this Order; and

d. agrees that if it fails to comply with this Order, the Order may be enforced by suit or otherwise to the same extent and with the same effect as a final Order entered after notice and hearing in accordance with all terms and provisions of the Water Quality Act.

3. Nothing in this Order relieves Navajo of its liability should its operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, nothing in this Order relieves Navajo of its responsibility for compliance with any other federal, state or local laws and/or regulations, including all other obligations under the Permits.

4. This Order may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this 14th day of November, 2013.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Order, and agrees to all of the terms and provisions as set forth in the Order.

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 14 November 2013

10/21/13

Summary of Recent Monitoring Results for Selenium (Se) in
Artesia Refinery Wastewater Discharged to Class I Injection Wells

Date of Quarterly Sampling Event	**Total Se @ (per OCD (mg/l)**	**Se @ TCLP Method[1] (mg/l)**	**Remarks**
2/23/2011	0.382	N/A	
5/24/2011	0.646	N/A	
8/23/2011	0.465	N/A	
11/16/2011	0.99	N/A	
2/28/2012	0.312	N/A	
5/21/2012	0.69	N/A	
9/19/2012	1.0	N/A	
11/15/2012	0.842	N/A	
3/21/2013	0.924	N/A	
5/17/2013[2]	N/A	0.334 0.230 (reanalysis)	
6/27/2013	0.81 0.682 (reanalysis)	N/A 0.810 (reanalysis)	
9/27/2013	1.6 --- 1.26 (reanalysis; results received 10/17/2013)	1.24 --- 1.23 (reanalysis; results received 10/18/2013)	Results received 10/14/2013, reported to OCD & NMED w/in 24 hours
10/15/2013[3]	1.49	1.24	Results received 10/19/2013, reported to OCD w/in 24 hours
10/20/2013	**N/A**	**N/A**	**All wastewater discharge to injection wells halted voluntarily**

[1] The Toxicity Characteristic Leachate Procedure ("TCLP"), also known as Method 1311, is not prescribed by the OCD permits. It is the method used by EPA to help determine whether a solid waste is a RCRA hazardous waste.
[2] This was an additional voluntary sampling event not required by the OCD permits.
[3] This was an additional voluntary sampling event not required by the OCD permits.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

AMENDED AND SUPPLEMENTAL AGREED COMPLIANCE ORDER

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I. FINDINGS AND DETERMINATIONS

1. The Oil Conservation Commission is a "constituent agency" under the Act and is charged with administration and enforcement of the Act and regulations promulgated in accordance with the Act. NMSA 1978, Section 74-6-3 (K). The Oil Conservation Division of the Energy, Minerals and Natural Resources Department has concurrent authority with the Commission. NMSA 1978, Section 70-2-6(B).

2. Navajo is a Limited Liability Company doing business in New Mexico. Navajo is

an active entity with a principal address of 501 East Main Street, Artesia, New Mexico 88210.

3. Navajo owns and operates a petroleum refinery located at 501 East Main Street, Artesia, New Mexico ("Facility"), including an onsite wastewater treatment plant ("WWTP").

4. The WQCC has adopted regulations, pursuant to the Act, requiring permits for the injection of fluids and the operation of underground injection wells in New Mexico. 20.6.2.5004 NMAC. For wells at oil and gas operations, including refineries, the WQCC has delegated administration and enforcement of those regulations to OCD.

5. Pursuant to the New Mexico Water Quality Act and the Water Quality Control Commission Regulations, OCD issued permits OCD Permit Nos. UICI-008-01 (WDW-1), UICI-008-2 (WDW-2), and UICI-008-3 (WDW-3) to Navajo for the injection of non-hazardous refinery wastewater at Underground Injection Control Class I wells at the Facility (the "wells").

6. Pursuant to 42 U.S.C. § 6926(b), the U.S. Environmental Protection Agency ("EPA") provided final authorization to the State of New Mexico to maintain a hazardous waste program in lieu of the federal program under the Resource Conservation and Recovery Act. 72 Fed. Reg. 46,165 (Aug. 17, 2007).

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11. On November 5, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on October 31, 2013 above the Se Limit. Upon receiving the sampling results on November 5, Navajo ceased discharging wastewater to the wells.

12. On November 6, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on November 4, 2013 above the Se Limit and indicated the same for the discharge on November 2, 2013.

13. On November 7, 2013, Navajo orally notified OCD and NMED that it received sampling results that reported selenium concentrations from wastewater injected at the wells on November 5, 2013 above the Se Limit.

14. Navajo subsequently advised OCD and NMED that it is investigating the reasons for the reported selenium concentrations, including possible additional corrective actions to prevent future wastewater concentrations in excess of the Se Limit. Navajo has reviewed, and is continuing to actively review, short-term and long-term engineering options for reducing selenium concentrations in the Facility wastewater.

