GW-028

Annual DP Report (6 of 6)

2016

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1605958**

27-May-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **LCS-25416**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**							
Client ID: **LCSW**	Batch ID: **25416**	RunNo: **34425**							
Prep Date: **5/20/2016**	Analysis Date: **5/24/2016**	SeqNo: **1061630**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.43	0.070	0.5020	0	85.7	51.3	137			
Dibenz(a,h)anthracene	0.84	0.12	1.002	0	83.8	57.8	134			
Benzo(g,h,i)perylene	0.85	0.12	1.000	0	85.0	57.2	134			
Indeno(1,2,3-cd)pyrene	1.6	0.25	2.004	0	81.3	58.2	137			
Surr: Benzo(e)pyrene	15		20.00		76.9	20	153			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1605958**

27-May-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	**MB-25543**	SampType:	**MBLK**	TestCode:	**Total Phenolics by SW-846 9067**					
Client ID:	**PBW**	Batch ID:	**25543**	RunNo:	**34512**					
Prep Date:	**5/27/2016**	Analysis Date:	**5/27/2016**	SeqNo:	**1064497**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND	2.5								

Sample ID	**LCS-25543**	SampType:	**LCS**	TestCode:	**Total Phenolics by SW-846 9067**					
Client ID:	**LCSW**	Batch ID:	**25543**	RunNo:	**34512**					
Prep Date:	**5/27/2016**	Analysis Date:	**5/27/2016**	SeqNo:	**1064498**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	23	2.5	20.00	0	116	64.4	135			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1605958**

27-May-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	**MB-25475**	SampType:	**MBLK**		TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**25475**		RunNo:	**34475**					
Prep Date:	**5/24/2016**	Analysis Date:	**5/25/2016**		SeqNo:	**1063156**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids		ND	20.0								

Sample ID	**LCS-25475**	SampType:	**LCS**		TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**25475**		RunNo:	**34475**					
Prep Date:	**5/24/2016**	Analysis Date:	**5/25/2016**		SeqNo:	**1063157**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids		1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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: 1605958 RcptNo: 1

Received by/date: SA 05/20/16

Logged By: **Lindsay Mangin** 5/20/2016 9:50:00 AM

Completed By: **Lindsay Mangin** 5/20/2016 10:12:15 AM

Reviewed By: 05/20/16

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: 6 (<2 or >12 unless noted)

Adjusted? NO

Checked by: AJS

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

Turn-Around Time:
X Standard ☐ Rush

Project Name:
Monthly R.O. Reject

Project #: P.O. # 167796

Project Manager:
Robert Combs

Sampler: Brady Hubbard
On Ice: X Yes ☐ No
Sample Temperature: 1.0

ient: Navajo Refinery

ailing Address: P.O. Box 159 Artesia,

M 88211-0159

hone #: 575-748-3311

nail or Fax#: 575-746-5451

A/QC Package:
Standard ☐ Level 4 (Full Validation)
Other
EDD (Type)

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.	8260B:WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470: Mercury	8015: GRO, DRO, ORO	8082: PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB	Air Bubbles (Y or N)
						Analysis Request																
9-16	10:15	liquid	R.O. Reject	2 - 500ml P	1-unpres 1-H2SO4	1605458-001									X		X	X	X	X		Y
9-16	10:15	liquid	R.O. Reject	3-40ml VOA	HCL	-001	X															
9-16	10:15	liquid	R.O. Reject	1-500ml P	HNO3	-001					X											
9-16	10:15	liquid	R.O. Reject	1-125ml P	HNO3	-001			X													
9-16	10:15	liquid	R.O. Reject	1-500ml P	NaOH	-001				X												
9-16	10:15	liquid	R.O. Reject	2- 1L P	HNO3	-001								X								
9-16	10:15	liquid	R.O. Reject	2-40ml VOA	Na2S2O3	-001															X	
9-16	10:15	liquid	R.O. Reject	2 - 1L Glass	unpres	-001							X									
9-16	10:15	liquid	R.O. Reject	1 - 1L Glass	unpres	-001		X														
9-16	10:15	liquid	R.O. Reject	3-40ml VOA	HCl	-001						X										
9-16	10:15	liquid	R.O. Reject	1-250mlGlass	unpres	-001						X										
9-16	10:15	liquid	R.O. Reject	1 - 1L Glass	H2SO4	-001										X						
		liquid	Trip Blank	2-40ml VOA	HCL	-002																

Date:	Time:	Relinquished by:	Received by:	Date	Time
9-16	2:00	Brady Hubbard	Joe Bat	05/20/16	0950
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
Metals: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zn
VOCs: 1,1,1-Trichloroethane; 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene; 1,1,2-Trichloroethane; 1,1,2-Trichloroethylene; 1,1-Dichloroethane; 1,1-Dichloroethene; 1,2-Dibromoethane; 1,2-Dichloroethane; Benzene; Carbon Tetrachloride; Chloroform; Dichloromethane; Ethylbenzene; Toluene; Total Xylenes; Vinyl Chloride
SVOCs: benzo(a)pyrene, phenol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene

HOLLYFRONTIER

July 15, 2016

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

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

RE: Discharge Permit GW-028
Monthly Report – June 2016 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's June 2016 monthly report, for the period of June 1-30, 2016, under the Permit.

Specifically, in accordance with Condition 4.B.7, this report covers the June 2016 reporting period and includes the daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4. Analytical data collected in accordance with Condition 4.B.1 for the second quarter of 2016 was provided in previous monthly reports.

Analytical results of a discharge sample collected on April 5, 2016, in accordance with Condition 4.B.1 for the second calendar quarter were included in the April report. Questions regarding the analytical results for the April 5 sample prompted re-sampling on May 19, 2016. A revised analytical report for the April 5 sample and an analytical report for follow up samples collected on May 19, 2016, were provided in the May monthly report submitted on June 2016.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units and the temporary RO unit on a daily basis. Daily discharge rates and volumes are provided in Attachment 1. Note that a third permanent unit was installed to replace the temporary RO unit as authorized by OCD on April 1, 2016. The third permanent unit began operation in May 2016. Operation of the temporary RO unit ceased on June 1.

Separately, on June 23, 2016, Navajo submitted an application to renew and modify Discharge Permit GW-028. This application was submitted in accordance with Condition 1.F of the Permit.

Navajo is committed to proactively meeting the requirements of the Permit and working cooperatively with OCD. If you have any questions or comments, please contact me at 575-746-5487.

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flow Rates

cc. HFC: D. McWatters, R. O'Brien, M. Holder
OCD: A. Marks, B. Brancard

Attachment 1
Daily Discharge Flow Rates and Volumes

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units					Temporary Unit		Daily Discharge Volume
	Metered Data			Combined RO Reject Discharge (Calculated)		Total RO Reject Discharge (Calculated from Log Data)		
	GPM SOUTH	GPM NORTH	GPM MIDDLE	GPM	BBL/DAY	GPM	BBL/DAY	BBL
6/1/2016	141.11	0.23	135.98	277.31	9,507.77	27	924	10,431.77
6/2/2016	139.41	0.74	136.77	276.92	9,494.40	0	0	9,494.40
6/3/2016	137.39	1.92	137.35	276.65	9,485.14	0	0	9,485.14
6/4/2016	141.17	0.58	136.36	278.11	9,535.20	0	0	9,535.20
6/5/2016	139.90	1.72	136.80	278.43	9,546.17	0	0	9,546.17
6/6/2016	140.35	2.30	136.73	279.38	9,578.74	0	0	9,578.74
6/7/2016	153.48	0.54	136.19	290.22	9,950.40	0	0	9,950.40
6/8/2016	153.74	0.10	135.62	289.46	9,924.34	0	0	9,924.34
6/9/2016	154.15	0.14	135.68	289.97	9,941.83	0	0	9,941.83
6/10/2016	154.55	0.17	135.63	290.35	9,954.86	0	0	9,954.86
6/11/2016	153.35	0.09	135.74	289.19	9,915.09	0	0	9,915.09
6/12/2016	154.64	0.40	136.03	291.07	9,979.54	0	0	9,979.54
6/13/2016	155.23	0.25	135.81	291.29	9,987.09	0	0	9,987.09
6/14/2016	155.22	0.30	135.19	290.72	9,967.54	0	0	9,967.54
6/15/2016	154.59	0.20	135.68	290.47	9,958.97	0	0	9,958.97
6/16/2016	144.65	2.15	136.14	282.94	9,700.80	0	0	9,700.80
6/17/2016	138.49	4.34	136.63	279.46	9,581.49	0	0	9,581.49
6/18/2016	141.24	6.44	136.16	283.84	9,731.66	0	0	9,731.66
6/19/2016	141.61	3.74	135.89	281.24	9,642.51	0	0	9,642.51
6/20/2016	138.93	2.01	135.71	276.66	9,485.49	0	0	9,485.49
6/21/2016	137.59	4.00	136.68	278.27	9,540.69	0	0	9,540.69
6/22/2016	135.87	6.67	138.00	280.54	9,618.51	0	0	9,618.51
6/23/2016	135.10	7.42	137.83	280.35	9,612.00	0	0	9,612.00
6/24/2016	139.11	3.20	137.05	279.36	9,578.06	0	0	9,578.06
6/25/2016	74.54	84.42	137.11	296.06	10,150.63	0	0	10,150.63
6/26/2016	141.61	3.74	135.89	281.24	9,642.51	0	0	9,642.51
6/27/2016	138.93	2.01	135.71	276.66	9,485.49	0	0	9,485.49
6/28/2016	137.59	4.00	136.68	278.27	9,540.69	0	0	9,540.69
6/29/2016	135.87	6.67	138.00	280.54	9,618.51	0	0	9,618.51
6/30/2016	135.10	7.42	137.83	280.35	9,612.00	0	0	9,612.00

HOLLYFRONTIER.

August 10, 2016

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

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

RE: Discharge Permit GW-028
Monthly Report – July 2016 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's July 2016 monthly report, for the period of July 1-31, 2016, under the Permit.

Specifically, this report covers the July 2016 reporting period and includes the following data and information as required by Condition 4.B.7:

- Daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4.

- Analytical results of a discharge sample collected on July 5, 2016 in accordance with Condition 4.B.1 for the third calendar quarter.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units on a daily basis. Daily discharge rates and volumes are provided in Attachment 1.

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the third quarter, samples were collected for the RO reject streams from the permanent units on July 5, 2016. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results are provided in Attachment 2.

On June 23, 2016, Navajo submitted an application to renew and modify Discharge Permit GW-028 in accordance with Condition 1.F of the Permit. Navajo received notification from OCD that the application was deemed administratively complete on July 28, 2016.

Navajo is committed to proactively meeting the requirements of the Permit and working cooperatively with OCD. If you have any questions or comments, please contact me at 575-746-5487.

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flowrates and Volumes
Attachment 2: Analytical Lab Report

cc. HFC: D. McWatters, R. O'Brien, M. Holder
OCD: A. Marks, B. Brancard

HOLLYFRONTIER.

October 13, 2016

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

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

RE: Discharge Permit GW-028
Monthly Report – September 2016 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's September 2016 monthly report, for the period of September 1-30, 2016, under the Permit.

Specifically, this report covers the September 2016 reporting period and includes the following data and information as required by Condition 4.B.7:

- Daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units on a daily basis. Daily discharge rates and volumes are provided in Attachment 1.

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the third quarter, samples were collected for the RO reject streams from the permanent units on July 5, 2016. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results were provided in the report submitted on August 10, 2016, for the July 2016 reporting period.

On June 23, 2016, Navajo submitted an application to renew and modify Discharge Permit GW-028 in accordance with Condition 1.F of the Permit. Navajo received notification from OCD that the application was deemed administratively complete on July 28, 2016, and notification that the application was determined to be technically incomplete on September 9, 2016.

Navajo is committed to proactively meeting the requirements of the Permit and working cooperatively with OCD. If you have any questions or comments, please contact me at 575-746-5487.

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flowrates and Volumes

cc. HFC: D. McWatters, R. O'Brien, M. Holder
OCD: A. Marks, B. Brancard

Attachment 1
Daily Discharge Flowrates and Volumes

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Daily Discharge Volume
	Metered Data			Combined RO Reject Discharge (Calculated)	
	GPM	GPM	GPM	GPM	BBL/DAY
	SOUTH	NORTH	MIDDLE		
9/1/2016	129.28	0.09	130.78	260.14	8919.09
9/2/2016	134.43	0.09	131.13	265.65	9108.00
9/3/2016	135.04	0.10	130.73	265.87	9115.54
9/4/2016	135.56	0.10	130.64	266.30	9130.29
9/5/2016	134.93	101.14	75.37	311.45	10678.29
9/6/2016	133.18	155.04	40.73	328.96	11278.63
9/7/2016	134.25	153.70	41.85	329.80	11307.43
9/8/2016	134.28	152.80	40.29	327.37	11224.11
9/9/2016	134.38	153.08	40.51	327.98	11245.03
9/10/2016	135.30	153.62	41.49	330.42	11328.69
9/11/2016	135.71	153.33	40.22	329.26	11288.91
9/12/2016	136.18	153.49	41.72	331.39	11361.94
9/13/2016	133.57	152.37	32.81	318.75	10928.57
9/14/2016	132.50	151.51	30.16	314.17	10771.54
9/15/2016	135.28	152.52	37.99	325.78	11169.60
9/16/2016	134.52	152.48	35.44	322.44	11055.09
9/17/2016	135.22	152.64	36.95	324.81	11136.34
9/18/2016	135.90	152.73	38.04	326.66	11199.77
9/19/2016	135.88	151.59	37.29	324.77	11134.97
9/20/2016	135.50	152.42	35.16	323.08	11077.03
9/21/2016	134.60	152.25	31.71	318.56	10922.06
9/22/2016	125.19	130.93	32.94	289.06	9910.63
9/23/2016	118.87	114.59	35.58	269.04	9224.23
9/24/2016	119.16	115.88	37.62	272.66	9348.34
9/25/2016	120.76	119.92	42.63	283.30	9713.14
9/26/2016	121.04	119.01	40.16	280.21	9607.20
9/27/2016	120.84	111.43	38.18	270.45	9272.57
9/28/2016	120.18	101.10	25.08	246.36	8446.63
9/29/2016	121.35	119.17	41.55	282.06	9670.63
9/30/2016	118.19	118.50	38.96	275.66	9451.20

HOLLYFRONTIER.

December 16, 2016

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

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

RE: Discharge Permit GW-028
Monthly Report – November 2016 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's November 2016 monthly report, for the period of November 1-30, 2016, under the Permit.

Specifically, this report covers the November 2016 reporting period and includes the following data and information as required by Condition 4.B.7:

- Daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4.

- Analytical results of a discharge sample collected on October 11, 2016 in accordance with Condition 4.B.1 for the fourth calendar quarter.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units on a daily basis. Daily discharge rates and volumes are provided in Attachment 1. Per Mr. Chavez' request, the total discharge for the month is also shown in Attachment 1.

