UICI - 8

ANNUAL REPORT

2022

March 31, 2023

Mr. Carl Chavez, CHMM
New Mexico Oil Conservation Division (Albuquerque Office)
Energy, Minerals and Natural Resources Department
5200 Oakland Avenue, NE
Albuquerque, NM 87113

RE: FFY 2022 Annual Class I Non-Hazardous Waste Injection Wells (WDW-1, WDW-2, WDW-3, WDW-4) Report from HF Sinclair Navajo Refining LLC

Dear Mr. Chavez,

Enclosed, please find the federal fiscal year 2022 (FFY 2022) Annual Injection Well Report for fluids that HF Sinclair Navajo Refining LLC (permittee) injected into wells WDW-1, WDW-2, WDW-3 and WDW-4 during the period from October 1, 2021 to Sept 30, 2022. This report has been prepared in accordance with the December 2017 Class I Non-Hazardous Waste Injection Well Discharge Permit UICI-8, Condition 2.I (pursuant to NMAC 20.6.2.3107). All four wells are included in this annual report and are identified as follows:

- Well WDW-1
  - API #30-015-27592 under Permit UICI-8-1 (Facility ID = fCJC2117350329)
- Well WDW-2
  - API #30-015-20894 under Permit UICI-8-2 (Facility ID = fCJC2117351808)
- Well WDW-3
  - API #30-015-26575 under Permit UICI-8-3 (Facility ID = fCJC2117354810)
- Well WDW-4
  - API #30-015-44677 under Permit UICI-8-4 (Facility ID = fCJC2117357871)

This report is signed and certified in accordance with NMAC Section 20.6.2.5101.G. If there are any questions or comments, please contact Jason Roberts at 575-748-6733.

Respectfully,

Kawika Tupou
Environmental Manager
HF Sinclair

Discharge Permit UICI-8 (2017), Condition 2.I Annual Report Requirements

1. *Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Wells (WDW-1, WDW-2, WDW-3, WDW-4), Name of Permittee, Discharge Permit Numbers, API numbers of wells, date of report, and person submitting report*

   Response: See cover letter.

2. *Summary of Class I non-hazardous waste injection well operations for the year including a description and reasan for any remedial or major work on the well with a copy of supporting OCD Form C-103(s)*

   Response: There were no deviations from normal injection well operations in FFY 2022. No remedial or major work occurred during this time period. As discussed in detail in items #6, #7, #11, and #12, required and voluntary annual testing was conducted for WDW-1, WDW-2, WDW-3, and WDW-4 during FFY 2022. The results of these testing activities have been provided to OCD via the e-permitting website.

3. *Monthly injection/disposal volume, including the cumulative total carried over from the prior year*

   Response: See Table 1

4. *Maximum, minimum, and average surface injection pressures*

   Response: See Table 1. In terms of Discharge Permit UICI-8 compliance, the hourly maximum injection pressures (occurring during FFY 2022) were within limits given in Condition 3.B as follows:

   - WDW-1: max = 1,335 psi (limit = 1,585 psig)
   - WDW-2: max = 1,293 psi (limit = 1,514 psig)
   - WDW-3: max = 1,249 psi (limit = 1,530 psig)
   - WDW-4: max = 1,500 psi (limit = 2,080 psig)

5. *Quarterly chemical analyses including data summary and all QA/QC and DQO associated information*

   Response: See Table 2 and Attachment A. Parameters were sampled at the well distribution header so concentrations are the same for all four UIC wells. Concentrations of constituents in injected fluids were below Regulatory Levels given in Condition 2.A.

6. *Mechanical integrity test (MIT) data, including the type of test, i.e., duration, gauge, pressure, calibration record, etc.*

   Response: A summary of MIT activities at each well is provided below.

   WDW-1: A successful Part I MIT was performed on 5/26/2022; test details including a copy of gauge calibration are included in the previously submitted Mechanical Integrity and Reservoir Testing Report, WDW-1 (June 17, 2022 – OCD Action ID #139500). A successful Part II MIT was performed on 8/16/2022; test details including a copy of the temperature log are included in the previously submitted Part II Mechanical Integrity Testing Report (September 12, 2022 – OCD Action ID #142056).

WDW-2: A successful Part I MIT was performed on 6/30/2022; test details including a copy of gauge calibration are included in the previously submitted Mechanical Integrity and Reservoir Testing Report, WDW-2 (July 25, 2022 – OCD Action ID #139501). A successful Part II MIT was performed on 8/17/2022; test details including a copy of the temperature log are included in the previously submitted Part II Mechanical Integrity Testing Report (September 12, 2022 – OCD Action ID #142058).

WDW-3: A successful Part I MIT was performed on 6/16/2022; test details including a copy of gauge calibration are included in the previously submitted Mechanical Integrity and Reservoir Testing Report, WDW-3 (July 25, 2022 – OCD Action ID #139503). A successful Part II MIT was performed on 8/18/2022; test details including a copy of the temperature log are included in the previously submitted Part II Mechanical Integrity Testing Report (September 12, 2022 – OCD Action ID #142059).

WDW-4: A successful Part I MIT was performed on 7/21/2022; test details including a copy of gauge calibration are included in the previously submitted Mechanical Integrity and Reservoir Testing Report, WDW-4 (August 12, 2022 – OCD Action ID #141214).

7. *Fall-Off Test data*

   Response: Copies of required falloff test charts are provided in the previously referenced (Item #6) and submitted Mechanical Integrity and Reservoir Testing Reports for each well, respectively.

8. *Summary tables listing environmental analytical laboratory data from quarterly waste effluent sampling.*

   Response: See Table 2 and Attachment A.

9. *Brief explanation(s) describing deviation(s) from the normal injection operations*

   Response: There were no deviations from normal injection well operations in FFY 2022.

10. *Results and status of any leaks and spill reports (include any OCD Form C-141 release notification or corrective action reports)*

    Response: There were no leaks or spills associated with well injection operations (i.e., injected fluids, pipeline conveyances, etc.).

11. *Area of Review (AOR) annual update summary with any new wells penetrating the injection zone (especially any and all other injection wells) within a 1-mile radius from WDW-1, WDW-2, WDW-3, and WDW-4*

    Response: Annual AOR updates for each well are provided in the previously referenced (Item #6) and submitted Mechanical Integrity and Reservoir Testing Reports for each well, respectively. AOR updates include a tabulation and plot summary of any new wells penetrating the injection zone within the AOR.