15. In the course of further assessing the data, Navajo, OCD and NMED have recognized certain anomalies in the results, including that selenium levels based on Method 1311 are in some instances greater than selenium levels based on a total selenium analysis. Navajo has engaged experts to further analyze the results and to share the outcome of such analysis with OCD and NMED before the results are deemed fully valid and reliable. Therefore, although Navajo will continue to pursue immediate corrective action based on the reported results at this time, Navajo reserves its right to assert that the prior results were invalid or unreliable in any future proceeding.

16. There is no known or anticipated damage or injury to public health or the environment resulting from the discharges identified above, since (1) the discharges were to Class I injection wells in formations that may not be used as a public drinking water supply and that are beneath the lowermost formation that contains 10,000 milligrams per liter or less total dissolved solids (TDS); and (2) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the Se Limit.

II. CONCLUSIONS

1. OCD has jurisdiction over the parties and subject matter in this proceeding.

2. Navajo is a person as defined by NMSA 1978, Section 74-6-2.I.

3. Based on the facts presented above, the lack of known or anticipated damage or injury to public health or the environment, the commitments made herein by Navajo, the company's long history of compliance with the OCD permits prior to the events described above, the lack of future anticipated damage or injury resulting from compliance with this Order, and other relevant considerations, OCD has determined Navajo need not be ordered to cease using wells WDW-1, WDW-2, or WDW-3 during the period of this Order. However, this paragraph shall not apply in the event: (A) new information not known by OCD at the time of this Order causes OCD to believe that Navajo will not be able to return to compliance pursuant to this Order; or (B) OCD determines that the continued use of the wells presents an imminent and substantial endangerment to human health and the environment; or (C) Navajo fails to diligently pursue the development and implementation of a remedy to reduce selenium concentrations as provided in Exhibit A to this Order.

III. ORDER

1. Compliance Schedule

a. Navajo shall take the actions and meet the schedule set forth in Exhibit A to this Order.

b. Except where otherwise modified or extended pursuant to Section IV, Paragraph 1, Navajo's obligation to comply with this Order shall be deferred only to the extent and only for the duration that the failure in compliance is caused by "force majeure." For purposes of this Order, "force majeure" is defined as an event or set of circumstances which are

beyond Navajo's control and could not have been prevented by Navajo's reasonable action or due diligence, including any delay in required approvals, issuance of any necessary permits or other similar items. "Force majeure" shall not apply to any failure in compliance due to increased costs or Navajo's financial inability to carry out this Order. Navajo shall promptly notify OCD of any force majeure event that has resulted or will result in the inability of Navajo to comply with any obligation under this Order and shall provide OCD with a schedule for completing the obligations.

c. All reports, notifications and other submittals required under this Order shall be sent to OCD at the following address:

Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6
e-mail: scott.dawson@state.nm.us
carlj.chavez@state.nm.us

All such submittals shall be made electronically. Written amendment to this Order is not required for a change in the e-mail addresses specified above, and any such change in addresses may be made by e-mail.

2. Civil Penalties

a. Navajo will pay a civil penalty of $26,000 (Twenty-six thousand dollars) to resolve all of the alleged violations set forth in this Order and the October 24 Order. Payment of this amount shall be remitted to OCD no later than 30 days after the effective date of this Order. Payment must be made to "State of New Mexico - General Fund" and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive

Santa Fe, NM 87505
Re: ACOW-6

b. Navajo shall pay stipulated penalties in the amounts set forth below if the following violations of the Order occur:

(1) For violation of the Se Limit at the Sample Location until Remediation Project Completion (as defined at Paragraph 13 of Exhibit A): $2,000 per violation for each of the first 20 violations in any calendar month and $4,000 per violation for any additional violations in the same calendar month.

(2) For violation of the Se Limit after Remediation Project Completion until this Order is terminated: $5,000 per violation for the first 10 violations in any calendar month; $10,000 per violation for 11 or more violations in any calendar month.

(3) For the failure to meet the deadline for completion of construction of the Remediation Project (as defined at Paragraph 13 of Exhibit A) or for Remediation Project Completion: $5,000 per day.

(4) For the failure to timely conduct sampling as required at Exhibit A: $2,000 per day.

(5) For the failure to timely submit any report or notification as required at Exhibit A: $1,000 per day.

(6) For violation of any requirement of this Order other than subparagraphs (1) – (5) above: $500 per violation.

For purposes of subparagraphs (1) and (2) above, beginning on the sampling date for a sample that exceeds the Se Limit, every day of injection to the wells shall constitute a separate violation until the sampling date of the next sample that is below the Se Limit. For avoidance of doubt, stipulated penalties for an exceedance of the Se Limit shall not be assessed for days that injection

to the wells does not occur. A calculation of stipulated penalties shall be made by Navajo and included in each monthly progress report submitted to OCD under this Order, and payment shall be due within 30 days after each monthly progress report submittal. Should OCD object to a given penalty calculation, OCD shall notify Navajo within five (5) business days after receipt of the monthly progress report, and Navajo shall make payment within 10 days after the resolution of any such dispute. Any overpayment by Navajo shall be credited to further amounts due to OCD. Payment shall be by corporate check, certified check, or other guaranteed negotiable instrument made payable to the "State of New Mexico", and shall be sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: ACOW-6

IV. OTHER TERMS AND CONDITIONS

1. Termination, Modification and Extension.

a. Navajo and OCD have the right to modify or terminate this Order by written instrument signed by both parties. In addition, this Order will terminate when selenium concentrations remain below the Se Limit for four (4) consecutive quarters after Remediation Project Completion.

b. OCD may grant an extension of any deadline to perform any activity required pursuant to this Order. Navajo shall submit all requests for an extension of a deadline in writing to OCD. The request shall propose a new deadline for the activity and shall include the basis for the request. OCD shall respond in writing by approving, approving in part or denying the request as soon as possible, but no later than fifteen days after receipt. If OCD

approves in part or denies the request, the response shall specify the reasons for OCD's actions.