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the fourth quarter, samples were collected for the RO reject streams from the permanent units on October 11, 2016. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results are provided in Attachment 2.

On October 21, 2016, Navajo notified OCD of its selection of a Class 1 disposal well as an alternative disposal method for the RO reject. Navajo is currently revising the application to renew and modify Discharge Permit GW-028 submitted on June 23, 2016, to reflect this selection.

Navajo is committed to proactively meeting the requirements of the Permit and working cooperatively with OCD. If you have any questions or comments, please contact me at 575-746-5487.

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flowrates and Volumes
Attachment 2: Analytical Lab Report

cc. IIFC: D. McWatters, R. O'Brien, M. Holder
OCD: A. Marks, B. Brancard

Attachment 1
Daily Discharge Flowrates and Volumes

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Daily Discharge Volume
	Metered Data			Combined RO Reject Discharge (Calculated)	
	GPM	GPM	GPM	GPM	BBL/DAY
	SOUTH	NORTH	MIDDLE		
11/1/2016	131.18	143.05	55.20	329.43	11,294.74
11/2/2016	131.71	143.11	56.78	331.59	11,368.80
11/3/2016	29.73	141.18	63.04	233.94	8,020.80
11/4/2016	73.35	142.31	58.64	274.30	9,404.57
11/5/2016	136.65	142.76	50.95	330.36	11,326.63
11/6/2016	137.55	142.70	52.06	332.30	11,393.14
11/7/2016	137.78	142.64	49.69	330.12	11,318.40
11/8/2016	139.07	143.06	53.20	335.33	11,497.03
11/9/2016	137.83	139.52	52.77	330.12	11,318.40
11/10/2016	139.04	142.68	55.00	336.72	11,544.69
11/11/2016	139.33	142.09	50.60	332.02	11,383.54
11/12/2016	139.06	142.09	52.70	333.85	11,446.29
11/13/2016	117.00	143.18	53.42	313.60	10,752.00
11/14/2016	55.16	137.56	38.91	231.63	7,941.60
11/15/2016	129.27	140.70	45.95	315.93	10,831.89
11/16/2016	129.66	140.82	45.01	315.50	10,817.14
11/17/2016	131.01	142.57	50.37	323.95	11,106.86
11/18/2016	130.93	142.10	49.35	322.39	11,053.37
11/19/2016	130.83	141.64	47.23	319.70	10,961.14
11/20/2016	131.05	141.62	45.90	318.57	10,922.40
11/21/2016	130.67	141.51	43.17	315.35	10,812.00
11/22/2016	131.03	141.94	44.67	317.65	10,890.86
11/23/2016	131.04	141.77	42.89	315.70	10,824.00
11/24/2016	132.65	142.55	49.49	324.70	11,132.57
11/25/2016	132.32	142.03	45.79	320.14	10,976.23
11/26/2016	132.91	142.02	47.08	322.01	11,040.34
11/27/2016	132.82	142.17	45.35	320.34	10,983.09
11/28/2016	133.01	142.55	45.24	320.80	10,998.86
11/29/2016	132.18	142.57	41.93	316.67	10,857.26
11/30/2016	132.44	142.71	42.61	317.77	10,894.97
TOTAL (bbls/month)					**325,113.60**

Attachment 2
Analytical Lab 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 16, 2016

Robert Combs

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

RE: Quarterly RO Reject OrderNo.: 1610613

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/13/2016 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 **1610613**
Date Reported: **11/16/2016**

CLIENT: Navajo Refining Company
Project: Quarterly RO Reject
Lab ID: 1610613-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 10/11/2016 11:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst: **JLF**	
Arsenic	ND	0.0050		mg/L	5	10/28/2016 2:36:13 PM	A38300
Lead	ND	0.00050		mg/L	1	10/25/2016 7:44:19 PM	B38214
Selenium	0.0089	0.0010		mg/L	1	10/25/2016 7:44:19 PM	B38214
Uranium	0.0064	0.00050		mg/L	1	10/25/2016 7:44:19 PM	B38214
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst: **SUB**	
Radium-226	0.525	0.552		pCi/L	1	11/16/2016	R38749
Radium-226 ±	0.445	0.552		pCi/L	1	11/16/2016	R38749
Radium-228	0.442	0.785		pCi/L	1	11/16/2016	R38749
Radium-228 ±	0.389	0.785		pCi/L	1	11/16/2016	R38749
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	3.6	2.0		mg/L	20	10/14/2016 12:43:59 AM	R37942
Chloride	280	10		mg/L	20	10/14/2016 12:43:59 AM	R37942
Sulfate	1900	50		mg/L	100	10/25/2016 4:52:17 PM	R38212
Nitrate+Nitrite as N	1.9	1.0		mg/L	5	10/14/2016 1:33:37 AM	R37942
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3960	20.0	*	mg/L	1	10/20/2016 2:01:00 PM	28134
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: **SUB**	
Cyanide	ND	0.0100		mg/L	1	10/19/2016	R38749
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.82	1.68	H	pH units	1	10/18/2016 1:22:12 PM	R38048
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **MED**	
Aluminum	ND	0.020		mg/L	1	10/25/2016 12:47:24 PM	A38197
Barium	0.079	0.0020		mg/L	1	10/21/2016 6:01:00 PM	B38141
Boron	0.092	0.040		mg/L	1	10/21/2016 6:01:00 PM	B38141
Cadmium	ND	0.0020		mg/L	1	10/21/2016 6:01:00 PM	B38141
Chromium	ND	0.0060		mg/L	1	10/21/2016 6:01:00 PM	B38141
Cobalt	ND	0.0060		mg/L	1	10/21/2016 6:01:00 PM	B38141
Copper	ND	0.0060		mg/L	1	10/25/2016 12:47:24 PM	A38197
Iron	ND	0.020		mg/L	1	10/25/2016 12:47:24 PM	A38197
Manganese	ND	0.0020		mg/L	1	10/21/2016 6:01:00 PM	B38141
Molybdenum	ND	0.0080		mg/L	1	10/21/2016 6:01:00 PM	B38141
Nickel	ND	0.010		mg/L	1	10/21/2016 6:01:00 PM	B38141
Silver	ND	0.0050		mg/L	1	10/21/2016 6:01:00 PM	B38141
Zinc	0.014	0.010		mg/L	1	10/21/2016 6:01:00 PM	B38141
EPA METHOD 245.1: MERCURY						Analyst: **JLF**	
Mercury	ND	0.00020		mg/L	1	10/21/2016 12:15:12 PM	28201

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: R.O. Reject
Project: Quarterly RO Reject
Collection Date: 10/11/2016 11:00:00 AM
Lab ID: 1610613-001 **Matrix:** AQUEOUS **Received Date:** 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	10/19/2016 9:14:28 PM	W38060
Surr: BFB	90.7	70-130		%Rec	1	10/19/2016 9:14:28 PM	W38060
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	10/17/2016 4:51:55 PM	28082
EPA METHOD 8082: PCB'S						Analyst: **SCC**	
Aroclor 1016	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Aroclor 1221	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Aroclor 1232	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Aroclor 1242	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Aroclor 1248	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Aroclor 1254	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Aroclor 1260	ND	1.0		µg/L	1	10/19/2016 8:28:00 AM	28040
Surr: Decachlorobiphenyl	117	26.1-140		%Rec	1	10/19/2016 8:28:00 AM	28040
Surr: Tetrachloro-m-xylene	112	15-123		%Rec	1	10/19/2016 8:28:00 AM	28040
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	10/14/2016 10:46:55 PM	28063
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	10/14/2016 10:46:55 PM	28063
Surr: DNOP	117	77.1-144		%Rec	1	10/14/2016 10:46:55 PM	28063
EPA METHOD 8310: PAHS						Analyst: **SCC**	
Naphthalene	ND	2.0		µg/L	1	10/20/2016 3:19:37 PM	28041
1-Methylnaphthalene	ND	2.0		µg/L	1	10/20/2016 3:19:37 PM	28041
2-Methylnaphthalene	ND	2.0		µg/L	1	10/20/2016 3:19:37 PM	28041
Benzo(a)pyrene	ND	0.070		µg/L	1	10/20/2016 3:19:37 PM	28041
Surr: Benzo(e)pyrene	80.6	20-153		%Rec	1	10/20/2016 3:19:37 PM	28041
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Toluene	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Ethylbenzene	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Carbon Tetrachloride	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Chloroform	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
1,1-Dichloroethane	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
1,1-Dichloroethene	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Methylene Chloride	ND	3.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: R.O. Reject
Project: Quarterly RO Reject
Collection Date: 10/11/2016 11:00:00 AM
Lab ID: 1610613-001 **Matrix:** AQUEOUS **Received Date:** 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Vinyl chloride	ND	1.0		µg/L	1	10/14/2016 10:07:29 AM	R37973
Xylenes, Total	ND	1.5		µg/L	1	10/14/2016 10:07:29 AM	R37973
Surr: 1,2-Dichloroethane-d4	96.3	70-130		%Rec	1	10/14/2016 10:07:29 AM	R37973
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	10/14/2016 10:07:29 AM	R37973
Surr: Dibromofluoromethane	103	70-130		%Rec	1	10/14/2016 10:07:29 AM	R37973
Surr: Toluene-d8	97.8	70-130		%Rec	1	10/14/2016 10:07:29 AM	R37973
TOTAL PHENOLICS BY SW-846 9067						Analyst: **SCC**	
Phenolics, Total Recoverable	ND	2.5		µg/L	1	10/18/2016	28115

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Quarterly RO Reject
Collection Date:
Lab ID: 1610613-002
Matrix: TRIP BLANK
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	10/17/2016 5:07:17 PM	28082
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Toluene	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Ethylbenzene	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Carbon Tetrachloride	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Chloroform	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,1-Dichloroethane	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,1-Dichloroethene	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Methylene Chloride	ND	3.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Vinyl chloride	ND	1.0		µg/L	1	10/14/2016 11:33:59 AM	R37973
Xylenes, Total	ND	1.5		µg/L	1	10/14/2016 11:33:59 AM	R37973
Surr: 1,2-Dichloroethane-d4	93.1	70-130		%Rec	1	10/14/2016 11:33:59 AM	R37973
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	10/14/2016 11:33:59 AM	R37973
Surr: Dibromofluoromethane	98.5	70-130		%Rec	1	10/14/2016 11:33:59 AM	R37973
Surr: Toluene-d8	104	70-130		%Rec	1	10/14/2016 11:33:59 AM	R37973

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **MB-B**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B38141**	RunNo: **38141**
Prep Date:	Analysis Date: **10/21/2016**	SeqNo: **1190207** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID **LLLCS-B**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B38141**	RunNo: **38141**
Prep Date:	Analysis Date: **10/21/2016**	SeqNo: **1190211** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0026	0.0020	0.002000	0	130	50	150			
Boron	0.040	0.040	0.04000	0	101	50	150			
Cadmium	ND	0.0020	0.002000	0	84.5	50	150			
Chromium	0.0062	0.0060	0.006000	0	103	50	150			
Cobalt	0.0064	0.0060	0.006000	0	106	50	150			
Manganese	0.0021	0.0020	0.002000	0	106	50	150			
Molybdenum	ND	0.0080	0.008000	0	97.5	50	150			
Nickel	ND	0.010	0.005000	0	96.6	50	150			
Silver	ND	0.0050	0.005000	0	99.4	50	150			
Zinc	ND	0.010	0.005000	0	105	50	150			

Sample ID **LCS-B**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B38141**	RunNo: **38141**
Prep Date:	Analysis Date: **10/21/2016**	SeqNo: **1190212** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.0020	0.5000	0	101	85	115			
Boron	0.53	0.040	0.5000	0	106	85	115			
Cadmium	0.52	0.0020	0.5000	0	104	85	115			
Chromium	0.50	0.0060	0.5000	0	101	85	115			
Cobalt	0.49	0.0060	0.5000	0	97.8	85	115			
Manganese	0.50	0.0020	0.5000	0	100	85	115			
Molybdenum	0.53	0.0080	0.5000	0	105	85	115			
Nickel	0.48	0.010	0.5000	0	96.3	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**LCS-B**	SampType:	**LCS**		TestCode:	**EPA Method 200.7: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID:	**B38141**		RunNo:	**38141**				
Prep Date:		Analysis Date:	**10/21/2016**		SeqNo:	**1190212**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	99.9	85	115			
Zinc	0.49	0.010	0.5000	0	97.9	85	115			

Sample ID	**MB-A**	SampType:	**MBLK**		TestCode:	**EPA Method 200.7: Dissolved Metals**				
Client ID:	**PBW**	Batch ID:	**A38197**		RunNo:	**38197**				
Prep Date:		Analysis Date:	**10/25/2016**		SeqNo:	**1192092**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Copper	ND	0.0060								
Iron	ND	0.020								

Sample ID	**LCS-A**	SampType:	**LCS**		TestCode:	**EPA Method 200.7: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID:	**A38197**		RunNo:	**38197**				
Prep Date:		Analysis Date:	**10/25/2016**		SeqNo:	**1192093**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.57	0.020	0.5000	0	114	85	115			
Copper	0.49	0.0060	0.5000	0	97.8	85	115			
Iron	0.50	0.020	0.5000	0	99.1	85	115			

Sample ID	**LLLCS-A**	SampType:	**LCSLL**		TestCode:	**EPA Method 200.7: Dissolved Metals**				
Client ID:	**BatchQC**	Batch ID:	**A38197**		RunNo:	**38197**				
Prep Date:		Analysis Date:	**10/25/2016**		SeqNo:	**1192094**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	123	50	150			
Copper	0.0064	0.0060	0.006000	0	106	50	150			
Iron	0.021	0.020	0.02000	0	107	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**LCS**	SampType: **LCS**			TestCode: **EPA 200.8: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID: **B38214**			RunNo: **38214**				
Prep Date:		Analysis Date: **10/25/2016**			SeqNo: **1192768**		Units: **mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	95.6	85	115			
Selenium	0.025	0.0010	0.02500	0	99.1	85	115			
Uranium	0.012	0.00050	0.01250	0	96.0	85	115			

Sample ID	**LLLCS**	SampType: **LCSLL**			TestCode: **EPA 200.8: Dissolved Metals**				
Client ID:	**BatchQC**	Batch ID: **B38214**			RunNo: **38214**				
Prep Date:		Analysis Date: **10/25/2016**			SeqNo: **1192770**		Units: **mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00051	0.00050	0.0005000	0	101	50	150			
Selenium	0.0011	0.0010	0.001000	0	113	50	150			
Uranium	ND	0.00050	0.0005000	0	97.5	50	150			

Sample ID	**MB**	SampType: **MBLK**			TestCode: **EPA 200.8: Dissolved Metals**				
Client ID:	**PBW**	Batch ID: **B38214**			RunNo: **38214**				
Prep Date:		Analysis Date: **10/25/2016**			SeqNo: **1192772**		Units: **mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								
Selenium	ND	0.0010								
Uranium	ND	0.00050								