12. *Summary with interpretation of MITs, Fall-Off Tests, Bradenhead Tests, etc., with conclusion(s) and recommendation(s)*

    Response: During FFY 2022 testing, each well satisfactorily demonstrated mechanical integrity pursuant to the applicable UIC permits, guidelines and regulations. All MIT and Bradenhead Testing requirements, if applicable, were satisfied as a result of the work performed. Wellbore and reservoir properties were confirmed as similar to those determined from analysis of the previous testing conducted in each well. Further

detail regarding testing for each well is provided in the previously referenced (Item #6) and submitted Mechanical Integrity and Reservoir Testing Reports.

13. *Include "Conclusions" and "Recommendations" sections at the end of the report*

Response: No concerns relevant to continued operation, safety or containment were identified in FFY 2022. Maximum surface injection pressures given in Discharge Permit UICI-8 Condition 3.B were not exceeded as shown in Table 1. Concentrations of constituents in injected fluids were below Regulatory Levels given in Condition 2.A as shown in Table 2 (and subsequently deemed non-hazardous). As such, it is recommended that injection activities continue per the approved permits and regulations, including the planned renewal of Discharge Permit UICI-8 in FFY 2023.

TABLE 1. FFY 2022 MONTHLY INJECTION PRESSURE, FLOW RATE, ANNULAR PRESSURE, AND VOLUME

Month	Injection Pressure			Injection Flowrate			Annular Pressure			Totalized Injected Volume	
	Average (psi)	Maximum (psi)	Minimum (psi)	Average (gpm)	Maximum (gpm)	Minimum (gpm)	Average (psi)	Maximum (psi)	Minimum (psi)	Monthly (barrels)	Cumulative (barrels)
30-015-27592 WDW-1											47,626,294
Oct-21	993	1,205	719	228	292	116	81	257	5	242,331	47,868,625
Nov-21	1,111	1,228	780	208	255	159	37	142	0	299,520	48,168,145
Dec-21	1,126	1,248	996	217	265	162	51	118	16	312,480	48,480,625
Jan-22	917	1,128	578	193	263	108	18	46	0	205,131	48,685,756
Feb-22	858	1,136	422	200	266	80	0	3	0	192,000	48,877,756
Mar-22	1,158	1,335	804	237	282	125	1	7	0	251,897	49,129,653
Apr-22	1,114	1,333	883	249	313	171	113	911	0	256,114	49,385,767
May-22	1,020	1,187	504	275	340	221	587	1,004	296	282,857	49,668,624
Jun-22	1,062	1,163	849	252	332	105	598	865	255	259,200	49,927,824
Jul-22	955	1,019	687	112	135	84	332	490	229	161,280	50,089,104
Aug-22	896	1,015	751	106	122	97	394	640	236	112,663	50,201,767
Sep-22	765	987	0	93	112	0	433	654	0	95,657	50,297,424
30-015-20894 WDW-2											29,429,340
Oct-21	987	1,123	0	77	91	53	295	574	96	81,840	29,511,180
Nov-21	1,034	1,254	790	82	110	41	177	384	96	118,080	29,629,260
Dec-21	993	1,145	891	90	106	73.0	146	323	104	129,600	29,758,860
Jan-22	907	1,077	600	122	172	76.0	410	1,219	91	129,699	29,888,559
Feb-22	814	1,028	685	81	137	0.0	818	987	478	77,760	29,966,319
Mar-22	1,010	1,146	827	102	190	50.0	786	1,196	427	108,411	30,074,730
Apr-22	1,000	1,092	837	223	302	157.0	965	1,243	709	229,371	30,304,101
May-22	1,102	1,250	921	225	320	163.0	864	1,197	626	231,429	30,535,530
Jun-22	1,026	1,143	851	216	303	74.0	708	880	534	222,171	30,757,701
Jul-22	1,069	1,293	968	86	102	75.0	803	974	715	123,840	30,881,541
Aug-22	972	1,207	754	77	100	56.0	525	938	305	81,840	30,963,381
Sep-22	1,037	1,075	978	82	89	73.0	303	528	0	84,343	31,047,724
30-015-26575 WDW-3											21,281,293
Oct-21	894	1,000	0	113	141	75	309	490	180	120,103	21,401,396
Nov-21	874	952	772	103	125	82	441	644	225	148,320	21,549,716
Dec-21	868	930	735	94	113	54	460	626	398	135,360	21,685,076
Jan-22	786	976	697	69	122	41	459	1,047	62	73,337	21,758,413
Feb-22	760	876	685	70	291	7	585	1,188	292	67,200	21,825,613
Mar-22	881	1,000	779	97	125	70	595	921	319	103,097	21,928,710
Apr-22	881	983	735	95	118	58	444	746	128	97,714	22,026,424
May-22	979	1,150	764	112	131	69	258	491	32	115,200	22,141,624
Jun-22	958	1,066	602	107	125	60	449	676	189	110,057	22,251,681
Jul-22	1,000	1,249	930	118	135	107	676	777	593	169,920	22,421,601
Aug-22	976	1,069	767	112	130	68	540	746	366	119,040	22,540,641
Sep-22	1,010	1,070	950	115	127	99	423	538	323	118,286	22,658,927
30-015-44677 WDW-4											6,263,350
Oct-21	145	187	0	155	253	88	84	189	52	164,743	6,428,093
Nov-21	143	180	119	159	249	77	79	124	53	228,960	6,657,053
Dec-21	171	189	160	240	284	208	94	125	71	345,600	7,002,653
Jan-22	230	682	155	308	541	191	118	223	43	327,360	7,330,013
Feb-22	339	1,500	150	364	542	164	176	239	110	349,440	7,679,453
Mar-22	167	184	146	200	238	123	160	247	63	212,571	7,892,024
Apr-22	170	204	136	195	298	100	178	261	97	200,571	8,092,595
May-22	209	237	178	249	285	198	213	265	166	256,114	8,348,709
Jun-22	251	304	215	297	352	248	197	249	137	305,486	8,654,195
Jul-22	258	589	191	266	318	5	176	258	113	383,040	9,037,235
Aug-22	258	301	164	299	369	63	150	247	93	317,794	9,355,029
Sep-22	260	280	210	301	329	235	92	146	62	309,600	9,664,629

TABLE 2. HF SINCLAIR FFY 2022 WWTP EFFLUENT CONCENTRATIONS INJECTED INTO UIC WELLS
"<" = value less than the laboratory reporting limit (RL)