2. By signing this Order, Navajo expressly:

a. acknowledges the authority of OCD to render the above Findings And Determinations, Conclusions and Order;

b. agrees to comply with the Order;

c. waives any right, pursuant to the Act or otherwise, to a hearing either prior or subsequent to the entry of this Order or to an appeal from this Order; and

d. agrees that if it fails to comply with this Order, the Order may be enforced by suit or otherwise to the same extent and with the same effect as a final Order entered after notice and hearing in accordance with all terms and provisions of the Water Quality Act.

3. Nothing in this Order relieves Navajo of its liability should its operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, nothing in this Order relieves Navajo of its responsibility for compliance with any other federal, state or local laws and/or regulations, including all other obligations under the Permits.

4. This Order may be executed in any number of counterparts (whether by facsimile, PDF, or original), each of which will be deemed to be an original and all of which together will constitute the same instrument.

Done at Santa Fe, New Mexico this 14th day of November, 2013.

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____
Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Order, and agrees to all of the terms and provisions as set forth in the Order.

Navajo Refining Company, L.L.C.

By: _____
Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 14 November 2013

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C. **No. WQA-OCD-CO-2013-001**

Exhibit A to Amended and Supplemental Agreed Compliance Order

Sampling and Operating Requirements

1. Beginning on the effective date of the Order, Navajo shall take the following actions:

    a) Navajo shall sample injection fluid at the Facility sampling point designated by Navajo and approved by OCD (the "Sample Location") for selenium at least weekly until selenium concentrations remain below the Se Limit, for four (4) consecutive weeks. Samples shall be taken on the first business day of each week.

    b) Once selenium concentrations remain below the Se Limit for four (4) consecutive weeks, Navajo may then reduce testing to once per month. Samples shall be taken on the first business day of each month.

    c) Once selenium concentrations remain below the Se Limit for four (4) consecutive months, Navajo may then reduce testing to once per calendar quarter. Samples shall be taken on the first business day of each quarter.

    d) If Navajo stops injection to the wells, Navajo shall sample injection fluid at the Sample Location prior to ceasing injection. Then, upon resuming injection, Navajo shall sample the injection fluid at the Sample Location. No sampling identified in this Exhibit A shall be required when the Facility is not injecting to the wells.

    e) Samples required by this paragraph 1 shall be analyzed using EPA Method 1311 and, for clarity, other samples taken by Navajo may be analyzed using any method.

2. If a sample is split and sent concurrently to two laboratories, Navajo shall average the results for selenium concentration. Navajo may use any U.S. EPA-certified laboratory for the analysis, and the time limit for any action required under this Exhibit resulting from the receipt of a sample shall not begin until the receipt of all final sampling results.

3. If, at any time during the term of the Order, a sample of the injection fluid required under Paragraph 1, above, exceeds the Se Limit, Navajo shall take reasonable and prudent actions to address the exceedance, including the following:

a) promptly take appropriate action to reduce selenium loading or concentrations to return the Facility to compliance with the Se Limit;

b) obtain samples as deemed appropriate by Navajo and its consultants, in an effort to identify any potential sources of increased selenium to the wastewater treatment plant;

c) take such other actions as may be appropriate to address the exceedance; and

d) reinstitute weekly sampling and follow the same sampling schedule set forth at Paragraph 1 above.

Reporting During the Term of the Order

4. Navajo shall provide OCD by e-mail the results of the weekly, monthly and quarterly sampling required under Paragraph 1, above, within three (3) business days after its receipt of the data for that sample.

5. In addition to the requirements in paragraph 4 immediately above, Navajo shall provide OCD by e-mail (in lieu of the oral notification required by 20.6.2.1203 NMAC) the results of the first sample from the Sample Location that exceeds the Se Limit (after previously being in compliance) within twenty-four (24) hours after its receipt of the final data for that sample. Laboratory results greater than the Se Limit for samples taken after this exceedance but before samples again comply with the Se Limit are not required to be reported under this Paragraph.

6. If Navajo stops injection to the wells, Navajo shall provide OCD by e-mail on the first business day after its receipt of the final data for each sample, the results of the samples from the Sample Location taken prior to ceasing, and after resuming, injection pursuant to Paragraph 1(d) above.