Sample ID	**LCS**	SampType: **LCS**			TestCode: **EPA 200.8: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID: **A38300**			RunNo: **38300**				
Prep Date:		Analysis Date: **10/28/2016**			SeqNo: **1195760**		Units: **mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.3	85	115			

Sample ID	**LLLCS**	SampType: **LCSLL**			TestCode: **EPA 200.8: Dissolved Metals**				
Client ID:	**BatchQC**	Batch ID: **A38300**			RunNo: **38300**				
Prep Date:		Analysis Date: **10/28/2016**			SeqNo: **1195761**		Units: **mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	99.2	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**
16-Nov-16

Client: Navajo Refining Company
Project: Quarterly RO Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A38300**	RunNo: **38300**
Prep Date:	Analysis Date: **10/28/2016**	SeqNo: **1195762** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**MB-28201**	SampType:	**MBLK**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**28201**	RunNo:	**38122**					
Prep Date:	**10/20/2016**	Analysis Date:	**10/21/2016**	SeqNo:	**1189575**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-28201**	SampType:	**LCS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**28201**	RunNo:	**38122**					
Prep Date:	**10/20/2016**	Analysis Date:	**10/21/2016**	SeqNo:	**1189576**	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	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**
16-Nov-16

Client: Navajo Refining Company
Project: Quarterly RO Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R37942**	RunNo: **37942**
Prep Date:	Analysis Date: **10/13/2016**	SeqNo: **1182401** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R37942**	RunNo: **37942**
Prep Date:	Analysis Date: **10/13/2016**	SeqNo: **1182402** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	107	90	110			
Chloride	4.7	0.50	5.000	0	93.9	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.3	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R38212**	RunNo: **38212**
Prep Date:	Analysis Date: **10/25/2016**	SeqNo: **1192608** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R38212**	RunNo: **38212**
Prep Date:	Analysis Date: **10/25/2016**	SeqNo: **1192609** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.7	0.50	10.00	0	96.9	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**MB-28082**	SampType:	**MBLK**	TestCode:	**EPA Method 8011/504.1: EDB**					
Client ID:	**PBW**	Batch ID:	**28082**	RunNo:	**37992**					
Prep Date:	**10/17/2016**	Analysis Date:	**10/17/2016**	SeqNo:	**1183982**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	**LCS-28082**	SampType:	**LCS**	TestCode:	**EPA Method 8011/504.1: EDB**					
Client ID:	**LCSW**	Batch ID:	**28082**	RunNo:	**37992**					
Prep Date:	**10/17/2016**	Analysis Date:	**10/17/2016**	SeqNo:	**1183984**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.093	0.010	0.1000	0	93.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **1610613-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **R.O. Reject**	Batch ID: **28063**	RunNo: **37940**
Prep Date: **10/14/2016**	Analysis Date: **10/14/2016**	SeqNo: **1183256** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.1	1.0	5.000	0	121	79.6	148			
Surr: DNOP	0.51		0.5000		103	77.1	144			

Sample ID **1610613-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **R.O. Reject**	Batch ID: **28063**	RunNo: **37940**
Prep Date: **10/14/2016**	Analysis Date: **10/14/2016**	SeqNo: **1183257** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	115	79.6	148	5.02	20	
Surr: DNOP	0.49		0.5000		98.6	77.1	144	0	0	

Sample ID **LCS-28063**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **28063**	RunNo: **37940**
Prep Date: **10/14/2016**	Analysis Date: **10/14/2016**	SeqNo: **1183264** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	63.2	155			
Surr: DNOP	0.49		0.5000		97.8	77.1	144			

Sample ID **MB-28063**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **28063**	RunNo: **37940**
Prep Date: **10/14/2016**	Analysis Date: **10/14/2016**	SeqNo: **1183265** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		114	77.1	144			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**
16-Nov-16

Client: Navajo Refining Company
Project: Quarterly RO Reject

Sample ID	**MB-28040**	SampType:	**MBLK**	TestCode:	**EPA Method 8082: PCB's**					
Client ID:	**PBW**	Batch ID:	**28040**	RunNo:	**38063**					
Prep Date:	**10/13/2016**	Analysis Date:	**10/18/2016**	SeqNo:	**1187392**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.7		2.500		110	26.1	140			
Surr: Tetrachloro-m-xylene	2.7		2.500		108	15	123			

Sample ID	**LCS-28040**	SampType:	**LCS**	TestCode:	**EPA Method 8082: PCB's**					
Client ID:	**LCSW**	Batch ID:	**28040**	RunNo:	**38063**					
Prep Date:	**10/13/2016**	Analysis Date:	**10/18/2016**	SeqNo:	**1187408**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	5.2	1.0	5.000	0	103	15	147			
Aroclor 1260	5.2	1.0	5.000	0	105	15	200			
Surr: Decachlorobiphenyl	2.8		2.500		112	26.1	140			
Surr: Tetrachloro-m-xylene	2.8		2.500		112	15	123			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R37973**	RunNo: **37973**
Prep Date:	Analysis Date: **10/14/2016**	SeqNo: **1183336** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	90.7	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	78.5	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.1	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID **1610613-001bms**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **R.O. Reject**	Batch ID: **R37973**	RunNo: **37973**
Prep Date:	Analysis Date: **10/14/2016**	SeqNo: **1183339** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.2	70	130			
Toluene	19	1.0	20.00	0	97.4	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	88.0	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	77.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.3	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.3	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID **1610613-001bmsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **R.O. Reject**	Batch ID: **R37973**	RunNo: **37973**
Prep Date:	Analysis Date: **10/14/2016**	SeqNo: **1183340** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.0	70	130	1.25	20	
Toluene	18	1.0	20.00	0	92.4	70	130	5.28	20	
1,1-Dichloroethene	17	1.0	20.00	0	86.1	70	130	2.18	20	
Trichloroethene (TCE)	15	1.0	20.00	0	76.1	70	130	2.11	20	
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.9	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130	0	0	
Surr: Dibromofluoromethane	9.9		10.00		98.9	70	130	0	0	
Surr: Toluene-d8	9.7		10.00		97.3	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R37973**	RunNo: **37973**
Prep Date:	Analysis Date: **10/14/2016**	SeqNo: **1183360** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.6	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **MB-28041**	SampType: **MBLK**	TestCode: **EPA Method 8310: PAHs**
Client ID: **PBW**	Batch ID: **28041**	RunNo: **38100**
Prep Date: **10/13/2016**	Analysis Date: **10/20/2016**	SeqNo: **1188744** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.1	20	153			

Sample ID **LCS-28041**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **28041**	RunNo: **38100**
Prep Date: **10/13/2016**	Analysis Date: **10/20/2016**	SeqNo: **1188746** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	81	2.0	80.00	0	101	55.6	124			
1-Methylnaphthalene	82	2.0	80.20	0	102	55.3	124			
2-Methylnaphthalene	79	2.0	80.00	0	99.2	55.4	124			
Acenaphthylene	85	2.5	80.20	0	106	60.2	119			
Acenaphthene	81	2.0	80.00	0	101	56	126			
Fluorene	7.5	0.80	8.020	0	93.9	51.6	129			
Phenanthrene	3.4	0.60	4.020	0	84.6	58.8	129			
Anthracene	4.0	0.60	4.020	0	98.8	59.9	121			
Fluoranthene	7.4	0.30	8.020	0	92.4	48	145			
Pyrene	8.2	0.30	8.020	0	102	56.2	130			
Benz(a)anthracene	0.81	0.070	0.8020	0	101	50.4	142			
Chrysene	3.9	0.20	4.020	0	95.8	54.7	134			
Benzo(b)fluoranthene	0.93	0.10	1.002	0	92.8	61.8	120			
Benzo(k)fluoranthene	0.49	0.070	0.5000	0	98.0	55.9	134			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **LCS-28041**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **28041**	RunNo: **38100**
Prep Date: **10/13/2016**	Analysis Date: **10/20/2016**	SeqNo: **1188746** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.51	0.070	0.5020	0	102	51.3	137			
Dibenz(a,h)anthracene	0.98	0.12	1.002	0	97.8	57.8	134			
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	100	57.2	134			
Indeno(1,2,3-cd)pyrene	2.2	0.25	2.004	0	108	58.2	137			
Surr: Benzo(e)pyrene	20		20.00		100	20	153			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**MB-28115**	SampType:	**MBLK**	TestCode:	**Total Phenolics by SW-846 9067**					
Client ID:	**PBW**	Batch ID:	**28115**	RunNo:	**38004**					
Prep Date:	**10/18/2016**	Analysis Date:	**10/18/2016**	SeqNo:	**1184471**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND	2.5								

Sample ID	**LCS-28115**	SampType:	**LCS**	TestCode:	**Total Phenolics by SW-846 9067**					
Client ID:	**LCSW**	Batch ID:	**28115**	RunNo:	**38004**					
Prep Date:	**10/18/2016**	Analysis Date:	**10/18/2016**	SeqNo:	**1184472**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	22	2.5	20.00	0	109	64.4	135			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**MB-R38749**	SampType:	**MBLK**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**PBW**	Batch ID:	**R38749**	RunNo:	**38749**					
Prep Date:		Analysis Date:	**10/19/2016**	SeqNo:	**1210509**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		ND	0.0100								

Sample ID	**LCS-R38749**	SampType:	**LCS**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**LCSW**	Batch ID:	**R38749**	RunNo:	**38749**					
Prep Date:		Analysis Date:	**10/19/2016**	SeqNo:	**1210510**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		0.543		0.5000	0	109	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **1610613-001bms**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **R.O. Reject**	Batch ID: **W38060**	RunNo: **38060**
Prep Date:	Analysis Date: **10/20/2016**	SeqNo: **1187259** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	97.8	53.8	128			
Surr: BFB	9.2		10.00		92.3	70	130			

Sample ID **1610613-001bmsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **R.O. Reject**	Batch ID: **W38060**	RunNo: **38060**
Prep Date:	Analysis Date: **10/20/2016**	SeqNo: **1187260** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	88.0	53.8	128	10.6	20	
Surr: BFB	8.6		10.00		86.5	70	130	0	0	

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **W38060**	RunNo: **38060**
Prep Date:	Analysis Date: **10/19/2016**	SeqNo: **1187443** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	8.9		10.00		88.8	70	130			

Sample ID **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **W38060**	RunNo: **38060**
Prep Date:	Analysis Date: **10/19/2016**	SeqNo: **1188464** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0	105	75.4	118			
Surr: BFB	9.3		10.00		93.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	**MB-R38749**	SampType:	**MBLK**	TestCode:	**EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID:	**PBW**	Batch ID:	**R38749**	RunNo:	**38749**
Prep Date:		Analysis Date:	**11/16/2016**	SeqNo:	**1210512** Units: **pCi/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0	0.518								
Radium-226 ±	0.321	0.518								
Radium-228	0.2	0.627								
Radium-228 ±	0.292	0.627								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610613**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID **MB-28134**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **28134**	RunNo: **38086**
Prep Date: **10/18/2016**	Analysis Date: **10/20/2016**	SeqNo: **1188295** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-28134**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **28134**	RunNo: **38086**
Prep Date: **10/18/2016**	Analysis Date: **10/20/2016**	SeqNo: **1188296** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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: 1610613 RcptNo: 1

Received by/date: JC 10/13/16

Logged By: Ashley Gallegos 10/13/2016 8:30:00 AM

Completed By: Ashley Gallegos 10/13/2016 11:53:15 AM

Reviewed By: JC 10/13/16

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: 5 (<2 or >12 unless noted)

Adjusted? No

Checked by: AJ

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 Refinery

Mailing Address: P.O. Box 159 Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

X Standard ☐ Rush _____

Project Name: Quarterly R.O. Reject

Project #: P.O. # 167796

Project Manager: Robert Combs

Sampler: Brady Hubbard

On Ice: X Yes ☐ No

Sample Temperature: 2.6

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. 1610013	8260B:WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470: Mercury	8015: GRO, DRO, ORO	8082: PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB	Air Bubbles (Y or N)
10-11	10:00	liquid	R.O. Reject	2 - 500ml P	1-unpres 1-H2SO4	-001									X		X	X	X	X		Y
10-11	10:00	liquid	R.O. Reject	3-40ml VOA	HCL		X															
10-11	10:00	liquid	R.O. Reject	1-500ml P	HNO3						X											
10-11	10:00	liquid	R.O. Reject	1-125ml P	HNO3				X													
10-11	10:00	liquid	R.O. Reject	1-500ml P	NaOH					X												
10-11	10:00	liquid	R.O. Reject	2- 1L P	HNO3									X								
10-11	10:00	liquid	R.O. Reject	3-40ml VOA	Na2S2O3																X	
10-11	10:00	liquid	R.O. Reject	2 - 1L Glass	unpres								X									
10-11	10:00	liquid	R.O. Reject	1 - 1L Glass	unpres			X														
10-11	10:00	liquid	R.O. Reject	3-40ml VOA	HCl							X										
10/11	10:00	liquid	R.O. Reject	1-250mlGlass	unpres							X										
10-11	10:00	liquid	R.O. Reject	1 - 1L Glass	H2SO4											X						
10-11	10:00	liquid	Trip Blank	2-40ml VOA	HCL	-002																

Date:	Time:	Relinquished by:	Received by:	Date	Time
10-12	11:00	Brady Hubbard	Lindsey Concha	10/13/16	0830
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

Metals: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zn

VOCs: 1,1,1-Trichloroethane; 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene; 1,1,2-Trichloroethane; 1,1,2-Trichloroethylene; 1,1-Dichloroethane; 1,1-Dichloroethene; 1,2-Dibromoethane; 1,2-Dichloroethane; Benzene; Carbon Tetrachloride; Chloroform; Dichloromethane; Ethylbenzene; Toluene; Total Xylenes; Vinyl Chloride

SVOCs: benzo(a)pyrene, phenol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene

HOLLYFRONTIER

January 12, 2017

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

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

RE: Discharge Permit GW-028
Monthly Report – December 2016 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's December 2016 monthly report, for the period of December 1-31, 2016, under the Permit.

Specifically, this report covers the December 2016 reporting period and includes the following data and information as required by Condition 4.B.7:

- Daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units on a daily basis. Daily discharge rates and volumes are provided in Attachment 1. Per Mr. Chavez' request, the total discharge for the month is also shown in Attachment 1.

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the fourth quarter, samples were collected for the RO reject streams from the permanent units on October 11, 2016. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results were provided in the report submitted on December 16 , 2016, for the November 2016 reporting period.

On October 21, 2016, Navajo notified OCD of its selection of a Class 1 disposal well as an alternative disposal method for the RO reject. Navajo is in the process of revising the application to renew and modify Discharge Permit GW-028 submitted on June 23, 2016, to reflect this selection.