Parameter	Units	UICI-8 Condition 2.A Regulatory Level (a)	12/21/2021	3/28/2022	4/26/2022	9/28/2022
Alkalinity, bicarbonate	mg/L	--	826.6	477.1	626.9	582.9
Alkalinity, carbonate	mg/L	--	<2	<2	<2	<2
Alkalinity, total	mg/L	--	826.6	477.1	626.9	582.9
Conductivity	uS/cm	--	7400	6300	6500	6900
Cyanide (Reactivity)	mg/L	--	<0.05	0.0103	0.0133	0.0207
Flashpoint (Ignitability)	deg F	--	<170	<170	<170	<170
Oxidation Reduction Potential	mV	--	-10.4	34.9	157	129
pH (Corrosivity)	su	--	7.39	7.47	7.25	7.83
Specific Gravity	su	--	1.0020	0.9968	0.9981	0.9989
Sulfide (Reactivity)	mg/L	--	0.334	<0.05	0.108	<0.05
Total Dissolved Solids	mg/L	--	5340	4660	4640	5120
Total Suspended Solids	mg/L	--		14	21	28
Bromide	mg/L	--	0.80	0.61	0.62	<0.5
Chloride	mg/L	--	800	720	600	490
Fluoride	mg/L	--	57	35	24	65
Nitrate	mg/L	--	<0.5	0.75	0.88	2.50
Nitrate/Nitrite	mg/L	--				
Nitrite	mg/L	--	<0.5	<0.5	<0.5	<0.5
Phosphorus, total	mg/L	--	<2.5	<2.5	<2.5	<2.5
Sulfate	mg/L	--	1800	2300	2400	2300
Calcium	mg/L	--	340	460	490	400
Magnesium	mg/L	--	110	140	160	130
Potassium	mg/L	--	140	130	100	230
Sodium	mg/L	--	850	640	580	880
Cation/Anion Ratio	__:1	--	--	0.82	0.81	0.97
Arsenic	mg/L	TCLP=5	<5	<5	<5	<5
Barium	mg/L	TCLP=100	<100	<100	<100	<100
Cadmium	mg/L	TCLP=1	<1	<1	<1	<1
Chromium	mg/L	TCLP=5	<5	<5	<5	<5
Lead	mg/L	TCLP=5	<5	<5	<5	<5
Mercury	mg/L	TCLP=0.2	<0.02	<0.02	<0.02	<0.02
Selenium	mg/L	TCLP=1	<1	<1	<1	<1
Silver	mg/L	TCLP=5	<5	<5	<5	<5
Chlordane	mg/L	TCLP=0.03	<0.03	<0.03	<0.03	<0.03
Endrin	mg/L	TCLP=0.02		<0.02	<0.02	<0.02
Lindane	mg/L	TCLP=0.4		<0.4	<0.4	<0.4
Heptachlor	mg/L	TCLP=0.008		<0.008	<0.008	<0.008
Heptachlor Epoxide	mg/L	TCLP=0.008		<0.008	<0.008	<0.008
Methoxychlor	mg/L	TCLP=10		<10	<10	<10
Toxaphene	mg/L	TCLP=0.50		<0.50	<0.50	<0.50
2,4,5-TP (Silvex)	mg/L	TCLP = 1		<1	<1	<1
2,4-D	mg/L	TCLP = 10		<10	<10	<10
1,1-Dichloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	<0.7
1,2-Dichloroethane	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	mg/L	TCLP=7.5	<7.5	<7.5	<7.5	<7.5
2,4,5-Trichlorophenol	mg/L	TCLP=400	<400	<400	<400	<400
2,4,6-Trichlorophenol	mg/L	TCLP=2	<2	<2	<2	<2
2,4-Dinitrotoluene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	<0.13
2-Butanone	mg/L	TCLP=200	<200	<200	<200	<200
2-Methylphenol	mg/L	TCLP=200	<200	<200	<200	<200
3+4-Methylphenol	mg/L	TCLP=200	<200	<200	<200	<200
Benzene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	mg/L	TCLP=100	<100	<100	<100	<100
Chloroform	mg/L	TCLP=6	<6	<6	<6	<6
Cresols	mg/L	TCLP=200	<200	<200	<200	<200
Hexachlorobenzene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	<0.13
Hexachlorobutadiene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/L	TCLP=3	<3	<3	<3	<3
Nitrobenzene	mg/L	TCLP=2	<2	<2	<2	<2
Pentachlorophenol	mg/L	TCLP=100	<100	<100	<100	<100
Pyridine	mg/L	TCLP=5	<5	<5	<5	<5
Tetrachloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	<0.7
Trichloroethene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	mg/L	TCLP=0.2	<0.2	<0.2	<0.2	<0.2

(a) TCLP = Toxicity Characteristic Leaching Procedure with regulatory level given in 40 CFR 261.24(b)

ATTACHMENT A

Analytical Lab Report(s)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

January 20, 2022

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

RE: Quarterly WDW 1 2 3 4 Inj Well OrderNo.: 2112C79

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/22/2021 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: 2111C79
Date: 1/20/2022

CLIENT: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well

Analytical Notes Regarding EPA Method 8270:
Pyridine is reported with an "E" flag. The "E" flag is used to represent an estimated value. Pyridine was not detected in the sample, but the calibration curve for this compound did not meet the method requirements.