7. If Navajo ceases injection at the wells, Navajo shall notify OCD by e-mail within one (1) business day thereafter.

8. Navajo shall notify OCD by e-mail that it has resumed injection at the wells within one (1) business day thereafter.

9. Beginning November 2013, Navajo shall provide OCD with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under the Order. The monthly progress report shall be due the first business day of the following month and shall include the following:

a) a summary of all the results of sampling required pursuant to Paragraph 1, above, and copies of all supporting laboratory data;

b) a summary of the results of any optional sampling taken during the preceding calendar month (copies of laboratory data for such optional sampling shall be provided to OCD upon request); and

c) the calculation of stipulated penalties required under Section III, Paragraph 2 of the Order.

10. On or before November 21, 2013, Navajo shall provide to OCD by e-mail an interim progress report that summarizes its efforts to date to address the causes of the exceedences of the Se Limit.

11. On or before December 4, 2013, Navajo shall advise OCD of the results of its further review of the sampling data and address any anomalies or discrepancies.

Remedy Selection and Implementation of Short-Term Plan

12. On or before December 13, 2013, Navajo shall complete a technical evaluation of potential short-term refinery process change(s) to reduce selenium concentrations in wastewater and provide OCD with a summary of Navajo's technical evaluation, above, including:

a) its selection of a short-term remedy(ies);

b) dates for completion of any necessary bench scale or other trials;

c) dates of anticipated installation of any selected technology(ies); and

d) dates of anticipated startup of any selected technology(ies).

13. Navajo shall commence permitting (if required) and construction of the remedy selected pursuant to paragraph 12 above (the "Remediation Project") following OCD approval of same. Thereafter, Navajo shall complete construction of the Remediation Project within 12 months after the later of (a) OCD approval of such remedy or (b) the issuance of any necessary permits for construction of same. Thereafter, Navajo shall achieve compliance with the Se Limit as measured at the Sampling Location within 6 months after completion of the construction of such remedy. Completion of the foregoing items required by this Paragraph (including OCD approval and Navajo construction, implementation, and achievement of compliance with the Se Limit) shall be referred to as the "Remediation Project Completion."

14. Upon OCD approval of the selected remedy, OCD and Navajo shall amend this Exhibit A to establish milestones and deadlines for the construction and completion of the Remediation Project.

Long Term Project

15. Navajo has been working on a project to enhance its wastewater treatment system and is currently implementing Phase I of this project. Phase II of this project is in the design phase and specifically addresses selenium reduction. Navajo is prepared to select the selenium reduction technology and is planning to accelerate the implementation of this technology to quickly reduce selenium in the wastewater. All of the sampling and analysis is complete and the design basis has been approved. The project manager has been assigned and is currently working to purchase an existing SeRT® unit or to build a new unit as soon as possible. On or before May 30, 2014, Navajo shall advise OCD of its selection of long-term options for addressing selenium concentrations in wastewater, including any permitting that may be required and its decision regarding the implementation of the SeRT® technology.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

IN THE MATTER OF

Navajo Refining Company, L.L.C.

No. WQA-OCD-CO-2013-001

AGREED COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17, as amended (Act), and the regulations promulgated under the Act, the Chairman of the Oil Conservation Commission and the Director of the Oil Conservation Division of the Energy Minerals and Natural Resources Department of the State of New Mexico (Director) issues this Order to Navajo Refining Company, L.L.C. (Navajo), directing compliance with the Act, the Water Quality Control Commission (WQCC) Regulations and permits issued under the Act.

I. FINDINGS & DETERMINATIONS BY THE DIRECTOR

1. The Oil Conservation Commission is a "constituent agency" under the Act and is charged with administration and enforcement of the Act and regulations promulgated in accordance with the Act. NMSA 1978, Section 74-6-3(K). The Oil Conservation Division of the Energy, Minerals and Natural Resources Department (OCD) has concurrent authority with the Commission. NMSA 1978, Section 70-2-6(B).
2. Navajo is a Limited Liability Company doing business in New Mexico. Navajo is an active entity with a principal address of 501 East Main Street, Artesia, New Mexico 88210.
3. Navajo owns and operates the Artesia Refinery, located at 501 East Main Street, Artesia, New Mexico ("Facility").

4. The WQCC has adopted regulations, pursuant to the Act, requiring permits for the injection of fluids and the operation of underground injection wells in New Mexico. 20.6.2.5004 NMAC. For wells at oil and gas operations, including refineries, the WQCC has delegated administration and enforcement of those regulations to the OCC and OCD.

5. Pursuant to the WQCC Regulations, the OCD has issued permits OCD Permit Nos. UIC-I-008-1 (WDW-1), UIC-I-008-2 (WDW-2), and UICI-008-3 (WDW-3) ("Permits") to Navajo for the injection of non-hazardous refinery fluids at Underground Injection Control Class I non-hazardous wells at the Facility (the "wells"). The WQCC Regulations and the Permits allow only the discharge of non-hazardous waste in the wells.