Navajo is committed to proactively meeting the requirements of the Permit and working cooperatively with OCD. If you have any questions or comments, please contact me at 575-746-5487.

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flowrates and Volumes

cc. HFC: D. McWatters, R. O'Brien, M. Holder
OCD: A. Marks, B. Brancard

Attachment 1
Daily Discharge Flowrates and Volumes

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Daily Discharge Volume
	Metered Data			Combined RO Reject Discharge (Calculated)	
	GPM SOUTH	GPM NORTH	GPM MIDDLE	GPM	BBL/DAY
12/1/2016	132.08	142.87	38.88	313.83	10,759.89
12/2/2016	36.35	127.17	110.62	274.14	9,399.09
12/3/2016	11.88	123.09	133.81	268.78	9,215.31
12/4/2016	8.73	122.92	133.77	265.43	9,100.46
12/5/2016	2.12	122.94	133.69	258.76	8,871.77
12/6/2016	0.05	110.20	126.98	237.23	8,133.60
12/7/2016	0.00	119.56	120.85	240.41	8,242.63
12/8/2016	0.00	123.28	121.52	244.80	8,393.14
12/9/2016	0.00	124.34	121.65	245.99	8,433.94
12/10/2016	0.00	123.05	122.00	245.05	8,401.71
12/11/2016	0.00	124.81	122.27	247.08	8,471.31
12/12/2016	0.00	125.03	122.51	247.54	8,487.09
12/13/2016	0.00	125.22	122.58	247.80	8,496.00
12/14/2016	0.00	123.96	122.44	246.41	8,448.34
12/15/2016	0.00	125.47	122.87	248.33	8,514.17
12/16/2016	0.00	126.86	124.03	250.88	8,601.60
12/17/2016	0.00	126.26	123.46	249.72	8,561.83
12/18/2016	0.00	127.98	124.22	252.20	8,646.86
12/19/2016	0.00	126.95	125.10	252.05	8,641.71
12/20/2016	0.00	126.69	125.33	252.01	8,640.34
12/21/2016	0.00	129.02	126.26	255.27	8,752.11
12/22/2016	0.00	130.12	126.58	256.69	8,800.80
12/23/2016	0.00	128.41	125.62	254.03	8,709.60
12/24/2016	0.00	128.31	125.11	253.43	8,689.03
12/25/2016	0.00	128.06	125.01	253.07	8,676.69
12/26/2016	0.00	129.05	125.70	254.75	8,734.29
12/27/2016	0.00	129.81	126.25	256.05	8,778.86
12/28/2016	0.00	127.44	124.91	252.35	8,652.00
12/29/2016	0.00	127.62	124.88	252.50	8,657.14
12/30/2016	0.00	126.30	124.54	250.83	8,599.89
12/31/2016	0.00	127.45	124.82	252.27	8,649.26
TOTAL (bbls/month)					**270,160.46**

APPENDIX C

Leaks, Spills, and Releases

APPENDIX C.1

August 9, 2016 – Wastewater Pipeline Release

Wastewater Effluent Analytical Results
Wastewater Pipeline Release Approximately 5 Miles East of Artesia - August 9, 2016
HollyFrontier Navajo Refining, LLC, GW-028, Artesia, New Mexico

			Sample ID:	Wastewater Effluent
			Date:	8/10/2016
Analyte	**Units**	**WQCC Standard**	**Screening Standard**	**Result**
VOCs				
1,1,1-Trichloroethane	mg/L	0.060	NMED GW Human Health	< 0.0025
1,1,2,2-Tetrachloroethane	mg/L	0.010	NMED GW Human Health	< 0.0025
1,1,2-Trichloroethane	mg/L	0.100	NMED GW Human Health	< 0.0025
1,1-Dichloroethane	mg/L	0.025	NMED GW Human Health	< 0.0025
1,1-Dichloroethene	mg/L	0.005	NMED GW Human Health	< 0.0025
1,2-Dichloroethane	mg/L	0.010	NMED GW Human Health	< 0.0025
Benzene	mg/L	0.010	NMED GW Human Health	< 0.0025
Carbon Tetrachloride	mg/L	0.010	NMED GW Human Health	< 0.0025
Chloroform	mg/L	0.100	NMED GW Human Health	< 0.0025
Ethylbenzene	mg/L	0.750	NMED GW Human Health	< 0.0025
Methylene Chloride	mg/L	0.100	NMED GW Human Health	< 0.012
Tetrachloroethene	mg/L	0.020	NMED GW Human Health	< 0.0025
Toluene	mg/L	0.750	NMED GW Human Health	0.012
Total Xylenes	mg/L	0.620	NMED GW Human Health	< 0.005
Trichloroethene	mg/L	0.100	NMED GW Human Health	< 0.0025
Vinyl Chloride	mg/L	0.001	NMED GW Human Health	< 0.0025
SVOCs				
1-Methylnaphthalene	mg/L	0.03	NMED GW Human Health	< 0.010
2-Methylnaphthalene	mg/L	0.03	NMED GW Human Health	< 0.010
Naphthalene	mg/L	0.03	NMED GW Human Health	< 0.010
Benzo(a)Pyrene	mg/L	0.0002	EPA MCL	< 0.0002
Total Metals (mg/L)				
Aluminum	mg/L	5.00	NMED GW Irrigation	0.260
Arsenic	mg/L	0.100	NMED GW Human Health	0.031
Barium	mg/L	1.00	NMED GW Human Health	< 0.020
Cadmium	mg/L	0.010	NMED GW Human Health	< 0.0020
Calcium	mg/L	--		130
Chromium	mg/L	0.050	NMED GW Human Health	< 0.0060
Cobalt	mg/L	0.050	NMED GW Irrigation	< 0.0060
Copper	mg/L	1.00	NMED GW Irrigation	< 0.0060
Iron	mg/L	1.00	NMED GW Irrigation	***2.40***
Lead	mg/L	0.050	NMED GW Human Health	< 0.0050
Manganese	mg/L	0.200	NMED GW Domestic	0.15
Mercury	mg/L	0.002	NMED GW Human Health	< 0.0002
Nickel	mg/L	0.200	NMED GW Irrigation	0.010
Potassium	mg/L	--		60.0
Selenium	mg/L	0.050	NMED GW Human Health	< 0.050
Silver	mg/L	0.050	NMED GW Human Health	< 0.0050
Sodium	mg/L	--		630
Zinc	mg/L	10.0	NMED GW Domestic	0.025
Anions				
Bromide	mg/L	--		1.60
Chloride	mg/L	250	NMED GW Domestic	***320***
Fluoride (F-, Anion)	mg/L	1.60	NMED GW Human Health	***13.0***
Nitrite (as N)	mg/L	1.00	NMED GW Human Health	0.96
Nitrate (as N)	mg/L	1.00	NMED GW Human Health	0.50
Sulfate	mg/L	600	NMED GW Domestic	***1,500***
Other Parameters				
Total Dissolved Solids	mg/L	1,000	NMED GW Domestic	***2,800***

Notes:

mg/L = milligrams per liter

NMED = New Mexico Environment Department

NMED GW Human Health = NMED groundwater standard for human health exposure, NMAC 20.6.2.3103.A

NMED GW Irrigation = NMED groundwater standard for irrigation exposure, NMAC 20.6.2.3103.C

NMED GW Domestic = NMED groundwater standard for domestic exposure, NMAC 20.6.2.3103.B

NMAC = New Mexico Administrative Code

Soil Analytical Results
Wastewater Pipeline Release Approximately 5 Miles East of Artesia - August 9, 2016
HollyFrontier Navajo Refining, LLC, GW-028, Artesia, New Mexico

	Spill Area Samples				Background Samples				Max Spill Area	Max Background	Wastewater Effluent
Sample ID:	**Test 1**	**Test 2**	**Test 3**	**Test 4**	**Background 5**	**Background 6**	**Background 7**	**Background 8**			
Analyte	*Concentration (mg/kg)*										*mg/L*
Fluoride	1.40	1.70	1.80	0.65	1.60	3.20	0.8	1.90	1.80	3.20	13.0
Chloride	27.0	200	640	3,100	600	400	7,600	450	3,100	7,600	320
Sulfate	1,300	3,300	5,200	4,800	2,300	370	780	3,500	5,200	3,500	1,500
Iron	22,000	20,000	23,000	27,000	14,000	23,000	27,000	24,000	27,000	27,000	2.40

Notes:

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Soil samples were collected on October 10, 2016 and analyzed by Hall Environmental Analysis Laboratory in Albuquerque, New Mexico

Wastewater effluent sample was collected on August 10, 2016 and analyzed by Hall Environmental Analysis Laboratory in Albuquerque, New Mexico

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

August 22, 2016

Robert Combs

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

RE: Waste Water Effluent OrderNo.: 1608660

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/11/2016 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 **1608660**
Date Reported: **8/22/2016**

CLIENT: Navajo Refining Company
Project: Waste Water Effluent
Lab ID: 1608660-001 **Matrix:** AQUEOUS

Client Sample ID: Wastewater Effluent 8-10-16
Collection Date: 8/10/2016 10:55:00 AM
Received Date: 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010						Analyst: **SUB**	
Ignitability	>200	0		°F	1	8/17/2016	R36648
SULFIDE, REACTIVE						Analyst: **SUB**	
Reactive Sulfide	ND	0.20		mg/L	1	8/17/2016	R36648
SPECIFIC GRAVITY						Analyst: **LGT**	
Specific Gravity	1.002	0			1	8/15/2016 4:29:00 PM	R36512
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	13	0.50	*	mg/L	5	8/11/2016 3:26:00 PM	R36408
Chloride	320	10		mg/L	20	8/11/2016 3:38:24 PM	R36408
Nitrogen, Nitrite (As N)	0.96	0.50		mg/L	5	8/11/2016 3:26:00 PM	R36408
Bromide	1.6	0.50		mg/L	5	8/11/2016 3:26:00 PM	R36408
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	8/11/2016 3:26:00 PM	R36408
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	8/11/2016 3:26:00 PM	R36408
Sulfate	1500	25		mg/L	50	8/18/2016 2:24:04 AM	R36593
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	4400	1.0		µmhos/cm	1	8/15/2016 3:14:28 PM	R36527
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	289.3	20.00		mg/L CaCO3	1	8/15/2016 4:49:30 PM	R36527
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	8/15/2016 4:49:30 PM	R36527
Total Alkalinity (as CaCO3)	289.3	20.00		mg/L CaCO3	1	8/15/2016 4:49:30 PM	R36527
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2800	40.0	*	mg/L	1	8/16/2016 8:21:00 AM	26968
CORROSIVITY						Analyst: **SUB**	
pH	6.99			pH Units	1	8/17/2016	R36648
CYANIDE, REACTIVE						Analyst: **SUB**	
Cyanide, Reactive	0.120	0.0100		mg/L	1	8/16/2016	R36648
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.49	1.68	H	pH units	1	8/15/2016 3:14:28 PM	R36527
EPA METHOD 7470: MERCURY						Analyst: **pmf**	
Mercury	ND	0.00020		mg/L	1	8/12/2016 11:14:45 AM	26894
MERCURY, TCLP						Analyst: **pmf**	
Mercury	ND	0.020		mg/L	1	8/17/2016 10:49:54 AM	27020
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**	
Aluminum	0.26	0.020		mg/L	1	8/18/2016 5:02:57 PM	26942

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Wastewater Effluent 8-10-16
Project: Waste Water Effluent
Collection Date: 8/10/2016 10:55:00 AM
Lab ID: 1608660-001 **Matrix:** AQUEOUS **Received Date:** 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**	
Antimony	ND	0.050		mg/L	1	8/19/2016 10:36:34 AM	26942
Arsenic	0.031	0.020		mg/L	1	8/18/2016 5:02:57 PM	26942
Barium	ND	0.020		mg/L	1	8/18/2016 5:02:57 PM	26942
Beryllium	ND	0.0030		mg/L	1	8/18/2016 5:02:57 PM	26942
Cadmium	ND	0.0020		mg/L	1	8/18/2016 5:02:57 PM	26942
Calcium	130	5.0		mg/L	5	8/18/2016 5:10:17 PM	26942
Chromium	ND	0.0060		mg/L	1	8/18/2016 5:02:57 PM	26942
Cobalt	ND	0.0060		mg/L	1	8/18/2016 5:02:57 PM	26942
Copper	ND	0.0060		mg/L	1	8/18/2016 5:02:57 PM	26942
Iron	2.4	0.25		mg/L	5	8/18/2016 5:10:17 PM	26942
Lead	ND	0.0050		mg/L	1	8/18/2016 5:02:57 PM	26942
Magnesium	41	1.0		mg/L	1	8/18/2016 5:02:57 PM	26942
Manganese	0.15	0.0020		mg/L	1	8/18/2016 5:02:57 PM	26942
Nickel	0.010	0.010		mg/L	1	8/18/2016 5:02:57 PM	26942
Potassium	60	5.0		mg/L	5	8/18/2016 5:10:17 PM	26942
Selenium	ND	0.050		mg/L	1	8/18/2016 5:02:57 PM	26942
Silver	ND	0.0050		mg/L	1	8/18/2016 5:02:57 PM	26942
Sodium	630	10		mg/L	10	8/18/2016 5:21:39 PM	26942
Strontium	1.9	0.10		mg/L	10	8/18/2016 5:21:39 PM	26942
Thallium	ND	0.050		mg/L	1	8/18/2016 5:02:57 PM	26942
Zinc	0.025	0.020		mg/L	1	8/18/2016 5:02:57 PM	26942
Silica	14	5.4		mg/L	5	8/18/2016 5:10:17 PM	26942
EPA 6010B: TCLP METALS						Analyst: **MED**	
Arsenic	ND	5.0		mg/L	1	8/15/2016 1:30:42 PM	26961
Barium	ND	100		mg/L	1	8/15/2016 1:30:42 PM	26961
Cadmium	ND	1.0		mg/L	1	8/15/2016 1:30:42 PM	26961
Chromium	ND	5.0		mg/L	1	8/15/2016 1:30:42 PM	26961
Lead	ND	5.0		mg/L	1	8/15/2016 1:30:42 PM	26961
Selenium	ND	1.0		mg/L	1	8/15/2016 1:30:42 PM	26961
Silver	ND	5.0		mg/L	1	8/15/2016 1:30:42 PM	26961
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Acetonitrile	ND	2.5		µg/L	1	8/12/2016	R36648
Allyl chloride	ND	2.5		µg/L	1	8/12/2016	R36648
Chloroprene	ND	2.5		µg/L	1	8/12/2016	R36648
Cyclohexane	ND	2.5		µg/L	1	8/12/2016	R36648
Diethyl ether	ND	2.5		µg/L	1	8/12/2016	R36648
Diisopropyl ether	ND	2.5		µg/L	1	8/12/2016	R36648
Epichlorohydrin	ND	25		µg/L	1	8/12/2016	R36648