Analytical Report
Lab Order 2112C79
Date Reported: 1/20/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well
Lab ID: 2112C79-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/21/2021 10:15:00 AM
Received Date: 12/22/2021 7:25:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: LSB	
Chlordane	ND	0.0012	0.075		mg/L	1	1/11/2022 7:03:42 PM	64757
Surr: Decachlorobiphenyl	79.2	0	73-119		%Rec	1	1/11/2022 7:03:42 PM	64757
Surr: Tetrachloro-m-xylene	60.2	0	36.6-84.1		%Rec	1	1/11/2022 7:03:42 PM	64757
EPA METHOD 300.0: ANIONS							Analyst: MRA	
Fluoride	57	0.80	2.0	*	mg/L	20	12/23/2021 3:16:42 PM	R84756
Chloride	600	25	50	*	mg/L	100	1/8/2022 2:29:50 PM	R85040
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	12/22/2021 3:04:18 PM	R84756
Bromide	0.80	0.25	0.50		mg/L	5	12/22/2021 3:04:18 PM	R84756
Nitrogen, Nitrate (As N)	0.45	0.050	0.50	J	mg/L	5	12/22/2021 3:04:18 PM	R84756
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	12/22/2021 3:04:18 PM	R84756
Sulfate	1600	25	50	*	mg/L	100	1/8/2022 2:29:50 PM	R85040
EPA METHOD 7470A: MERCURY							Analyst: VP	
Mercury	ND	0.20	0.0010		mg/L	5	12/27/2021 5:00:11 PM	64706
EPA METHOD 6010B: DISSOLVED METALS							Analyst: JLF	
Calcium	340	0.29	5.0		mg/L	5	12/22/2021 8:17:59 PM	A84757
Magnesium	110	0.17	5.0		mg/L	5	12/22/2021 8:17:59 PM	A84757
Potassium	140	1.0	5.0		mg/L	5	12/22/2021 8:17:59 PM	A84757
Sodium	850	21	50		mg/L	50	12/22/2021 8:20:16 PM	A84757
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: JLF	
Arsenic	ND	0.22	5.0		mg/L	10	1/4/2022 5:19:46 PM	64703
Barium	0.041	0.011	100	J	mg/L	10	1/4/2022 4:12:19 PM	64703
Cadmium	ND	0.012	1.0		mg/L	10	1/4/2022 7:10:30 PM	64703
Chromium	ND	0.017	5.0		mg/L	10	1/4/2022 4:12:19 PM	64703
Lead	0.19	0.13	5.0	J	mg/L	10	1/18/2022 7:46:26 AM	64703
Selenium	ND	0.25	1.0		mg/L	10	1/4/2022 7:10:30 PM	64703
Silver	0.016	0.013	5.0	J	mg/L	10	1/4/2022 4:12:19 PM	64703
EPA METHOD 8270C TCLP							Analyst: JME	
2-Methylphenol	0.016	0.0010	200	JD	mg/L	2	1/5/2022 4:05:58 AM	64755
3+4-Methylphenol	0.026	0.00090	200	JD	mg/L	2	1/5/2022 4:05:58 AM	64755
2,4-Dinitrotoluene	ND	0.0012	0.13	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Hexachlorobenzene	ND	0.0013	0.13	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Hexachlorobutadiene	ND	0.0016	0.50	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Hexachloroethane	ND	0.00090	3.0	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Nitrobenzene	ND	0.0010	2.0	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Pentachlorophenol	ND	0.0012	100	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Pyridine	ND	0.0019	40	ED	mg/L	2	1/5/2022 4:05:58 AM	64755
2,4,5-Trichlorophenol	ND	0.0012	400	D	mg/L	2	1/5/2022 4:05:58 AM	64755

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order 2112C79
Date Reported: 1/20/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well
Lab ID: 2112C79-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/21/2021 10:15:00 AM
Received Date: 12/22/2021 7:25:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: JME	
2,4,6-Trichlorophenol	ND	0.00087	2.0	D	mg/L	2	1/5/2022 4:05:58 AM	64755
Cresols, Total	0.042	0.0010	200	JD	mg/L	2	1/5/2022 4:05:58 AM	64755
Surr: 2-Fluorophenol	0.497	0	15-118	SD	%Rec	2	1/5/2022 4:05:58 AM	64755
Surr: Phenol-d5	11.8	0	15-92.9	SD	%Rec	2	1/5/2022 4:05:58 AM	64755
Surr: 2,4,6-Tribromophenol	1.36	0	15-150	SD	%Rec	2	1/5/2022 4:05:58 AM	64755
Surr: Nitrobenzene-d5	71.4	0	15-136	D	%Rec	2	1/5/2022 4:05:58 AM	64755
Surr: 2-Fluorobiphenyl	69.9	0	15-134	D	%Rec	2	1/5/2022 4:05:58 AM	64755
Surr: 4-Terphenyl-d14	110	0	15-168	D	%Rec	2	1/5/2022 4:05:58 AM	64755
TCLP VOLATILES BY 8260B							Analyst: RAA	
Benzene	0.27	0.00023	0.50	J	mg/L	200	12/27/2021 9:36:53 PM	T84811
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/27/2021 9:36:53 PM	T84811
2-Butanone	ND	0.0020	200		mg/L	200	12/27/2021 9:36:53 PM	T84811
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/27/2021 9:36:53 PM	T84811
Chloroform	ND	0.00013	6.0		mg/L	200	12/27/2021 9:36:53 PM	T84811
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/27/2021 9:36:53 PM	T84811
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/27/2021 9:36:53 PM	T84811
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/27/2021 9:36:53 PM	T84811
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/27/2021 9:36:53 PM	T84811
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/27/2021 9:36:53 PM	T84811
Chlorobenzene	0.069	0.00016	100	J	mg/L	200	12/27/2021 9:36:53 PM	T84811
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	200	12/27/2021 9:36:53 PM	T84811
Surr: 4-Bromofluorobenzene	98.7	0	70-130		%Rec	200	12/27/2021 9:36:53 PM	T84811
Surr: Dibromofluoromethane	110	0	70-130		%Rec	200	12/27/2021 9:36:53 PM	T84811
Surr: Toluene-d8	91.3	0	70-130		%Rec	200	12/27/2021 9:36:53 PM	T84811
SM2510B: SPECIFIC CONDUCTANCE							Analyst: JRR	
Conductivity	7400	10	10		µmhos/c	1	12/27/2021 1:08:18 PM	R84794
SM2320B: ALKALINITY							Analyst: JRR	
Bicarbonate (As CaCO3)	826.6	20.00	20.00		mg/L Ca	1	12/27/2021 1:08:18 PM	R84794
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/27/2021 1:08:18 PM	R84794
Total Alkalinity (as CaCO3)	826.6	20.00	20.00		mg/L Ca	1	12/27/2021 1:08:18 PM	R84794
SPECIFIC GRAVITY							Analyst: JRR	
Specific Gravity	1.002	0	0			1	1/7/2022 12:54:00 PM	R85017
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: CJS	
Total Dissolved Solids	5340	100	100	*D	mg/L	1	12/30/2021 10:03:00 A	64762

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order 2112C79
Date Reported: 1/20/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well
Lab ID: 2112C79-002 **Matrix:** TRIP BLANK