6. On October 15, 2013, Navajo orally notified the OCD that Navajo received sampling results that the injection fluid at the wells on September 27, 2013, exceeded the limit of less than 1.0 mg/L of Selenium, based on the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311 (the "Se Limit"). Those results indicate that fluid injected on September 27, 2013, exceeded the maximum concentration of contaminants for the toxicity characteristic for Selenium, 40 CFR 261.24, in violation of the WQCC Regulations and the Permits. Navajo advised the OCD that Navajo was investigating the reasons for the Selenium concentrations and evaluating possible corrective actions to prevent future injection fluid concentrations in excess of the Se Limit. On October 21, 2013, Navajo submitted a Form C-141 to the OCD.

7. On October 20, 2013, Navajo orally notified the OCD that Navajo received sampling results from sampling done on October 15, 2013, which indicated that injection fluid at the wells again exceeded the Se Limit. Those results indicate that fluids injected on

October 15, 2013, exceeded the maximum concentration of Selenium for the toxicity characteristic in violation of the WQCC Regulations and the Permits. Navajo advised the OCD that Navajo was investigating the reasons for the Selenium concentrations and evaluating possible corrective actions to prevent future injection fluid concentrations in excess of the Se Limit. On October 21, 2013, Navajo submitted a Form C-141 to the OCD.

8. On October 20, 2013, Navajo ceased injecting into the wells.

9. There is no known or anticipated damage or injury to public health resulting from the discharges identified in Paragraphs 6 and 7 above since the discharges were to Class I injection wells in formations at depths at least 7000 feet, below the lowermost formation that contains public drinking water supplies (10,000 milligrams per liter or less total dissolved solids (TDS)).

10. Navajo is actively reviewing short-term and long-term engineering options for reducing Selenium concentrations in the refinery wastewater and has taken several interim measures. The most recent test results for the stored injection fluid, taken on October 20, 2013, were below the Se Limit.

II. CONCLUSIONS OF THE DIRECTOR

1. The Director has jurisdiction over the parties and subject matter in this proceeding.

2. Navajo is a person as defined by NMSA 1978, Section 74-6-2.I.

Effective Date : 10/24/2013

III. ORDER

1. Compliance Schedule

1) 10/31
2) 11/7
3) 11/14
4) 11/21

a. Beginning on the effective date of this Order, Navajo shall sample injection fluid for Selenium at least weekly until Selenium concentrations remain below the Se Limit, for four consecutive weeks.

b. Once Selenium concentrations remain below the Se Limit, for four (4) consecutive weeks, Navajo may then reduce testing to once per month.

c. If Selenium concentrations then remain below the Se Limit, for four (4) consecutive months, Navajo may then reduce testing to once per quarter.

d. If at any time, a sample exceeds the Se Limit, Navajo will notify the OCD Santa Fe Office within twenty-four (24) hours, take prompt action to address the exceedance and reinstitute weekly testing.

e. If a sample is split and sent to two laboratories, Navajo shall average the results for Selenium concentration. Navajo may use any U.S. EPA certified laboratory.

f. On or before November 21, 2013, Navajo shall complete the following:

   (1) Engineering evaluation of potential short-term refinery process changes to reduce Selenium concentrations in process water; and

   (2) Engineering evaluation of potential short-term enhanced wastewater treatment options.

g. On or before December 7, 2013, Navajo shall provide the OCD Santa Fe Office with a summary of Navajo's engineering evaluation under subparagraph f. above and include selection of short term remedies with a proposed implementation schedule.

h. Beginning November 30, 2013, on or before the last day of the month, Navajo shall provide the OCD Santa Fe Office with monthly interim progress reports detailing the status and timeline for actions taken by Navajo during the preceding calendar month under this Order.

i. On or before May 30, 2014, Navajo shall advise the OCD Santa Fe Office of its selection of long-term options for addressing Selenium concentrations in wastewater.

j. Navajo's obligation to comply with this Order shall be deferred only to the extent and only for the duration that the failure in compliance is caused by "force majeure." For purposes of this Agreement, "force majeure" is defined as an event or set of circumstances which are beyond Navajo's control and could not have been prevented by Navajo's reasonable action or due diligence. "Force majeure" shall not apply to any failure in compliance due to increased costs or Navajo's financial inability to carry out this Agreement. Navajo shall promptly notify OCD of any force majeure event that has resulted or will result in the inability of Navajo to comply with any obligation under this Order and shall provide OCD with a schedule for completing the obligations.

2. Civil Penalties

a. By November 23, 2013, Navajo shall pay $14,000 (fourteen thousand dollars) in civil penalties, pursuant to NMSA 1978, § 74-6-10.C for the violations of the Regulations and the Permits for discharges of injection fluid, as shown in the test results from the September 27, 2013 and October 15, 2013 samples.

b. Payment shall be made to the *State of New Mexico General Fund* by certified or corporate check and sent to the following address:

Director, Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Re: CO 2013-001

c. Stipulated Penalties:

(1) Failure to Meet Se Limit: The penalty shall be assessed beginning on the day a sample that does not meet the Se Limit is taken. The penalty assessment will continue until the earlier of:

(a) the next required weekly sample that is under the Se Limit; or

(b) for sampling more frequently than the required weekly sampling, two consecutive samples are under the Se Limit and no sample since such two samples is over the Se Limit.