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Wastewater Effluent 8-10-16
Project: Waste Water Effluent
Collection Date: 8/10/2016 10:55:00 AM
Lab ID: 1608660-001 **Matrix:** AQUEOUS **Received Date:** 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Ethyl acetate	ND	2.5		µg/L	1	8/12/2016	R36648
Ethyl methacrylate	ND	12		µg/L	1	8/12/2016	R36648
Ethyl tert-butyl ether	ND	2.5		µg/L	1	8/12/2016	R36648
Freon-113	ND	2.5		µg/L	1	8/12/2016	R36648
Isobutanol	ND	50		µg/L	1	8/12/2016	R36648
Isopropyl acetate	ND	2.5		µg/L	1	8/12/2016	R36648
Methacrylonitrile	ND	12		µg/L	1	8/12/2016	R36648
Methyl acetate	ND	2.5		µg/L	1	8/12/2016	R36648
Methyl ethyl ketone	ND	12		µg/L	1	8/12/2016	R36648
Methyl isobutyl ketone	ND	12		µg/L	1	8/12/2016	R36648
Methyl methacrylate	ND	12		µg/L	1	8/12/2016	R36648
Methylcyclohexane	ND	5.0		µg/L	1	8/12/2016	R36648
n-Amyl acetate	ND	2.5		µg/L	1	8/12/2016	R36648
n-Hexane	ND	2.5		µg/L	1	8/12/2016	R36648
Nitrobenzene	ND	25		µg/L	1	8/12/2016	R36648
Pentachloroethane	ND	25		µg/L	1	8/12/2016	R36648
p-isopropyltoluene	ND	2.5		µg/L	1	8/12/2016	R36648
Propionitrile	ND	12		µg/L	1	8/12/2016	R36648
Tetrahydrofuran	ND	2.5		µg/L	1	8/12/2016	R36648
Benzene	ND	2.5		µg/L	1	8/12/2016	R36648
Toluene	12	2.5		µg/L	1	8/12/2016	R36648
Ethylbenzene	ND	2.5		µg/L	1	8/12/2016	R36648
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	1	8/12/2016	R36648
1,2,4-Trimethylbenzene	2.8	2.5		µg/L	1	8/12/2016	R36648
1,3,5-Trimethylbenzene	4.5	2.5		µg/L	1	8/12/2016	R36648
1,2-Dichloroethane (EDC)	ND	2.5		µg/L	1	8/12/2016	R36648
1,2-Dibromoethane (EDB)	ND	2.5		µg/L	1	8/12/2016	R36648
Naphthalene	ND	2.5		µg/L	1	8/12/2016	R36648
Acetone	350	12		µg/L	1	8/12/2016	R36648
Bromobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
Bromodichloromethane	ND	2.5		µg/L	1	8/12/2016	R36648
Bromoform	ND	2.5		µg/L	1	8/12/2016	R36648
Bromomethane	ND	2.5		µg/L	1	8/12/2016	R36648
2-Butanone	47	12		µg/L	1	8/12/2016	R36648
Carbon disulfide	ND	2.5		µg/L	1	8/12/2016	R36648
Carbon Tetrachloride	ND	2.5		µg/L	1	8/12/2016	R36648
Chlorobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
Chloroethane	ND	2.5		µg/L	1	8/12/2016	R36648
Chloroform	ND	2.5		µg/L	1	8/12/2016	R36648

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Client Sample ID: Wastewater Effluent 8-10-16
Project: Waste Water Effluent
Collection Date: 8/10/2016 10:55:00 AM
Lab ID: 1608660-001 **Matrix:** AQUEOUS **Received Date:** 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Chloromethane	ND	2.5		µg/L	1	8/12/2016	R36648
2-Chlorotoluene	ND	2.5		µg/L	1	8/12/2016	R36648
4-Chlorotoluene	ND	2.5		µg/L	1	8/12/2016	R36648
cis-1,2-DCE	ND	2.5		µg/L	1	8/12/2016	R36648
cis-1,3-Dichloropropene	ND	2.5		µg/L	1	8/12/2016	R36648
1,2-Dibromo-3-chloropropane	ND	2.5		µg/L	1	8/12/2016	R36648
Dibromochloromethane	ND	2.5		µg/L	1	8/12/2016	R36648
Dibromomethane	ND	2.5		µg/L	1	8/12/2016	R36648
1,2-Dichlorobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
1,3-Dichlorobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
1,4-Dichlorobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
Dichlorodifluoromethane	ND	2.5		µg/L	1	8/12/2016	R36648
1,1-Dichloroethane	ND	2.5		µg/L	1	8/12/2016	R36648
1,1-Dichloroethene	ND	2.5		µg/L	1	8/12/2016	R36648
1,2-Dichloropropane	ND	2.5		µg/L	1	8/12/2016	R36648
1,3-Dichloropropane	ND	2.5		µg/L	1	8/12/2016	R36648
2,2-Dichloropropane	ND	2.5		µg/L	1	8/12/2016	R36648
1,1-Dichloropropene	ND	2.5		µg/L	1	8/12/2016	R36648
Hexachlorobutadiene	ND	2.5		µg/L	1	8/12/2016	R36648
2-Hexanone	28	2.5		µg/L	1	8/12/2016	R36648
Isopropylbenzene	ND	2.5		µg/L	1	8/12/2016	R36648
Methylene Chloride	ND	12		µg/L	1	8/12/2016	R36648
n-Butylbenzene	ND	2.5		µg/L	1	8/12/2016	R36648
n-Propylbenzene	ND	2.5		µg/L	1	8/12/2016	R36648
sec-Butylbenzene	ND	2.5		µg/L	1	8/12/2016	R36648
Styrene	ND	2.5		µg/L	1	8/12/2016	R36648
tert-Butylbenzene	ND	2.5		µg/L	1	8/12/2016	R36648
1,1,1,2-Tetrachloroethane	ND	2.5		µg/L	1	8/12/2016	R36648
1,1,2,2-Tetrachloroethane	ND	2.5		µg/L	1	8/12/2016	R36648
Tetrachloroethene (PCE)	ND	2.5		µg/L	1	8/12/2016	R36648
trans-1,2-DCE	ND	2.5		µg/L	1	8/12/2016	R36648
trans-1,3-Dichloropropene	ND	2.5		µg/L	1	8/12/2016	R36648
1,2,3-Trichlorobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
1,2,4-Trichlorobenzene	ND	2.5		µg/L	1	8/12/2016	R36648
1,1,1-Trichloroethane	ND	2.5		µg/L	1	8/12/2016	R36648
1,1,2-Trichloroethane	ND	2.5		µg/L	1	8/12/2016	R36648
Trichloroethene (TCE)	ND	2.5		µg/L	1	8/12/2016	R36648
Trichlorofluoromethane	ND	2.5		µg/L	1	8/12/2016	R36648
1,2,3-Trichloropropane	ND	2.5		µg/L	1	8/12/2016	R36648

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Client Sample ID: Wastewater Effluent 8-10-16
Project: Waste Water Effluent
Collection Date: 8/10/2016 10:55:00 AM
Lab ID: 1608660-001 **Matrix:** AQUEOUS **Received Date:** 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Vinyl chloride	ND	2.5		µg/L	1	8/12/2016	R36648
mp-Xylenes	ND	5.0		µg/L	1	8/12/2016	R36648
o-Xylene	ND	2.5		µg/L	1	8/12/2016	R36648
tert-Amyl methyl ether	ND	2.5		µg/L	1	8/12/2016	R36648
tert-Butyl alcohol	ND	2.5		µg/L	1	8/12/2016	R36648
Acrolein	ND	12		µg/L	1	8/12/2016	R36648
Acrylonitrile	ND	12		µg/L	1	8/12/2016	R36648
Bromochloromethane	ND	2.5		µg/L	1	8/12/2016	R36648
2-Chloroethyl vinyl ether	ND	2.5		µg/L	1	8/12/2016	R36648
Iodomethane	ND	2.5		µg/L	1	8/12/2016	R36648
trans-1,4-Dichloro-2-butene	ND	2.5		µg/L	1	8/12/2016	R36648
Vinyl acetate	ND	2.5		µg/L	1	8/12/2016	R36648
1,4-Dioxane	ND	100		µg/L	1	8/12/2016	R36648
Surr: 1,2-Dichlorobenzene-d4	101	70-130		%Rec	1	8/12/2016	R36648
Surr: 4-Bromofluorobenzene	99.6	70-130		%Rec	1	8/12/2016	R36648
Surr: Toluene-d8	102	70-130		%Rec	1	8/12/2016	R36648
EPA 8270C: SEMIVOLATILES/MOD						Analyst: **SUB**	
1,1-Biphenyl	ND	5.0		µg/L	1	8/17/2016	R36648
Atrazine	ND	5.0		µg/L	1	8/17/2016	R36648
Benzaldehyde	ND	5.0		µg/L	1	8/17/2016	R36648
Caprolactam	ND	5.0		µg/L	1	8/17/2016	R36648
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	8/17/2016	R36648
Acetophenone	ND	10		µg/L	1	8/17/2016	R36648
1-Methylnaphthalene	ND	10		µg/L	1	8/17/2016	R36648
2,3,4,6-Tetrachlorophenol	ND	10		µg/L	1	8/17/2016	R36648
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/17/2016	R36648
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/17/2016	R36648
2,4-Dichlorophenol	ND	10		µg/L	1	8/17/2016	R36648
2,4-Dimethylphenol	ND	10		µg/L	1	8/17/2016	R36648
2,4-Dinitrophenol	ND	10		µg/L	1	8/17/2016	R36648
2,4-Dinitrotoluene	ND	10		µg/L	1	8/17/2016	R36648
2,6-Dinitrotoluene	ND	10		µg/L	1	8/17/2016	R36648
2-Chloronaphthalene	ND	10		µg/L	1	8/17/2016	R36648
2-Chlorophenol	ND	10		µg/L	1	8/17/2016	R36648
2-Methylnaphthalene	ND	10		µg/L	1	8/17/2016	R36648
2-Methylphenol	ND	10		µg/L	1	8/17/2016	R36648
2-Nitroaniline	ND	10		µg/L	1	8/17/2016	R36648
2-Nitrophenol	ND	10		µg/L	1	8/17/2016	R36648
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/17/2016	R36648

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

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Wastewater Effluent 8-10-16
Project: Waste Water Effluent
Collection Date: 8/10/2016 10:55:00 AM
Lab ID: 1608660-001 **Matrix:** AQUEOUS **Received Date:** 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: **SUB**	
3-Nitroaniline	ND	10		µg/L	1	8/17/2016	R36648
4,6-Dinitro-2-methylphenol	ND	10		µg/L	1	8/17/2016	R36648
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/17/2016	R36648
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/17/2016	R36648
4-Chloroaniline	ND	10		µg/L	1	8/17/2016	R36648
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/17/2016	R36648
4-Nitroaniline	ND	10		µg/L	1	8/17/2016	R36648
4-Nitrophenol	ND	10		µg/L	1	8/17/2016	R36648
Acenaphthene	ND	10		µg/L	1	8/17/2016	R36648
Acenaphthylene	ND	10		µg/L	1	8/17/2016	R36648
Anthracene	ND	10		µg/L	1	8/17/2016	R36648
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/17/2016	R36648
Benz(a)anthracene	ND	0.20		µg/L	1	8/17/2016	R36648
Benzo(a)pyrene	ND	0.20		µg/L	1	8/17/2016	R36648
Benzo(b)fluoranthene	ND	0.20		µg/L	1	8/17/2016	R36648
Benzo(k)fluoranthene	ND	0.20		µg/L	1	8/17/2016	R36648
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/17/2016	R36648
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/17/2016	R36648
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/17/2016	R36648
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/17/2016	R36648
Butyl benzyl phthalate	ND	10		µg/L	1	8/17/2016	R36648
Carbazole	ND	10		µg/L	1	8/17/2016	R36648
Chrysene	ND	0.20		µg/L	1	8/17/2016	R36648
Dibenz(a,h)anthracene	ND	0.20		µg/L	1	8/17/2016	R36648
Dibenzofuran	ND	10		µg/L	1	8/17/2016	R36648
Diethyl phthalate	ND	10		µg/L	1	8/17/2016	R36648
Dimethyl phthalate	ND	10		µg/L	1	8/17/2016	R36648
Di-n-butyl phthalate	ND	10		µg/L	1	8/17/2016	R36648
Di-n-octyl phthalate	ND	10		µg/L	1	8/17/2016	R36648
Fluoranthene	ND	10		µg/L	1	8/17/2016	R36648
Fluorene	ND	10		µg/L	1	8/17/2016	R36648
Hexachlorobenzene	ND	2.0		µg/L	1	8/17/2016	R36648
Hexachlorobutadiene	ND	10		µg/L	1	8/17/2016	R36648
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/17/2016	R36648
Hexachloroethane	ND	10		µg/L	1	8/17/2016	R36648
Indeno(1,2,3-cd)pyrene	ND	0.20		µg/L	1	8/17/2016	R36648
Isophorone	ND	10		µg/L	1	8/17/2016	R36648
Naphthalene	ND	10		µg/L	1	8/17/2016	R36648
Nitrobenzene	ND	10		µg/L	1	8/17/2016	R36648

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Wastewater Effluent 8-10-16
Project: Waste Water Effluent
Collection Date: 8/10/2016 10:55:00 AM
Lab ID: 1608660-001 **Matrix:** AQUEOUS **Received Date:** 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: **SUB**	
N-Nitrosodi-n-propylamine	ND	4.0		µg/L	1	8/17/2016	R36648
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/17/2016	R36648
Pentachlorophenol	ND	10		µg/L	1	8/17/2016	R36648
Phenanthrene	ND	10		µg/L	1	8/17/2016	R36648
Phenol	ND	10		µg/L	1	8/17/2016	R36648
Pyrene	ND	10		µg/L	1	8/17/2016	R36648
o-Toluidine	ND	4.0		µg/L	1	8/17/2016	R36648
Pyridine	ND	10		µg/L	1	8/17/2016	R36648
1,2,4,5-Tetrachlorobenzene	ND	10		µg/L	1	8/17/2016	R36648
Surr: 2,4,6-Tribromophenol	90.0	63-110		%Rec	1	8/17/2016	R36648
Surr: 2-Fluorobiphenyl	60.4	58-112		%Rec	1	8/17/2016	R36648
Surr: 2-Fluorophenol	69.0	47-109		%Rec	1	8/17/2016	R36648
Surr: Nitrobenzene-d5	72.0	58-110		%Rec	1	8/17/2016	R36648
Surr: Phenol-d5	67.8	52-105		%Rec	1	8/17/2016	R36648
Surr: Terphenyl-d14	28.7	22-133		%Rec	1	8/17/2016	R36648