Client Sample ID: TRIP BLANK
Collection Date:
Received Date: 12/22/2021 7:25:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							**Analyst: RAA**	
Benzene	ND	0.00023	0.50		mg/L	1	12/27/2021 10:03:52 P	T84811
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	1	12/27/2021 10:03:52 P	T84811
2-Butanone	ND	0.0020	200		mg/L	1	12/27/2021 10:03:52 P	T84811
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	1	12/27/2021 10:03:52 P	T84811
Chloroform	ND	0.00013	6.0		mg/L	1	12/27/2021 10:03:52 P	T84811
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	1	12/27/2021 10:03:52 P	T84811
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	1	12/27/2021 10:03:52 P	T84811
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	1	12/27/2021 10:03:52 P	T84811
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	1	12/27/2021 10:03:52 P	T84811
Vinyl chloride	ND	0.00032	0.20		mg/L	1	12/27/2021 10:03:52 P	T84811
Chlorobenzene	ND	0.00016	100		mg/L	1	12/27/2021 10:03:52 P	T84811
Surr: 1,2-Dichloroethane-d4	105	0	70-130		%Rec	1	12/27/2021 10:03:52 P	T84811
Surr: 4-Bromofluorobenzene	93.3	0	70-130		%Rec	1	12/27/2021 10:03:52 P	T84811
Surr: Dibromofluoromethane	105	0	70-130		%Rec	1	12/27/2021 10:03:52 P	T84811
Surr: Toluene-d8	102	0	70-130		%Rec	1	12/27/2021 10:03:52 P	T84811

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

ANALYTICAL REPORT

January 04, 2022

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Hall Environmental Analysis Laboratory

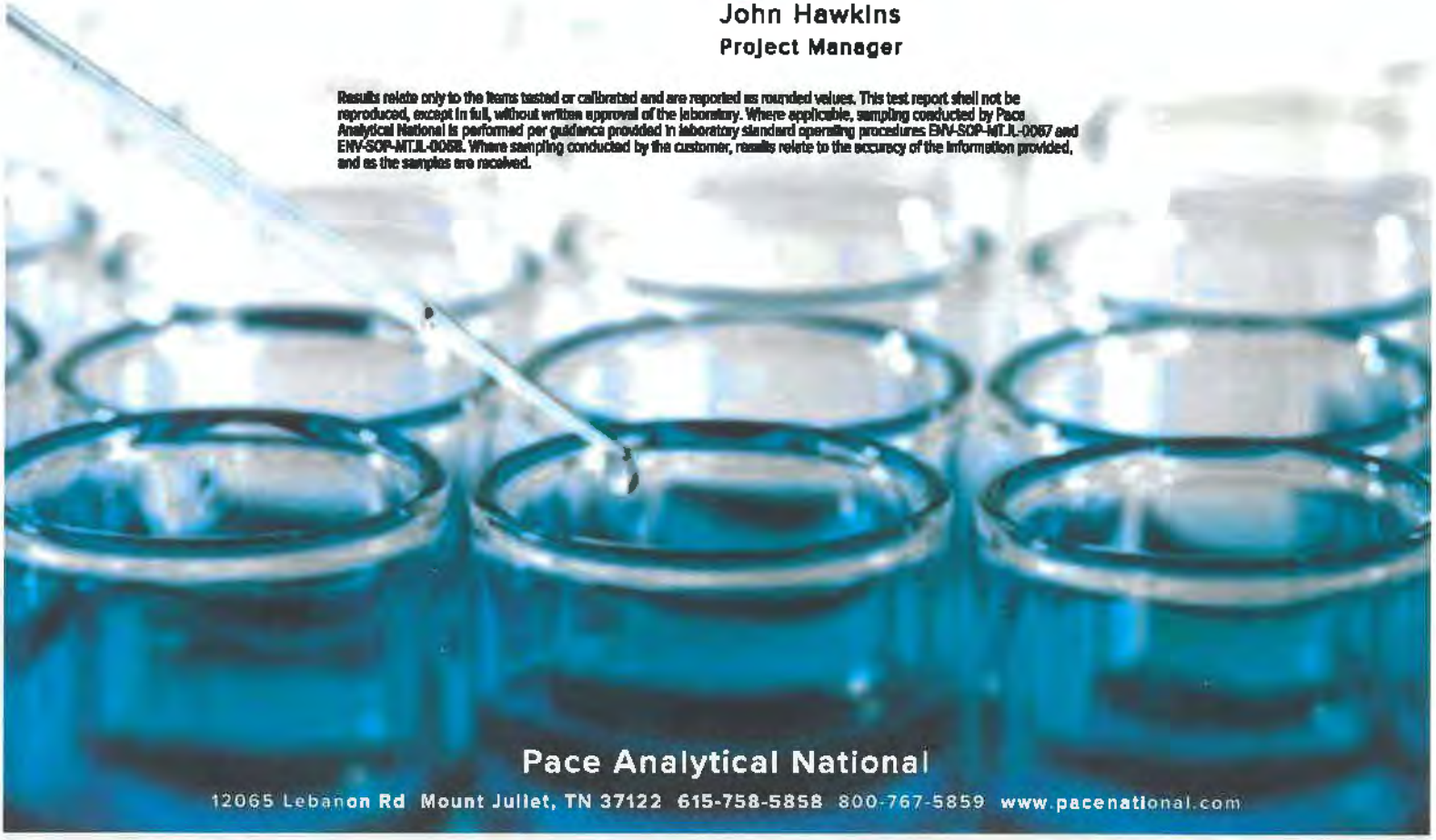
Sample Delivery Group:	L1445523
Samples Received:	12/23/2021
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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SAMPLE SUMMARY

	Collected by	Collected date/time	Received date/time
2112C79-001F WDW-1,2,3 & 4 EFFLUENT L1445523-01 GW		12/21/21 10:15	12/23/21 09:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1794960	1	01/02/22 08:47	01/02/22 08:47	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1794923	10	12/28/21 22:40	12/28/21 14:51	KEG	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1797616	1	01/03/22 21:51	01/03/22 21:51	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1795243	1	12/27/21 16:31	12/27/21 16:31	SCM	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1794911	1	12/27/21 00:35	12/27/21 00:35	WOS	Mt. Juliet, TN

1 Cp
2 Tc
Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

2112C79-001F WDW-1,2,3 & 4 EFFLUENT
Collected date/time: 12/21/21 10:15

SAMPLE RESULTS - 01
L1445523

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	-10.4	T8	1	01/02/2022 08:47	WG1794950

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.0500	10	12/28/2021 14:51	WG1794923

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	0.334	T8	0.0500	1	01/03/2022 21:51	WG1797616

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.39	T8	1	12/27/2021 16:31	WG1795243

Sample Narrative:
L1445523-01 WG1795243: 7.39 at 20.1C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	12/27/2021 00:35	WG1794911

WG1794960

Wet Chemistry by Method 2580

QUALITY CONTROL SUMMARY

L1445523-01

L1445523-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445523-01 01/02/22 08:47 • (DUP) R3746662-3 01/02/22 08:47

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	-10.4	-11.2	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3746662-1 01/02/22 08:47 • (LCSD) R3746662-2 01/02/22 08:47

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	108	110	99.9	102	86.0-105			2.40	20