Upon satisfying (a) or (b), the amount of the penalty for any future sample that fails to meet the Se Limit shall be reset to the "Week 1" level as shown in the next paragraph.

The penalty shall be assessed as follows:

Week	Penalty per Day of Injection	Maximum Penalty for 7-day Period
Week 1	$2,000	$14,000
Week 2	$4,000	$28,000
Week 3	$6,000	$42,000
Week 4	$8,000	$56,000
Week 5	$10,000	$70,000
Maximum penalty for 35-day period		$210,000

For avoidance of doubt, penalties shall not be assessed for (a) days that injection to the wells does not occur, or (b) days on and after the sample date for test results that are under the Se Limit (unless a future sample fails to meet the Se Limit in which case the penalty shall resume as of the sample date that corresponds to the sample that failed to meet the Se Limit).

(2) Reports and Samples: $2,000 per day for the failure to timely submit reports or to timely conduct required sampling.

d. Stipulated penalties shall be due thirty (30) days after the OCD makes a written demand for payment of stipulated penalties.

IV. OTHER TERMS AND CONDITIONS

1. By signing this Order, Navajo expressly:

   a. acknowledges the authority of the Director to render the above Findings & Determinations, Conclusions and Order;

   b. agrees to comply with the Order;

   c. waives any right, pursuant to the Act or otherwise, to a hearing either prior or subsequent to the entry of this Order or to an appeal from this Order; and

   d. agrees that if it fails to comply with this Order, the Order may be enforced by suit or otherwise to the same extent and with the same effect as a final Order entered after notice and hearing in accordance with all terms and provisions of the Water Quality Act.

2. Nothing in this Order relieves Navajo of its liability should its operations fail to adequately investigate and remediate contamination that poses a threat to ground water,

surface water, human health or the environment. In addition, nothing in this Order relieves Navajo of its responsibility for compliance with any other federal, state or local laws and/or regulations, including all other obligations under the Permits.

3. Navajo and OCD have the right to modify or terminate this Order by written instrument signed by both parties. Once quarterly testing commences under paragraph III.1.c, this Order will terminate when the Selenium concentrations remain below the Se Limit for four (4) consecutive quarters.

Done at Santa Fe, New Mexico this 24th day of October, 2013.

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION
OIL CONSERVATION DIVISION

By: _____

Name: Jami Bailey

Title: Chair, Oil Conservation Commission
Director, Oil Conservation Division

ACCEPTANCE

Navajo Refining Company, L.L.C. hereby accepts the foregoing Order, and agrees to all of the terms and provisions as set forth in the Order,

Navajo Refining Company, L.L.C.

By: Michael G. McKee

Name: Michael G. McKee

Title: Vice President and Refinery Manager

Date: 24 October 2013

Chavez, Carl J, EMNRD

From: Holder, Mike <Michael.Holder@hollyfrontier.com>
Sent: Monday, October 21, 2013 11:01 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Navajo C-141 Initial Reports
Attachments: 9.27.13 C-141 Report.pdf; 10.15.13 C-141 Report.pdf

Carl – attached please find the initial C-141 Reports for the verbal notifications made on 10/15/13 & 10/20/13. Please do not hesitate to call w/any questions.

Thanks,
Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you
received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Mike Holder
Address: 501 E. Main Street, Artesia, NM 88210	Telephone No. 575-746-5487
Facility Name: Artesia Refinery	Facility Type: Petroleum Refinery

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Refinery wastewater	Volume of Release: Not determined.	Volume Recovered: Not applicable (NA) – See below.
Source of Release: Refinery Wastewater Treatment Plant (WWTP)	Date and Hour of Occurrence Sample taken on 9/27/13 at ~ 11:55 a.m.	Date and Hour of Discovery: Upon receipt of laboratory analytical results, on 10/14/13 at ~ 11:22 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD Sante Fe, Carl Chavez; left message NMED Santa Fe, David Cobrain; left message	
By Whom? Mike Holder	Date and Hour: 10/15/13 at ~ 11:00 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*

NA

Describe Cause of Problem and Remedial Action Taken.*

The Artesia Refinery is authorized to discharge wastewater from its onsite WWTP to three underground injection control wells pursuant to OCD Permit Nos. UIC-CLI-008 (1-008) (WDW-1), UIC-CLI-008-1 (1-008-1) (WDW-2), and UICI-008-0 (WDW-3). As reported in our immediate notice, on October 14, 2013, the Refinery received laboratory analytical results from samples of the WWTP discharge to the three wells taken on September 27, 2013. The results indicated total selenium of 1.6 milligrams/liter (mg/l), and selenium of 1.24 mg/l using the Toxicity Characteristic Leachate Procedure (TCLP). The composition of the wastewater discharge on September 27 was generally the same as the Refinery's typical wastewater discharge to the wells, and we are still evaluating the laboratory results to determine whether they are accurate and valid, and if so, why the selenium levels may have been higher than usual. For comparison purposes, the previous routine quarterly sampling results from late June/early July 2013 showed total selenium of 0.81 mg/l and, using TCLP, Se of 0.682 mg/l in the discharge to the wells.