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R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Waste Water Effluent
Collection Date:
Lab ID: 1608660-002
Matrix: TRIP BLANK
Received Date: 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Acetonitrile	ND	0.50		µg/L	1	8/12/2016	R36648
Allyl chloride	ND	0.50		µg/L	1	8/12/2016	R36648
Chloroprene	ND	0.50		µg/L	1	8/12/2016	R36648
Cyclohexane	ND	0.50		µg/L	1	8/12/2016	R36648
Diethyl ether	ND	0.50		µg/L	1	8/12/2016	R36648
Diisopropyl ether	ND	0.50		µg/L	1	8/12/2016	R36648
Epichlorohydrin	ND	5.0		µg/L	1	8/12/2016	R36648
Ethyl acetate	ND	0.50		µg/L	1	8/12/2016	R36648
Ethyl methacrylate	ND	2.5		µg/L	1	8/12/2016	R36648
Ethyl tert-butyl ether	ND	0.50		µg/L	1	8/12/2016	R36648
Freon-113	ND	0.50		µg/L	1	8/12/2016	R36648
Isobutanol	ND	10		µg/L	1	8/12/2016	R36648
Isopropyl acetate	ND	0.50		µg/L	1	8/12/2016	R36648
Methacrylonitrile	ND	2.5		µg/L	1	8/12/2016	R36648
Methyl acetate	ND	0.50		µg/L	1	8/12/2016	R36648
Methyl ethyl ketone	ND	2.5		µg/L	1	8/12/2016	R36648
Methyl isobutyl ketone	ND	2.5		µg/L	1	8/12/2016	R36648
Methyl methacrylate	ND	2.5		µg/L	1	8/12/2016	R36648
Methylcyclohexane	ND	1.0		µg/L	1	8/12/2016	R36648
n-Amyl acetate	ND	0.50		µg/L	1	8/12/2016	R36648
n-Hexane	ND	0.50		µg/L	1	8/12/2016	R36648
Nitrobenzene	ND	5.0		µg/L	1	8/12/2016	R36648
Pentachloroethane	ND	5.0		µg/L	1	8/12/2016	R36648
p-isopropyltoluene	ND	0.50		µg/L	1	8/12/2016	R36648
Propionitrile	ND	2.5		µg/L	1	8/12/2016	R36648
Tetrahydrofuran	ND	0.50		µg/L	1	8/12/2016	R36648
Benzene	ND	0.50		µg/L	1	8/12/2016	R36648
Toluene	ND	0.50		µg/L	1	8/12/2016	R36648
Ethylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	8/12/2016	R36648
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	8/12/2016	R36648
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	8/12/2016	R36648
Naphthalene	ND	0.50		µg/L	1	8/12/2016	R36648
Acetone	ND	2.5		µg/L	1	8/12/2016	R36648
Bromobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
Bromodichloromethane	ND	0.50		µg/L	1	8/12/2016	R36648
Bromoform	ND	0.50		µg/L	1	8/12/2016	R36648

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Waste Water Effluent
Collection Date:
Lab ID: 1608660-002
Matrix: TRIP BLANK
Received Date: 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Bromomethane	ND	0.50		µg/L	1	8/12/2016	R36648
2-Butanone	ND	2.5		µg/L	1	8/12/2016	R36648
Carbon disulfide	ND	0.50		µg/L	1	8/12/2016	R36648
Carbon Tetrachloride	ND	0.50		µg/L	1	8/12/2016	R36648
Chlorobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
Chloroethane	ND	0.50		µg/L	1	8/12/2016	R36648
Chloroform	ND	0.50		µg/L	1	8/12/2016	R36648
Chloromethane	ND	0.50		µg/L	1	8/12/2016	R36648
2-Chlorotoluene	ND	0.50		µg/L	1	8/12/2016	R36648
4-Chlorotoluene	ND	0.50		µg/L	1	8/12/2016	R36648
cis-1,2-DCE	ND	0.50		µg/L	1	8/12/2016	R36648
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	8/12/2016	R36648
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	8/12/2016	R36648
Dibromochloromethane	ND	0.50		µg/L	1	8/12/2016	R36648
Dibromomethane	ND	0.50		µg/L	1	8/12/2016	R36648
1,2-Dichlorobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,3-Dichlorobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,4-Dichlorobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
Dichlorodifluoromethane	ND	0.50		µg/L	1	8/12/2016	R36648
1,1-Dichloroethane	ND	0.50		µg/L	1	8/12/2016	R36648
1,1-Dichloroethene	ND	0.50		µg/L	1	8/12/2016	R36648
1,2-Dichloropropane	ND	0.50		µg/L	1	8/12/2016	R36648
1,3-Dichloropropane	ND	0.50		µg/L	1	8/12/2016	R36648
2,2-Dichloropropane	ND	0.50		µg/L	1	8/12/2016	R36648
1,1-Dichloropropene	ND	0.50		µg/L	1	8/12/2016	R36648
Hexachlorobutadiene	ND	0.50		µg/L	1	8/12/2016	R36648
2-Hexanone	ND	0.50		µg/L	1	8/12/2016	R36648
Isopropylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
Methylene Chloride	ND	2.5		µg/L	1	8/12/2016	R36648
n-Butylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
n-Propylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
sec-Butylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
Styrene	ND	0.50		µg/L	1	8/12/2016	R36648
tert-Butylbenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	8/12/2016	R36648
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	8/12/2016	R36648
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	8/12/2016	R36648
trans-1,2-DCE	ND	0.50		µg/L	1	8/12/2016	R36648
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	8/12/2016	R36648

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Waste Water Effluent
Collection Date:
Lab ID: 1608660-002
Matrix: TRIP BLANK
Received Date: 8/11/2016 9:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	8/12/2016	R36648
1,1,1-Trichloroethane	ND	0.50		µg/L	1	8/12/2016	R36648
1,1,2-Trichloroethane	ND	0.50		µg/L	1	8/12/2016	R36648
Trichloroethene (TCE)	ND	0.50		µg/L	1	8/12/2016	R36648
Trichlorofluoromethane	ND	0.50		µg/L	1	8/12/2016	R36648
1,2,3-Trichloropropane	ND	0.50		µg/L	1	8/12/2016	R36648
Vinyl chloride	ND	0.50		µg/L	1	8/12/2016	R36648
mp-Xylenes	ND	1.0		µg/L	1	8/12/2016	R36648
o-Xylene	ND	0.50		µg/L	1	8/12/2016	R36648
tert-Amyl methyl ether	ND	0.50		µg/L	1	8/12/2016	R36648
tert-Butyl alcohol	ND	0.50		µg/L	1	8/12/2016	R36648
Acrolein	ND	2.5		µg/L	1	8/12/2016	R36648
Acrylonitrile	ND	2.5		µg/L	1	8/12/2016	R36648
Bromochloromethane	ND	0.50		µg/L	1	8/12/2016	R36648
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	8/12/2016	R36648
Iodomethane	ND	0.50		µg/L	1	8/12/2016	R36648
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	8/12/2016	R36648
Vinyl acetate	ND	0.50		µg/L	1	8/12/2016	R36648
1,4-Dioxane	ND	20		µg/L	1	8/12/2016	R36648
Surr: 1,2-Dichlorobenzene-d4	101	70-130		%Rec	1	8/12/2016	R36648
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	8/12/2016	R36648
Surr: Toluene-d8	101	70-130		%Rec	1	8/12/2016	R36648

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Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R36408**	RunNo: **36408**
Prep Date:	Analysis Date: **8/11/2016**	SeqNo: **1128954** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R36408**	RunNo: **36408**
Prep Date:	Analysis Date: **8/11/2016**	SeqNo: **1128955** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Chloride	4.8	0.50	5.000	0	96.2	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.8	90	110			
Bromide	2.4	0.10	2.500	0	96.7	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.0	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	97.2	90	110			

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R36593**	RunNo: **36593**
Prep Date:	Analysis Date: **8/17/2016**	SeqNo: **1133301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R36593**	RunNo: **36593**
Prep Date:	Analysis Date: **8/17/2016**	SeqNo: **1133302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.7	0.50	10.00	0	97.0	90	110			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **MB-R36648**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/12/2016**	SeqNo: **1135033** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.50								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Cyclohexane	ND	0.50								
Diethyl ether	ND	0.50								
Diisopropyl ether	ND	0.50								
Epichlorohydrin	ND	0.50								
Ethyl acetate	ND	0.50								
Ethyl methacrylate	ND	2.5								
Ethyl tert-butyl ether	ND	0.50								
Freon-113	ND	0.50								
Isobutanol	ND	10								
Isopropyl acetate	ND	0.50								
Methacrylonitrile	ND	2.5								
Methyl acetate	ND	0.50								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	2.5								
Methylcyclohexane	ND	0.50								
n-Amyl acetate	ND	0.50								
n-Hexane	ND	0.50								
Nitrobenzene	ND	0.50								
Pentachloroethane	ND	0.50								
p-isopropyltoluene	ND	0.50								
Propionitrile	ND	2.5								
Tetrahydrofuran	ND	0.50								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
Methyl tert-butyl ether (MTBE)	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Naphthalene	ND	0.50								
Acetone	ND	2.5								
Bromobenzene	ND	0.50								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **MB-R36648**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/12/2016**	SeqNo: **1135033** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromomethane	ND	0.50								
2-Butanone	ND	2.5								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
2-Chlorotoluene	ND	0.50								
4-Chlorotoluene	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,3-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								
1,1-Dichloropropene	ND	0.50								
Hexachlorobutadiene	ND	0.50								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.50								
Methylene Chloride	ND	2.5								
n-Butylbenzene	ND	0.50								
n-Propylbenzene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Styrene	ND	0.50								
tert-Butylbenzene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **MB-R36648**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/12/2016**	SeqNo: **1135033** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	0.50								
1,2,4-Trichlorobenzene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
tert-Amyl methyl ether	ND	0.50								
tert-Butyl alcohol	ND	0.50								
Acrolein	ND	2.5								
Acrylonitrile	ND	2.5								
Bromochloromethane	ND	0.50								
2-Chloroethyl vinyl ether	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								
1,4-Dioxane	ND	0.50								

Sample ID **LCS-R36648**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/12/2016**	SeqNo: **1135034** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.1	0	10.00	0	90.7	80	120			
Toluene	9.4	0	10.00	0	94.5	80	120			
Ethylbenzene	9.6	0	10.00	0	96.4	80	120			
Chlorobenzene	9.1	0	10.00	0	91.2	80	120			
1,1-Dichloroethene	9.1	0	10.00	0	91.1	80	120			
Tetrachloroethene (PCE)	8.7	0	10.00	0	87.1	80	120			
Trichloroethene (TCE)	8.9	0	10.00	0	89.0	80	120			
o-Xylene	10	0	10.00	0	100	80	120			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**
22-Aug-16

Client: Navajo Refining Company
Project: Waste Water Effluent

Sample ID **MB-R36648**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/17/2016**	SeqNo: **1135037** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitroso-di-n-butylamine	ND	1.0								
Acetophenone	ND	10								
1-Methylnaphthalene	ND	10								
2,3,4,6-Tetrachlorophenol	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2,4-Dichlorophenol	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	10								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3,3´-Dichlorobenzidine	ND	10								
3-Nitroaniline	ND	10								
4,6-Dinitro-2-methylphenol	ND	10								
4-Bromophenyl phenyl ether	ND	10								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Anthracene	ND	10								
Benzo(g,h,i)perylene	ND	1.0								
Benz(a)anthracene	ND	1.0								
Benzo(a)pyrene	ND	1.0								
Benzo(b)fluoranthene	ND	1.0								
Benzo(k)fluoranthene	ND	1.0								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	10								

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company
Project: Waste Water Effluent

Sample ID **MB-R36648**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/17/2016**	SeqNo: **1135037** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbazole	ND	10								
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	1.0								
Dibenzofuran	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	1.0								
Isophorone	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	10								
Phenanthrene	ND	10								
Phenol	ND	5.0								
Pyrene	ND	10								
o-Toluidine	ND	1.0								
Pyridine	ND	1.0								
1,2,4,5-Tetrachlorobenzene	ND	10								

Sample ID **LCS-R36648**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R36648**	RunNo: **36648**
Prep Date:	Analysis Date: **8/17/2016**	SeqNo: **1135038** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	4.6	0	5.000	0	91.8	49	134			
2-Chlorophenol	4.6	0	5.000	0	93.0	50	131			
4-Chloro-3-methylphenol	5.1	0	5.000	0	102	42	139			
4-Nitrophenol	4.7	0	5.000	0	94.2	19	137			
Acenaphthene	4.5	0	5.000	0	89.8	36	122			
Bis(2-ethylhexyl)phthalate	5.1	0	5.000	0	102	43	142			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**
22-Aug-16

Client: Navajo Refining Company
Project: Waste Water Effluent

Sample ID	**LCS-R36648**	SampType:	**LCS**	TestCode:	**EPA 8270C: Semivolatiles/Mod**					
Client ID:	**LCSW**	Batch ID:	**R36648**	RunNo:	**36648**					
Prep Date:		Analysis Date:	**8/17/2016**	SeqNo:	**1135038**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitrosodi-n-propylamine	4.2	0	5.000	0	84.0	46	140			
Pentachlorophenol	2.2	0	5.000	0	45.0	22	138			
Phenol	4.7	0	5.000	0	93.4	45	134			
Pyrene	5.0	0	5.000	0	100	45	138			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID	**MB-26894**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**26894**	RunNo:	**36465**					
Prep Date:	**8/10/2016**	Analysis Date:	**8/12/2016**	SeqNo:	**1129407**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-26894**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**26894**	RunNo:	**36465**					
Prep Date:	**8/10/2016**	Analysis Date:	**8/12/2016**	SeqNo:	**1129408**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	105	80	120			

Sample ID	**1608660-001BMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Wastewater Effluent**	Batch ID:	**26894**	RunNo:	**36465**					
Prep Date:	**8/10/2016**	Analysis Date:	**8/12/2016**	SeqNo:	**1129410**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0057	0.00020	0.005000	0	113	75	125			

Sample ID	**1608660-001BMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Wastewater Effluent**	Batch ID:	**26894**	RunNo:	**36465**					
Prep Date:	**8/10/2016**	Analysis Date:	**8/12/2016**	SeqNo:	**1129411**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0057	0.00020	0.005000	0	114	75	125	0.473	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID	**MB-27020**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**27020**	RunNo:	**36563**					
Prep Date:	**8/16/2016**	Analysis Date:	**8/17/2016**	SeqNo:	**1132320**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-27020**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**27020**	RunNo:	**36563**					
Prep Date:	**8/16/2016**	Analysis Date:	**8/17/2016**	SeqNo:	**1132321**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	98.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **MB-26942**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **26942**	RunNo: **36611**
Prep Date: **8/11/2016**	Analysis Date: **8/18/2016**	SeqNo: **1134113** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Strontium	ND	0.010								
Thallium	ND	0.050								
Zinc	ND	0.020								
Silica	ND	1.1								