WG1794923

Wet Chemistry by Method 4500 CN E-2016

QUALITY CONTROL SUMMARY

L1445523-01

Method Blank (MB)

(MB) R3745581-1 12/28/21 14:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Reactive Cyanide	U		0.00180	0.00500

L1445069-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445069-02 12/28/21 14:42 • (DUP) R3745581-5 12/28/21 14:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Cyanide	ND	ND	1	0.000		20

L1445536-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445536-01 12/28/21 14:55 • (DUP) R3745581-6 12/28/21 14:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3745581-2 12/28/21 14:31

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Cyanide	0.100	0.0965	96.5	87.1-120	

L1445053-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445053-03 12/28/21 14:36 • (MS) R3745581-3 12/28/21 14:37 • (MSD) R3745581-4 12/28/21 14:38

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	0.00500	ND	0.103	0.000	98.0	1	90.0-110	J6	J3	200	20

L1445536-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445536-02 12/28/21 14:57 • (MS) R3745581-7 12/28/21 14:58 • (MSD) R3745581-8 12/28/21 14:59

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.100	0.105	100	105	1	90.0-110			4.88	20

WG1797616

Wet Chemistry by Method 4500 S2 D-2011

QUALITY CONTROL SUMMARY

L1445523-01

Method Blank (MB)

(MB) R3747054-1 01/03/22 21:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3747054-2 01/03/22 21:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.545	109	85.0-115	

Cp Tc Ss Cn Sr Qc Gl Al Sc

WG1795243

Wet Chemistry by Method 9040C

QUALITY CONTROL SUMMARY

L1445523-01

L1445523-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445523-01 12/27/21 16:31 • (DUP) R3745144-3 12/27/21 16:31

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Corrosivity by pH	7.39	7.38	1	0.135		1

Sample Narrative:
OS: 7.39 at 20.1C
DUP: 7.38 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3745144-1 12/27/21 16:31

Analyte	Spike Amount su	LCS Result su	LCS Rec. %	Rec. Limits %	LCS Qualifier
Corrosivity by pH	10.0	10.0	100	99.0-101	

Sample Narrative:
LCS: 10.01 at 20C

WG1794911

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

L1445523-01

L1444846-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1444846-01 12/27/21 00:35 • (DUP) R3744823-3 12/27/21 00:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

L1445523-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445523-01 12/27/21 00:35 • (DUP) R3744823-4 12/27/21 00:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3744823-1 12/27/21 00:35 • (LCSD) R3744823-2 12/27/21 00:35

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	124	130	98.3	103	96.0-104			4.73	10

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	8915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [16]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [14]	2006
Louisiana	LA018	Texas	T104704245-20-19
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

B208

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

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS L1445823
1	2112C79-001F	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	12/21/2021 10:15:00 AM	1	RCl, ORP -01
2	2112C79-001G	WDW-1,2,3 & 4 Effluent	500PLNAOH ZNAC	Aqueous	12/21/2021 10:15:00 AM	1	RCl, ORP -01
3	2112C79-001H	WDW-1,2,3 & 4 Effluent	500PL-NaOH	Aqueous	12/21/2021 10:15:00 AM	1	RCl, ORP -02

55285948 0150

DKA7
5.3+0=5.3

Sample Receipt Checklist
Seal Present/Intact: ✓Y _N
Signed/Accurate: ✓Y _N
Bottles arrive intact: ✓Y _N
Correct bottles used: ✓Y _N
Sufficient volume sent: ✓Y _N
RAD Screen <0.5 mR/hr: ✓Y _N
If Applicable
VOA Zero Headspace: _Y _N
Pres. Correct/Check: ✓Y _N

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: SC	Date: 12/22/2021	Time: 9:04 AM	Received By: [signature]	Date: 12/23/21	Time: 9:50
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples ______ °C Attempt to Cool? ______
Comments: ______

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112C79**

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R84756**	RunNo: **84756**							
Prep Date:	Analysis Date: **12/22/2021**	SeqNo: **2980681**	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								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R84756**	RunNo: **84756**							
Prep Date:	Analysis Date: **12/22/2021**	SeqNo: **2980682**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.8	90	110			
Chloride	4.9	0.50	5.000	0	98.2	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	99.5	90	110			
Bromide	2.5	0.10	2.500	0	101	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	104	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	97.0	90	110			
Sulfate	9.7	0.50	10.00	0	96.8	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R85040**	RunNo: **85040**							
Prep Date:	Analysis Date: **1/8/2022**	SeqNo: **2991990**	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: **R85040**	RunNo: **85040**							
Prep Date:	Analysis Date: **1/8/2022**	SeqNo: **2991991**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	91.4	90	110			
Sulfate	9.1	0.50	10.00	0	90.6	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79
21-Jan-22

Client: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: MB-64757	SampType: MBLK	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: PBW	Batch ID: 64757	RunNo: 85069							
Prep Date: 12/28/2021	Analysis Date: 1/11/2022	SeqNo: 2993207	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0022		0.002500		87.1	73	119			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.3	36.6	84.1			

Sample ID: MB-64757	SampType: MBLK	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: PBW	Batch ID: 64757	RunNo: 85069							
Prep Date: 12/28/2021	Analysis Date: 1/11/2022	SeqNo: 2993208	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0022		0.002500		88.2	73	119			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		55.4	36.6	84.1			

Sample ID: LCS-64757	SampType: LCS	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: LCSW	Batch ID: 64757	RunNo: 85069							
Prep Date: 12/28/2021	Analysis Date: 1/11/2022	SeqNo: 2993316	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0022		0.002500		90.0	73	119			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		62.0	36.6	84.1			

Sample ID: LCS-64757	SampType: LCS	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: LCSW	Batch ID: 64757	RunNo: 85069							
Prep Date: 12/28/2021	Analysis Date: 1/11/2022	SeqNo: 2993316	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0023		0.002500		91.7	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.3	36.6	84.1			

Sample ID: LCSD-64757	SampType: LCSD	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: LCSS02	Batch ID: 64757	RunNo: 85069							
Prep Date: 12/28/2021	Analysis Date: 1/11/2022	SeqNo: 2993320	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0023		0.002500		93.3	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.2	36.6	84.1	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Estimated value
- 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
- PQL Practical Quantitative Limit
- RL Reporting Limit
- S % Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: LCSD-64757	SampType: LCSD	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: LCSS02	Batch ID: 64757	RunNo: 85069							
Prep Date: 12/28/2021	Analysis Date: 1/11/2022	SeqNo: 2983321	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0024		0.002500		94.7	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.7	36.6	64.1	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79
21-Jan-22