Selenium is a naturally-occurring constituent of the crude oil received and processed at the Refinery, as well as in water used in Refinery processes. Navajo is examining long-term engineering solutions to reduce selenium levels in the Refinery's wastewater discharge, including consideration of various technologies, and has retained an outside engineering firm to assist with this analysis. In addition, the Refinery is promptly taking steps to assess interim, shorter-term methods to lower selenium levels that can be implemented quickly, including a review of ongoing operations. Navajo has also now temporarily ceased wastewater discharge to the wells and is running a crude slate that contains lower levels of selenium. Navajo will provide OCD with updates on selenium reduction measures.

Describe Area Affected and Cleanup Action Taken.*

As explained above, the wastewater discharge was to three underground injection controls wells permitted by OCD. The discharge is not expected to cause damage or injury because, among other reasons (i) the discharge was not to a watercourse as defined by OCD, (ii) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the TCLP threshold; (iii) the wells are located beneath the lowest formation that could be an underground source of drinking water, (iv) the wells already contain total dissolved solids greater than 10,000 mg/l, and (v) the wastewater discharge was only slightly above the TCLP level of 1.0 mg/l. As a result, the Company has not identified any harm resulting from the discharge, and no immediate cleanup actions were needed or taken. The Company is continuing to take steps to identify the source of elevated selenium and to take corrective measures.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Mike Holder	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Mike Holder		
Title: Environmental Manager	Approval Date:	Expiration Date:
E-mail Address: Michael.Holder@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: October 21, 2013 Phone: 575-746-5487		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
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1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Mike Holder
Address: 501 E. Main Street, Artesia, NM 88210	Telephone No. 575-746-5487
Facility Name: Artesia Refinery	Facility Type: Petroleum Refinery

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Refinery wastewater	Volume of Release: Not determined.	Volume Recovered: Not applicable (NA) – See below.
Source of Release: Refinery Wastewater Treatment Plant (WWTP)	Date and Hour of Occurrence Sample taken on 10/15/13 at ~ 2:10 p.m. MDT	Date and Hour of Discovery: Upon receipt of laboratory TCLP analytical results by Environmental Manager, on 10/19/13 at ~ 10:43 a.m. MDT
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD Sante Fe, Carl Chavez; left message	
By Whom? Mike Holder	Date and Hour: 10/20/13 at ~ 7:10 a.m. MDT	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*

NA

Describe Cause of Problem and Remedial Action Taken.*

The Artesia Refinery is authorized to discharge wastewater from its onsite WWTP to three underground injection control wells pursuant to OCD Permit Nos. UIC-CLI-008 (I-008) (WDW-1), UIC-CLI-008-1 (I-008-1) (WDW-2), and UICI-008-0 (WDW-3). On October 20, 2013, the Refinery received laboratory analytical results from samples of the WWTP discharge to the three wells taken on October 15, 2013. This was follow-up to the sampling event on September 17, 2013, previously reported to OCD. The results received on October 20 indicated total selenium of 1.49 milligrams/liter (mg/l), and selenium of 1.24 mg/l using the Toxicity Characteristic Leachate Procedure (TCLP). The composition of the wastewater discharge on October 15 was generally the same as the Refinery's typical wastewater discharge to the wells, and we are still evaluating the laboratory results to determine whether they are accurate and valid, and if so, why the selenium levels may have been higher than usual. For comparison purposes, the previous routine quarterly sampling results from late June/early July 2013 showed total selenium of 0.81 mg/l and, using TCLP, Se of 0.682 mg/l in the discharge to the wells.

Selenium is a naturally-occurring constituent of the crude oil received and processed at the Refinery, as well as in water used in Refinery processes. Navajo is examining long-term engineering solutions to reduce selenium levels in the Refinery's wastewater discharge, including consideration of various technologies, and has retained an outside engineering firm to assist with this analysis. In addition, the Refinery is promptly taking steps to assess interim, shorter-term methods to lower selenium levels that can be implemented quickly, including a review of ongoing operations. Navajo has also now temporarily ceased wastewater discharge to the wells and is running a crude slate that contains lower levels of selenium. Navajo will provide OCD with updates on selenium reduction measures.