Sample ID **LCS-26942**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **26942**	RunNo: **36611**
Prep Date: **8/11/2016**	Analysis Date: **8/18/2016**	SeqNo: **1134115** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.52	0.020	0.5000	0	103	80	120			
Arsenic	0.49	0.020	0.5000	0	97.6	80	120			
Barium	0.48	0.020	0.5000	0	95.1	80	120			
Beryllium	0.51	0.0030	0.5000	0	101	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.9	80	120			
Calcium	50	1.0	50.00	0	99.0	80	120			
Chromium	0.47	0.0060	0.5000	0	94.7	80	120			
Cobalt	0.46	0.0060	0.5000	0	91.2	80	120			
Copper	0.47	0.0060	0.5000	0	94.2	80	120			
Iron	0.47	0.050	0.5000	0	93.1	80	120			
Lead	0.46	0.0050	0.5000	0	92.8	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **LCS-26942**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **26942**	RunNo: **36611**
Prep Date: **8/11/2016**	Analysis Date: **8/18/2016**	SeqNo: **1134115** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	50	1.0	50.00	0	99.0	80	120			
Manganese	0.47	0.0020	0.5000	0	93.4	80	120			
Nickel	0.45	0.010	0.5000	0	90.3	80	120			
Potassium	48	1.0	50.00	0	96.0	80	120			
Selenium	0.50	0.050	0.5000	0	99.0	80	120			
Silver	0.097	0.0050	0.1000	0	96.8	80	120			
Sodium	49	1.0	50.00	0	97.0	80	120			
Strontium	0.11	0.010	0.1000	0	110	80	120			
Thallium	0.49	0.050	0.5000	0	97.0	80	120			
Zinc	0.46	0.020	0.5000	0	91.0	80	120			
Silica	5.4	1.1	5.350	0	101	80	120			

Sample ID **1608660-001BMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Wastewater Effluent**	Batch ID: **26942**	RunNo: **36611**
Prep Date: **8/11/2016**	Analysis Date: **8/18/2016**	SeqNo: **1134120** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.79	0.020	0.5000	0.2561	106	75	125			
Arsenic	0.52	0.020	0.5000	0.03115	98.4	75	125			
Barium	0.48	0.020	0.5000	0.01539	93.1	75	125			
Beryllium	0.49	0.0030	0.5000	0.0002600	97.2	75	125			
Cadmium	0.47	0.0020	0.5000	0	93.5	75	125			
Chromium	0.46	0.0060	0.5000	0	91.1	75	125			
Cobalt	0.45	0.0060	0.5000	0.002780	89.5	75	125			
Copper	0.51	0.0060	0.5000	0	101	75	125			
Lead	0.45	0.0050	0.5000	0	89.7	75	125			
Magnesium	90	1.0	50.00	41.34	97.7	75	125			
Manganese	0.61	0.0020	0.5000	0.1524	91.0	75	125			
Nickel	0.45	0.010	0.5000	0.01016	88.2	75	125			
Selenium	0.52	0.050	0.5000	0.03028	97.3	75	125			
Silver	0.097	0.0050	0.1000	0	97.3	75	125			
Thallium	0.48	0.050	0.5000	0	95.8	75	125			
Zinc	0.47	0.020	0.5000	0.02456	88.1	75	125			

Sample ID **1608660-001BMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Wastewater Effluent**	Batch ID: **26942**	RunNo: **36611**
Prep Date: **8/11/2016**	Analysis Date: **8/18/2016**	SeqNo: **1134122** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.80	0.020	0.5000	0.2561	108	75	125	1.20	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **1608660-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **Wastewater Effluent** Batch ID: **26942** RunNo: **36611**

Prep Date: **8/11/2016** Analysis Date: **8/18/2016** SeqNo: **1134122** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.54	0.020	0.5000	0.03115	102	75	125	3.44	20	
Barium	0.48	0.020	0.5000	0.01539	93.8	75	125	0.725	20	
Beryllium	0.49	0.0030	0.5000	0.0002600	98.0	75	125	0.895	20	
Cadmium	0.48	0.0020	0.5000	0	95.7	75	125	2.34	20	
Chromium	0.47	0.0060	0.5000	0	93.8	75	125	2.88	20	
Cobalt	0.46	0.0060	0.5000	0.002780	92.2	75	125	2.97	20	
Copper	0.51	0.0060	0.5000	0	102	75	125	1.08	20	
Lead	0.46	0.0050	0.5000	0	92.1	75	125	2.73	20	
Magnesium	91	1.0	50.00	41.34	98.8	75	125	0.587	20	
Manganese	0.61	0.0020	0.5000	0.1524	91.8	75	125	0.656	20	
Nickel	0.46	0.010	0.5000	0.01016	90.5	75	125	2.44	20	
Selenium	0.52	0.050	0.5000	0.03028	97.8	75	125	0.514	20	
Silver	0.097	0.0050	0.1000	0	97.0	75	125	0.216	20	
Thallium	0.48	0.050	0.5000	0	95.2	75	125	0.572	20	
Zinc	0.48	0.020	0.5000	0.02456	90.6	75	125	2.56	20	

Sample ID **1608660-001BMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **Wastewater Effluent** Batch ID: **26942** RunNo: **36611**

Prep Date: **8/11/2016** Analysis Date: **8/18/2016** SeqNo: **1134131** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	110	5.0	50.00	60.03	97.9	75	125			

Sample ID **1608660-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **Wastewater Effluent** Batch ID: **26942** RunNo: **36611**

Prep Date: **8/11/2016** Analysis Date: **8/18/2016** SeqNo: **1134132** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	110	5.0	50.00	60.03	97.4	75	125	0.257	20	

Sample ID **MB-26942** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **PBW** Batch ID: **26942** RunNo: **36628**

Prep Date: **8/11/2016** Analysis Date: **8/19/2016** SeqNo: **1134578** Units: **mg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID	**LCS-26942**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**LCSW**	Batch ID:	**26942**		RunNo:	**36628**				
Prep Date:	**8/11/2016**	Analysis Date:	**8/19/2016**		SeqNo:	**1134579**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.49	0.050	0.5000	0	97.9	80	120			

Sample ID	**1608660-001BMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**Wastewater Effluent**	Batch ID:	**26942**		RunNo:	**36628**				
Prep Date:	**8/11/2016**	Analysis Date:	**8/19/2016**		SeqNo:	**1134583**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.49	0.050	0.5000	0	97.2	75	125			

Sample ID	**1608660-001BMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**Wastewater Effluent**	Batch ID:	**26942**		RunNo:	**36628**				
Prep Date:	**8/11/2016**	Analysis Date:	**8/19/2016**		SeqNo:	**1134584**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.49	0.050	0.5000	0	98.5	75	125	1.33	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **MB-26961**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **26961**	RunNo: **36503**
Prep Date: **8/12/2016**	Analysis Date: **8/15/2016**	SeqNo: **1130431** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Lead	ND	0.0050								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								

Sample ID **LCS-26961**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **26961**	RunNo: **36503**
Prep Date: **8/12/2016**	Analysis Date: **8/15/2016**	SeqNo: **1130432** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.51	0.020	0.5000	0	103	80	120			
Antimony	0.49	0.050	0.5000	0	98.3	80	120			
Arsenic	0.48	0.020	0.5000	0	95.2	80	120			
Barium	0.46	0.020	0.5000	0	93.0	80	120			
Beryllium	0.49	0.0030	0.5000	0	97.7	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.7	80	120			
Chromium	0.47	0.0060	0.5000	0	93.1	80	120			
Cobalt	0.46	0.0060	0.5000	0	91.2	80	120			
Copper	0.48	0.0060	0.5000	0	95.2	80	120			
Lead	0.46	0.0050	0.5000	0	92.1	80	120			
Manganese	0.46	0.0020	0.5000	0	92.3	80	120			
Nickel	0.46	0.010	0.5000	0	92.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.2	80	120			
Silver	0.096	0.0050	0.1000	0	95.6	80	120			
Thallium	0.47	0.050	0.5000	0	93.1	80	120			
Vanadium	0.49	0.050	0.5000	0	98.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **1608660-001CMS** SampType: **MS** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36503**

Prep Date: **8/12/2016** Analysis Date: **8/15/2016** SeqNo: **1130536** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.78	0.020	0.5000	0.2003	116	75	125			
Antimony	0.50	0.050	0.5000	0	101	75	125			
Arsenic	0.53	0.020	0.5000	0.02818	101	75	125			
Barium	0.48	0.020	0.5000	0.01425	92.4	75	125			
Beryllium	0.49	0.0030	0.5000	0.0004400	97.1	75	125			
Cadmium	0.48	0.0020	0.5000	0	95.8	75	125			
Chromium	0.46	0.0060	0.5000	0	92.3	75	125			
Cobalt	0.46	0.0060	0.5000	0.001460	91.1	75	125			
Copper	0.51	0.0060	0.5000	0	102	75	125			
Lead	0.46	0.0050	0.5000	0.003590	90.5	75	125			
Manganese	0.61	0.0020	0.5000	0.1322	95.0	75	125			
Nickel	0.47	0.010	0.5000	0.009620	92.8	75	125			
Selenium	0.56	0.050	0.5000	0.03775	105	75	125			
Silver	0.098	0.0050	0.1000	0	97.9	75	125			
Vanadium	0.50	0.050	0.5000	0.006750	98.8	75	125			

Sample ID **1608660-001CMSD** SampType: **MSD** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36503**

Prep Date: **8/12/2016** Analysis Date: **8/15/2016** SeqNo: **1130537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.79	0.020	0.5000	0.2003	118	75	125	1.17	20	
Antimony	0.47	0.050	0.5000	0	94.6	75	125	6.35	20	
Arsenic	0.53	0.020	0.5000	0.02818	99.4	75	125	1.25	20	
Barium	0.48	0.020	0.5000	0.01425	93.4	75	125	1.05	20	
Beryllium	0.49	0.0030	0.5000	0.0004400	97.9	75	125	0.828	20	
Cadmium	0.48	0.0020	0.5000	0	95.9	75	125	0.169	20	
Chromium	0.46	0.0060	0.5000	0	92.2	75	125	0.119	20	
Cobalt	0.46	0.0060	0.5000	0.001460	91.6	75	125	0.583	20	
Copper	0.52	0.0060	0.5000	0	104	75	125	1.52	20	
Lead	0.46	0.0050	0.5000	0.003590	90.6	75	125	0.0438	20	
Manganese	0.62	0.0020	0.5000	0.1322	97.0	75	125	1.70	20	
Nickel	0.47	0.010	0.5000	0.009620	92.8	75	125	0.0190	20	
Selenium	0.53	0.050	0.5000	0.03775	97.9	75	125	6.15	20	
Silver	0.10	0.0050	0.1000	0	99.8	75	125	2.01	20	
Vanadium	0.51	0.050	0.5000	0.006750	99.9	75	125	1.05	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **1608660-001CMS** SampType: **MS** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36503**

Prep Date: **8/12/2016** Analysis Date: **8/15/2016** SeqNo: **1130575** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.54	0.25	0.5000	0	107	75	125			

Sample ID **1608660-001CMSD** SampType: **MSD** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36503**

Prep Date: **8/12/2016** Analysis Date: **8/15/2016** SeqNo: **1130576** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.50	0.25	0.5000	0	100	75	125	11.2	20	

Sample ID **MB-26961** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **PBW** Batch ID: **26961** RunNo: **36584**

Prep Date: **8/12/2016** Analysis Date: **8/17/2016** SeqNo: **1132791** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Iron	ND	0.050								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID **LCS-26961** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **LCSW** Batch ID: **26961** RunNo: **36584**

Prep Date: **8/12/2016** Analysis Date: **8/17/2016** SeqNo: **1132792** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	101	80	120			
Iron	0.50	0.050	0.5000	0	99.4	80	120			
Magnesium	50	1.0	50.00	0	99.7	80	120			
Potassium	48	1.0	50.00	0	97.0	80	120			
Sodium	49	1.0	50.00	0	98.4	80	120			

Sample ID **1608660-001CMS** SampType: **MS** TestCode: **EPA 6010B: TCLP Metals**

Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36584**

Prep Date: **8/12/2016** Analysis Date: **8/17/2016** SeqNo: **1132798** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	90	1.0	50.00	35.08	110	75	125			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID **1608660-001CMSD** SampType: **MSD** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36584**
Prep Date: **8/12/2016** Analysis Date: **8/17/2016** SeqNo: **1132799** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	87	1.0	50.00	35.08	104	75	125	3.07	20	

Sample ID **1608660-001CMS** SampType: **MS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36584**
Prep Date: **8/12/2016** Analysis Date: **8/17/2016** SeqNo: **1132804** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	110	5.0	50.00	59.21	104	75	125			

Sample ID **1608660-001CMSD** SampType: **MSD** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36584**
Prep Date: **8/12/2016** Analysis Date: **8/17/2016** SeqNo: **1132805** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	110	5.0	50.00	59.21	93.6	75	125	4.76	20	

Sample ID **MB-26961** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **26961** RunNo: **36591**
Prep Date: **8/12/2016** Analysis Date: **8/18/2016** SeqNo: **1133361** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	ND	0.020								

Sample ID **LCS-26961** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **26961** RunNo: **36591**
Prep Date: **8/12/2016** Analysis Date: **8/18/2016** SeqNo: **1133362** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.47	0.020	0.5000	0	93.6	80	120			

Sample ID **1608660-001CMS** SampType: **MS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **Wastewater Effluent** Batch ID: **26961** RunNo: **36591**
Prep Date: **8/12/2016** Analysis Date: **8/18/2016** SeqNo: **1133467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.50	0.020	0.5000	0.02262	95.6	75	125			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**
22-Aug-16

Client: Navajo Refining Company
Project: Waste Water Effluent

Sample ID	**1608660-001CMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: TCLP Metals**				
Client ID:	**Wastewater Effluent**	Batch ID:	**26961**		RunNo:	**36591**				
Prep Date:	**8/12/2016**	Analysis Date:	**8/18/2016**		SeqNo:	**1133468**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.49	0.020	0.5000	0.02262	92.8	75	125	2.78	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID	**MB-R36648**	SampType:	**MBLK**	TestCode:	**CYANIDE, Reactive**					
Client ID:	**PBW**	Batch ID:	**R36648**	RunNo:	**36648**					
Prep Date:		Analysis Date:	**8/16/2016**	SeqNo:	**1135042**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive		ND	1.00								

Sample ID	**LCS-R36648**	SampType:	**LCS**	TestCode:	**CYANIDE, Reactive**					
Client ID:	**LCSW**	Batch ID:	**R36648**	RunNo:	**36648**					
Prep Date:		Analysis Date:	**8/16/2016**	SeqNo:	**1135043**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive		0.578		0.5000	0	116	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**