Client: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: 100ng lcs	SampType: LCS	TestCode: TCLP Volatiles by 8260B
Client ID: LCSW	Batch ID: T84811	RunNo: 84811
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2983267 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.017	0.00023	0.02000	0	86.5	70	130			
1,1-Dichloroethene	0.017	0.00020	0.02000	0	85.8	70	130			
Trichloroethene (TCE)	0.017	0.00020	0.02000	0	82.9	70	130			
Chlorobenzene	0.016	0.00016	0.02000	0	80.3	70	130			
Surr: 1,2-Dichloroethane-d4	0.0094		0.01000		94.4	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.0095		0.01000		95.0	70	130			
Surr: Toluene-d8	0.0093		0.01000		92.7	70	130			

Sample ID: mb	SampType: MBLK	TestCode: TCLP Volatiles by 8260B
Client ID: PBW	Batch ID: T84811	RunNo: 84811
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2983270 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0090		0.01000		90.0	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		101	70	130			
Surr: Dibromofluoromethane	0.0094		0.01000		94.3	70	130			
Surr: Toluene-d8	0.0094		0.01000		93.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112C79**

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-64755**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**							
Client ID: **PBW**	Batch ID: **64755**	RunNo: **84935**							
Prep Date: **12/28/2021**	Analysis Date: **1/5/2022**	SeqNo: **2989261**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	40								E
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		60.0	15	118			
Surr: Phenol-d5	0.091		0.2000		45.7	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		76.6	15	150			
Surr: Nitrobenzene-d5	0.063		0.1000		63.4	15	136			
Surr: 2-Fluorobiphenyl	0.060		0.1000		60.3	15	134			
Surr: 4-Terphenyl-d14	0.11		0.1000		110	15	168			

Sample ID: **LCS-64755**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**							
Client ID: **LCSW**	Batch ID: **64755**	RunNo: **84935**							
Prep Date: **12/28/2021**	Analysis Date: **1/5/2022**	SeqNo: **2989262**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.075	0.00010	0.1000	0	75.5	19	106			
3+4-Methylphenol	0.16	0.00010	0.2000	0	80.5	16.3	112			
2,4-Dinitrotoluene	0.068	0.00010	0.1000	0	67.8	15	99.6			
Hexachlorobenzene	0.088	0.00010	0.1000	0	88.4	41.8	111			
Hexachlorobutadiene	0.057	0.00010	0.1000	0	57.1	15	91.5			
Hexachloroethane	0.066	0.00010	0.1000	0	65.5	15	87.5			
Nitrobenzene	0.072	0.00010	0.1000	0	71.8	19.3	114			
Pentachlorophenol	0.083	0.00010	0.1000	0	82.5	29	103			
Pyridine	0.023	0.00010	0.1000	0	23.0	15	92.6			E
2,4,5-Trichlorophenol	0.087	0.00010	0.1000	0	87.0	25.2	114			
2,4,6-Trichlorophenol	0.078	0.00010	0.1000	0	78.1	25.7	112			
Cresols, Total	0.24	0.00010	0.3000	0	78.9	15	145			
Surr: 2-Fluorophenol	0.13		0.2000		63.0	15	118			
Surr: Phenol-d5	0.10		0.2000		49.9	15	92.9			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		91.2	15	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: LCS-64755	SampType: LCS	TestCode: EPA Method 8270C TCLP							
Client ID: LCSW	Batch ID: 64755	RunNo: 84935							
Prep Date: 12/28/2021	Analysis Date: 1/5/2022	SeqNo: 2969262	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.076		0.1000		75.7	15	136			
Surr: 2-Fluorobiphenyl	0.078		0.1000		78.0	15	134			
Surr: 4-Terphenyl-d14	0.12		0.1000		122	15	168			

Sample ID: 2112C79-001BMS	SampType: MS	TestCode: EPA Method 8270C TCLP							
Client ID: WDW-1,2,3 & 4 Effu	Batch ID: 64755	RunNo: 84935							
Prep Date: 12/28/2021	Analysis Date: 1/5/2022	SeqNo: 2969264	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.10	0.00020	0.1000	0.01601	85.0	15.8	101			D
3+4-Methylphenol	0.18	0.00020	0.2000	0.02832	79.2	16.9	97.9			D
2,4-Dinitrotoluene	0.059	0.00020	0.1000	0	59.5	20.1	90.5			D
Hexachlorobenzene	0.085	0.00020	0.1000	0	84.9	34	108			D
Hexachlorobutadiene	0.061	0.00020	0.1000	0	61.4	15	99.7			D
Hexachloroethane	0.071	0.00020	0.1000	0	70.7	15	86.4			D
Nitrobenzene	0.071	0.00020	0.1000	0	70.9	15	109			D
Pentachlorophenol	ND	0.00020	0.1000	0	0	15	130			SD
Pyridine	0.051	0.00020	0.1000	0	50.7	15	82			ED
2,4,5-Trichlorophenol	0.0052	0.00020	0.1000	0	5.25	28.1	105			SD
2,4,6-Trichlorophenol	0.0048	0.00020	0.1000	0	4.76	21.5	110			SD
Cresols, Total	0.35	0.00020	0.3000	0.04232	102	15	127			D
Surr: 2-Fluorophenol	0.0083		0.2000		4.13	15	118			SD
Surr: Phenol-d5	0.049		0.2000		24.5	15	82.9			D
Surr: 2,4,6-Tribromophenol	0.010		0.2000		5.07	15	150			SD
Surr: Nitrobenzene-d5	0.078		0.1000		78.0	15	136			D
Surr: 2-Fluorobiphenyl	0.079		0.1000		78.8	15	134			D
Surr: 4-Terphenyl-d14	0.11		0.1000		107	15	168			D

Sample ID: 2112C79-001BMSD	SampType: MSD	TestCode: EPA Method 8270C TCLP							
Client ID: WDW-1,2,3 & 4 Effu	Batch ID: 64755	RunNo: 84935							
Prep Date: 12/28/2021	Analysis Date: 1/5/2022	SeqNo: 2969265	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.086	0.00020	0.1000	0.01601	69.9	15.8	101	16.2	20	D
3+4-Methylphenol	0.14	0.00020	0.2000	0.02832	55.7	16.9	97.9	29.1	20	RD
2,4-Dinitrotoluene	0.063	0.00020	0.1000	0	62.8	20.1	90.5	5.42	20	D
Hexachlorobenzene	0.092	0.00020	0.1000	0	92.3	34	108	8.35	20	D
Hexachlorobutadiene	0.059	0.00020	0.1000	0	59.0	15	99.7	3.68	20	D
Hexachloroethane	0.067	0.00020	0.1000	0	67.2	15	86.4	5.18	20	D
Nitrobenzene	0.072	0.00020	0.1000	0	71.7	15	109	1.12	20	D