Describe Area Affected and Cleanup Action Taken.*

As explained above, the wastewater discharge was to three underground injection controls wells permitted by OCD. The discharge is not expected to cause damage or injury because, among other reasons (i) the discharge was not to a watercourse as defined by OCD, (ii) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the TCLP threshold, (iii) the wells are located beneath the lowest formation that could be an underground source of drinking water, (iv) the wells already contain total dissolved solids greater than 10,000 mg/l, and (v) the wastewater discharge was only slightly above the TCLP level of 1.0 mg/l. As a result, the Company has not identified any harm resulting from the discharge, and no immediate cleanup actions were needed or taken. The Company is continuing to take steps to identify the source of elevated selenium and to take corrective measures.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Michael A Holder	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Mike Holder		
Title: Environmental Manager	Approval Date:	Expiration Date:
E-mail Address: Michael.Holder@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: October 21, 2013 Phone: 575-746-5487		

* Attach Additional Sheets If Necessary

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Revised August 8, 2011

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Mike Holder
Address: 501 E. Main Street, Artesia, NM 88210	Telephone No. 575-746-5487
Facility Name: Artesia Refinery	Facility Type: Petroleum Refinery

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Refinery wastewater	Volume of Release: Not determined.	Volume Recovered: Not applicable (NA) – See below.
Source of Release: Refinery Wastewater Treatment Plant (WWTP)	Date and Hour of Occurrence Sample taken on 9/27/13 at ~ 11:55 a.m.	Date and Hour of Discovery: Upon receipt of laboratory analytical results, on 10/14/13 at ~ 11:22 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD Sante Fe, Carl Chavez; left message NMED Santa Fe, David Cobrain; left message	
By Whom? Mike Holder	Date and Hour: 10/15/13 at ~ 11:00 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*

NA

Describe Cause of Problem and Remedial Action Taken.*

The Artesia Refinery is authorized to discharge wastewater from its onsite WWTP to three underground injection control wells pursuant to OCD Permit Nos. UIC-CLI-008 (I-008) (WDW-1), UIC-CLI-008-1 (I-008-1) (WDW-2), and UICI-008-0 (WDW-3). As reported in our immediate notice, on October 14, 2013, the Refinery received laboratory analytical results from samples of the WWTP discharge to the three wells taken on September 27, 2013. The results indicated total selenium of 1.6 milligrams/liter (mg/l), and selenium of 1.24 mg/l using the Toxicity Characteristic Leachate Procedure (TCLP). The composition of the wastewater discharge on September 27 was generally the same as the Refinery's typical wastewater discharge to the wells, and we are still evaluating the laboratory results to determine whether they are accurate and valid, and if so, why the selenium levels may have been higher than usual. For comparison purposes, the previous routine quarterly sampling results from late June/early July 2013 showed total selenium of 0.81 mg/l and, using TCLP, Se of 0.682 mg/l in the discharge to the wells.

Selenium is a naturally-occurring constituent of the crude oil received and processed at the Refinery, as well as in water used in Refinery processes. Navajo is examining long-term engineering solutions to reduce selenium levels in the Refinery's wastewater discharge, including consideration of various technologies, and has retained an outside engineering firm to assist with this analysis. In addition, the Refinery is promptly taking steps to assess interim, shorter-term methods to lower selenium levels that can be implemented quickly, including a review of ongoing operations. Navajo has also now temporarily ceased wastewater discharge to the wells and is running a crude slate that contains lower levels of selenium. Navajo will provide OCD with updates on selenium reduction measures.

Describe Area Affected and Cleanup Action Taken.*

As explained above, the wastewater discharge was to three underground injection controls wells permitted by OCD. The discharge is not expected to cause damage or injury because, among other reasons (i) the discharge was not to a watercourse as defined by OCD, (ii) upon injection, the wastewater was added to large volumes of wastewater already in the well formation such that resulting concentrations would be less than the TCLP threshold; (iii) the wells are located beneath the lowest formation that could be an underground source of drinking water, (iv) the wells already contain total dissolved solids greater than 10,000 mg/l, and (v) the wastewater discharge was only slightly above the TCLP level of 1.0 mg/l. As a result, the Company has not identified any harm resulting from the discharge, and no immediate cleanup actions were needed or taken. The Company is continuing to take steps to identify the source of elevated selenium and to take corrective measures.

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Signature: Michael a Holder	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Mike Holder		
Title: Environmental Manager	Approval Date:	Expiration Date:
E-mail Address: Michael.Holder@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: October 21, 2013 Phone: 575-746-5487		

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Mike Holder
Address: 501 E. Main Street, Artesia, NM 88210	Telephone No. 575-746-5487
Facility Name: Artesia Refinery	Facility Type: Petroleum Refinery

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Refinery wastewater	Volume of Release: Not determined.	Volume Recovered: Not applicable (NA) – See below.
Source of Release: Refinery Wastewater Treatment Plant (WWTP)	Date and Hour of Occurrence Sample taken on 10/15/13 at ~ 2:10 p.m. MDT	Date and Hour of Discovery: Upon receipt of laboratory TCLP analytical results by Environmental Manager, on 10/19/13 at ~ 10:43 a.m. MDT
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD Sante Fe, Carl Chavez; left message	
By Whom? Mike Holder	Date and Hour: 10/20/13 at ~ 7:10 a.m. MDT	
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If a Watercourse was Impacted, Describe Fully.*

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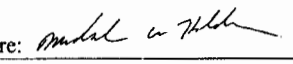
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Signature: 	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Mike Holder		
Title: Environmental Manager	Approval Date:	Expiration Date:
E-mail Address: Michael.Holder@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: October 21, 2013 Phone: 575-746-5487		

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