22-Aug-16

Client: Navajo Refining Company

Project: Waste Water Effluent

Sample ID	**MB-R36648**	SampType:	**MBLK**	TestCode:	**SULFIDE, Reactive**					
Client ID:	**PBW**	Batch ID:	**R36648**	RunNo:	**36648**					
Prep Date:		Analysis Date:	**8/17/2016**	SeqNo:	**1135045**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide		ND	1.0								

Sample ID	**LCS-R36648**	SampType:	**LCS**	TestCode:	**SULFIDE, Reactive**					
Client ID:	**LCSW**	Batch ID:	**R36648**	RunNo:	**36648**					
Prep Date:		Analysis Date:	**8/17/2016**	SeqNo:	**1135046**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide		0.20		0.2000	0	100	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**
22-Aug-16

Client: Navajo Refining Company
Project: Waste Water Effluent

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R36527**	RunNo: **36527**							
Prep Date:	Analysis Date: **8/15/2016**	SeqNo: **1131152**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R36527**	RunNo: **36527**							
Prep Date:	Analysis Date: **8/15/2016**	SeqNo: **1131153**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79.40	20.00	80.00	0	99.2	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1608660**
22-Aug-16

Client: Navajo Refining Company
Project: Waste Water Effluent

Sample ID **MB-26968**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **26968**	RunNo: **36519**
Prep Date: **8/13/2016**	Analysis Date: **8/16/2016**	SeqNo: **1130783** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-26968**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **26968**	RunNo: **36519**
Prep Date: **8/13/2016**	Analysis Date: **8/16/2016**	SeqNo: **1130784** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	994	20.0	1000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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: **1608660** RcptNo: **1**

Received by/date: AD 08/11/16

Logged By: **Lindsay Mangin** **8/11/2016 9:05:00 AM**

Completed By: **Lindsay Mangin** **8/11/2016 10:45:24 AM**

Reviewed By: aJ 08/11/16

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: 3 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: aJ

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

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 X Rush

Project Name:

Waste Water Effluent 8-10-16

Project #: P.O. # 167796

Project Manager: Robert Combs

Sampler: Brady Hubbard

On Ice: M Yes ☐ No

Sample Temperature: 1.5°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. 1608460	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	3	Neat/H2SO4	-001	X						X
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	1	HNO3	-001					X	X	
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	3	HCL	-001		X					
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	2	Neat	-001			X				
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	2	Neat	-001				X			
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	2	Neat	-001		X					
8/10/16	10:55	Liquid	Waste Water Effluent 8-10-16	1	Neat	-001							

Date	Time	Relinquished by	Received by	Date	Time
8-10-16	4:00	Brady Hubbard			
				08/11/16	0905

Remarks: Send results to Robert Combs

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, 2016

Robert Combs

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

RE: Effluent Release 8/10/16 OrderNo.: 1610723

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 11 sample(s) on 10/14/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 31, 2016.

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1610723**
Date Reported: **12/5/2016**

CLIENT: Navajo Refining Company
Project: Effluent Release 8/10/16
Lab ID: 1610723-001 **Matrix:** SOIL

Client Sample ID: Test 1
Collection Date: 10/12/2016 8:27:00 AM
Received Date: 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	1.4	0.30		mg/Kg	1	10/21/2016 2:58:57 PM
Chloride	27	1.5		mg/Kg	1	10/21/2016 2:58:57 PM
Sulfate	1300	30		mg/Kg	20	10/21/2016 3:36:12 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	22000	250		mg/Kg	100	10/18/2016 9:21:23 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Test 2
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 8:32:00 AM
Lab ID: 1610723-002 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	1.7	0.30		mg/Kg	1	10/21/2016 3:48:36 PM
Chloride	200	30		mg/Kg	20	10/21/2016 4:01:01 PM
Sulfate	3300	75		mg/Kg	50	10/25/2016 10:03:43 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	20000	240		mg/Kg	100	10/18/2016 9:22:56 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Test 3
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 8:37:00 AM
Lab ID: 1610723-003 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	1.8	0.30		mg/Kg	1	10/21/2016 4:13:25 PM
Chloride	640	30		mg/Kg	20	10/21/2016 4:25:50 PM
Sulfate	5200	75		mg/Kg	50	10/25/2016 10:16:08 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	23000	240		mg/Kg	100	10/18/2016 9:24:29 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Test 4
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 8:44:00 AM
Lab ID: 1610723-004 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	0.65	0.30		mg/Kg	1	10/21/2016 4:38:14 PM
Chloride	3100	150		mg/Kg	100	10/25/2016 10:28:33 PM
Sulfate	4800	150		mg/Kg	100	10/25/2016 10:28:33 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	27000	490		mg/Kg	200	10/18/2016 10:03:51 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Background 5
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 8:56:00 AM
Lab ID: 1610723-005 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	1.6	0.30		mg/Kg	1	10/21/2016 5:27:53 PM
Chloride	600	30		mg/Kg	20	10/21/2016 5:40:18 PM
Sulfate	2300	30		mg/Kg	20	10/21/2016 5:40:18 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	14000	250		mg/Kg	100	10/18/2016 9:27:36 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Background 6
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 9:01:00 AM
Lab ID: 1610723-006 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Fluoride	3.2	0.30		mg/Kg	1	10/25/2016 12:56:59 PM
Chloride	400	30		mg/Kg	20	10/25/2016 1:34:13 PM
Sulfate	370	30		mg/Kg	20	10/25/2016 1:34:13 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	23000	250		mg/Kg	100	10/18/2016 9:29:09 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Background 7
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 9:08:00 AM
Lab ID: 1610723-007 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Fluoride	0.80	0.30		mg/Kg	1	10/25/2016 1:46:37 PM
Chloride	7600	300		mg/Kg	200	10/26/2016 11:36:39 PM
Sulfate	780	30		mg/Kg	20	10/25/2016 1:59:02 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	27000	500		mg/Kg	200	10/18/2016 10:05:25 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Background 8
Project: Effluent Release 8/10/16
Collection Date: 10/12/2016 9:14:00 AM
Lab ID: 1610723-008 **Matrix:** SOIL **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Fluoride	1.9	0.30		mg/Kg	1	10/25/2016 2:11:26 PM
Chloride	450	30		mg/Kg	20	10/25/2016 2:23:51 PM
Sulfate	3500	75		mg/Kg	50	10/26/2016 11:49:03 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**
Iron	24000	250		mg/Kg	100	10/18/2016 9:37:54 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Test 3
Project: Effluent Release 8/10/16
Collection Date:
Lab ID: 1610723-009
Matrix: LEACHATE
Received Date: 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	0.53	0.10		mg/L	1	11/11/2016 6:35:12 PM
Sulfate	520	10	*	mg/L	20	11/10/2016 2:59:00 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Test 4
Project: Effluent Release 8/10/16
Collection Date:
Lab ID: 1610723-010
Matrix: LEACHATE
Received Date: 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Chloride	150	10		mg/L	20	11/10/2016 3:48:38 AM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**
Iron	ND	0.050		mg/L	1	11/13/2016 2:46:08 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: SPLP BLANK
Project: Effluent Release 8/10/16
Collection Date:
Lab ID: 1610723-011 **Matrix:** LEACHATE **Received Date:** 10/14/2016 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **LGT**
Fluoride	ND	0.10		mg/L	1	11/10/2016 4:01:03 AM
Chloride	ND	0.50		mg/L	1	11/10/2016 4:01:03 AM
Sulfate	ND	0.50		mg/L	1	11/10/2016 4:01:03 AM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**
Iron	ND	0.050		mg/L	1	11/13/2016 2:52:13 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610723**

05-Dec-16

Client: Navajo Refining Company

Project: Effluent Release 8/10/16

Sample ID	**MB-28232**	SampType:	**MBLK**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**28232**		RunNo:	**38151**					
Prep Date:	**10/21/2016**	Analysis Date:	**10/21/2016**		SeqNo:	**1190570**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	ND	0.30									
Chloride	ND	1.5									
Sulfate	ND	1.5									

Sample ID	**LCS-28232**	SampType:	**LCS**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**28232**		RunNo:	**38151**					
Prep Date:	**10/21/2016**	Analysis Date:	**10/21/2016**		SeqNo:	**1190571**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	1.6	0.30	1.500	0	106	90	110				
Chloride	14	1.5	15.00	0	94.3	90	110				
Sulfate	29	1.5	30.00	0	96.3	90	110				

Sample ID	**1610723-001AMS**	SampType:	**MS**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**Test 1**	Batch ID:	**28232**		RunNo:	**38151**					
Prep Date:	**10/21/2016**	Analysis Date:	**10/21/2016**		SeqNo:	**1190594**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	1.5	0.30	1.500	1.352	8.14	15	110			S	
Chloride	47	1.5	15.00	26.77	138	70.8	119			S	

Sample ID	**1610723-001AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**Test 1**	Batch ID:	**28232**		RunNo:	**38151**					
Prep Date:	**10/21/2016**	Analysis Date:	**10/21/2016**		SeqNo:	**1190595**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	1.3	0.30	1.500	1.352	-1.32	15	110	10.1	20	S	
Chloride	47	1.5	15.00	26.77	138	70.8	119	0.00989	20	S	

Sample ID	**MB-28251**	SampType:	**mblk**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**28251**		RunNo:	**38161**					
Prep Date:	**10/24/2016**	Analysis Date:	**10/24/2016**		SeqNo:	**1191020**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	ND	0.30									
Chloride	ND	1.5									
Sulfate	ND	1.5									

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1610723**
05-Dec-16

Client: Navajo Refining Company
Project: Effluent Release 8/10/16

Sample ID	**LCS-28251**	SampType:	**lcs**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**LCSS**	Batch ID:	**28251**		RunNo:	**38161**				
Prep Date:	**10/24/2016**	Analysis Date:	**10/24/2016**		SeqNo:	**1191021**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.30	1.500	0	103	90	110			
Chloride	14	1.5	15.00	0	96.6	90	110			
Sulfate	29	1.5	30.00	0	97.9	90	110			

Sample ID	**1610723-006AMS**	SampType:	**MS**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**Background 6**	Batch ID:	**28251**		RunNo:	**38187**				
Prep Date:	**10/24/2016**	Analysis Date:	**10/25/2016**		SeqNo:	**1193030**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.5	0.30	1.500	3.210	21.9	15	110			

Sample ID	**1610723-006AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**Background 6**	Batch ID:	**28251**		RunNo:	**38187**				
Prep Date:	**10/24/2016**	Analysis Date:	**10/25/2016**		SeqNo:	**1193031**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.4	0.30	1.500	3.210	9.98	15	110	5.17	20	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610723**

05-Dec-16

Client: Navajo Refining Company

Project: Effluent Release 8/10/16

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A38595**	RunNo: **38595**
Prep Date:	Analysis Date: **11/9/2016**	SeqNo: **1205622** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A38595**	RunNo: **38595**
Prep Date:	Analysis Date: **11/9/2016**	SeqNo: **1205623** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.0	90	110			
Sulfate	9.8	0.50	10.00	0	97.7	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R38671**	RunNo: **38671**
Prep Date:	Analysis Date: **11/11/2016**	SeqNo: **1207765** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R38671**	RunNo: **38671**
Prep Date:	Analysis Date: **11/11/2016**	SeqNo: **1207766** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610723**

05-Dec-16

Client: Navajo Refining Company

Project: Effluent Release 8/10/16

Sample ID	**MB-28097**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: Soil Metals**					
Client ID:	**PBS**	Batch ID:	**28097**	RunNo:	**38014**					
Prep Date:	**10/17/2016**	Analysis Date:	**10/18/2016**	SeqNo:	**1185141**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	2.5								

Sample ID	**LCS-28097**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: Soil Metals**					
Client ID:	**LCSS**	Batch ID:	**28097**	RunNo:	**38014**					
Prep Date:	**10/17/2016**	Analysis Date:	**10/18/2016**	SeqNo:	**1185142**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	25	2.5	25.00	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610723**

05-Dec-16

Client: Navajo Refining Company

Project: Effluent Release 8/10/16

Sample ID	**MB-28558**	SampType:	**MBLK**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**PBW**	Batch ID:	**28558**		RunNo:	**38660**				
Prep Date:	**11/10/2016**	Analysis Date:	**11/13/2016**		SeqNo:	**1207448**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.050								

Sample ID	**LCS-28558**	SampType:	**LCS**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**LCSW**	Batch ID:	**28558**		RunNo:	**38660**				
Prep Date:	**11/10/2016**	Analysis Date:	**11/13/2016**		SeqNo:	**1207452**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.050	0.5000	0	96.8	80	120			

Sample ID	**1610723-010BMS**	SampType:	**MS**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**Test 4**	Batch ID:	**28558**		RunNo:	**38660**				
Prep Date:	**11/10/2016**	Analysis Date:	**11/13/2016**		SeqNo:	**1207457**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.050	0.5000	0.008830	97.5	75	125			

Sample ID	**1610723-010BMSD**	SampType:	**MSD**		TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**Test 4**	Batch ID:	**28558**		RunNo:	**38660**				
Prep Date:	**11/10/2016**	Analysis Date:	**11/13/2016**		SeqNo:	**1207458**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.49	0.050	0.5000	0.008830	95.6	75	125	1.95	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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: 1610723 RcptNo: 1

Received by/date: AS 10/14/16

Logged By: **Michelle Garcia** 10/14/2016 8:45:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 10/14/2016 1:12:57 PM Michelle Garcia

Reviewed By: 10/14/16

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? UPS

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	4.7	Good	Yes			

Chain-of-Custody Record

Client: Holly Frontier

Mailing Address: P.O. Box 159
ARTESIA, NM 88211

Phone #: 575-746-5281

email or Fax#: 575-746-5451

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation:
☐ NELAP ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Effluent Release 8/10/16

Project #:
Effluent Release

Project Manager:
ROBERT COMBS

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: ~~78° when collected~~ 4.7°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. 1610723	Chloride	Fluoride	Sulfate	TDS	TDS (Cromic dissolved Solids) mg 10/14/16
12/16	8:27 AM	Soil	Test 1	Jar #1	on Ice	001	X	X	X	X	
12/16	8:32 AM		Test 2	#2		002					
12/16	8:37 AM		Test 3	#3		003					
12/16	8:44 AM		Test 4	#4		004					
12/16	8:56 AM		Background 5	#5		005					
12/16	9:01 AM		Background 6	#6		006					
12/16	9:08 AM		Background 7	#7		007					
12/16	9:11 AM	↓	Background 8	#8		008	↓	↓	↓	↓	
			SPLP			-011					
			Test 3 Leachate			-009					
			Test 4 Leachate			-010					
			AT 11/04/16								

Date	Time	Relinquished by:	Received by:	Date	Time
13/16	6:45 PM	L Dade		10/14/16	0945
		Relinquished by:	Received by:	Date	Time

Remarks: Verified analysis with Randy Dade mg 10/14/16.
Add SPLP -3, -4 for Cl, F, SO4 + TDS 11/4

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.