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: 2112C79-001BMSD SampType: MSD TestCode: EPA Method 8270C TCLP

Client ID: WDW-1,2,3 & 4 Efflu Batch ID: 64755 RunNo: 84836

Prep Date: 12/28/2021 Analysis Date: 1/5/2022 SeqNo: 2939285 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	ND	0.00020	0.1000	0	0	15	130	0	20	SD
Pyridine	0.049	0.00020	0.1000	0	48.8	15	82	4.15	20	ED
2,4,5-Trichlorophenol	0.0021	0.00020	0.1000	0	2.09	28.1	105	86.2	20	RSD
2,4,6-Trichlorophenol	0.0035	0.00020	0.1000	0	3.52	21.5	110	30.0	20	RSD
Cresols, Total	0.26	0.00020	0.3000	0.04232	74.0	15	127	27.0	20	RD
Surr: 2-Fluorophenol	0.0028		0.2000		1.41	15	118	0	0	SD
Surr: Phenol-d5	0.030		0.2000		15.1	15	92.9	0	0	D
Surr: 2,4,6-Tribromophenol	0.0062		0.2000		3.08	15	160	0	0	SD
Surr: Nitrobenzene-d5	0.073		0.1000		72.8	15	138	0	0	D
Surr: 2-Fluorobiphenyl	0.078		0.1000		77.8	15	134	0	0	D
Surr: 4-Terphenyl-d14	0.11		0.1000		109	15	166	0	0	D

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Estimated value
- 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
- PQL Practical Quantitative Limit
- RL Reporting Limit
- S % Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: lcs-1 99.3u9 uC	SampType: lcs	TestCode: SM2510B: Specific Conductance							
Client ID: LCSW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982430	Units: µmhos/cm						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.30	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79
21-Jan-22

Client: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: MB-64706	SampType: MBLK	TestCode: EPA Method 7470A: Mercury							
Client ID: PBW	Batch ID: 64706	RunNo: 84787							
Prep Date: 12/23/2021	Analysis Date: 12/27/2021	SeqNo: 2982004	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-64706	SampType: LCSLL	TestCode: EPA Method 7470A: Mercury							
Client ID: BatchQC	Batch ID: 64706	RunNo: 84787							
Prep Date: 12/23/2021	Analysis Date: 12/27/2021	SeqNo: 2982005	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00017	0.00020	0.0001501	0	115	50	150			J

Sample ID: LCS-64706	SampType: LCS	TestCode: EPA Method 7470A: Mercury							
Client ID: LCSW	Batch ID: 64706	RunNo: 84787							
Prep Date: 12/23/2021	Analysis Date: 12/27/2021	SeqNo: 2982006	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	98.3	85	115			

Sample ID: 2112C79-001EMS	SampType: MS	TestCode: EPA Method 7470A: Mercury							
Client ID: WDW-1,2,3 & 4 Effu	Batch ID: 64706	RunNo: 84787							
Prep Date: 12/23/2021	Analysis Date: 12/27/2021	SeqNo: 2982150	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.0010	0.005000	0	0	75	125			S

Sample ID: 2112C79-001EMSD	SampType: MSD	TestCode: EPA Method 7470A: Mercury							
Client ID: WDW-1,2,3 & 4 Effu	Batch ID: 64706	RunNo: 84787							
Prep Date: 12/23/2021	Analysis Date: 12/27/2021	SeqNo: 2982151	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.0010	0.005000	0	0	75	125	0	20	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: PBW	Batch ID: A84757	RunNo: 84757							
Prep Date:	Analysis Date: 12/22/2021	SeqNo: 2980772	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: LCSW	Batch ID: A84757	RunNo: 84757							
Prep Date:	Analysis Date: 12/22/2021	SeqNo: 2980774	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	47	1.0	50.00	0	94.0	80	120			
Magnesium	47	1.0	50.00	0	93.4	80	120			
Potassium	46	1.0	50.00	0	92.8	80	120			
Sodium	46	1.0	50.00	0	92.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

31-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: MB-64703	SampType: MBLK	TestCode: EPA 6010B: Total Recoverable Metals							
Client ID: PBW	Batch ID: 64703	RunNo: 84926							
Prep Date: 12/22/2021	Analysis Date: 1/4/2022	SeqNo: 2969856	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.030								
Barium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: LCS-64703	SampType: LCS	TestCode: EPA 6010B: Total Recoverable Metals							
Client ID: LCSW	Batch ID: 64703	RunNo: 84926							
Prep Date: 12/22/2021	Analysis Date: 1/4/2022	SeqNo: 2969863	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.030	0.5000	0	89.3	80	120			
Barium	0.44	0.0020	0.5000	0	87.2	80	120			
Chromium	0.40	0.0060	0.5000	0	80.0	80	120			
Silver	0.091	0.0050	0.1000	0	90.8	80	120			

Sample ID: LCSD-64703	SampType: LCSD	TestCode: EPA 6010B: Total Recoverable Metals							
Client ID: LCSS02	Batch ID: 64703	RunNo: 84926							
Prep Date: 12/22/2021	Analysis Date: 1/4/2022	SeqNo: 2969864	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.44	0.030	0.5000	0	88.4	80	120	0.960	20	
Barium	0.44	0.0020	0.5000	0	87.1	80	120	0.0742	20	
Chromium	0.41	0.0060	0.5000	0	81.1	80	120	1.36	20	
Silver	0.090	0.0050	0.1000	0	90.3	80	120	0.388	20	

Sample ID: MB-64703	SampType: MBLK	TestCode: EPA 6010B: Total Recoverable Metals							
Client ID: PBW	Batch ID: 64703	RunNo: 84926							
Prep Date: 12/22/2021	Analysis Date: 1/4/2022	SeqNo: 2969221	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020								
Selenium	ND	0.050								

Sample ID: LCS-64703	SampType: LCS	TestCode: EPA 6010B: Total Recoverable Metals							
Client ID: LCSW	Batch ID: 64703	RunNo: 84926							
Prep Date: 12/22/2021	Analysis Date: 1/4/2022	SeqNo: 2969223	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.0020	0.5000	0	96.6	80	120			
Selenium	0.49	0.050	0.5000	0	97.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112C79**

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **LCSD-64703**	SampType: **LCSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSS02**	Batch ID: **64703**	RunNo: **84926**
Prep Date: **12/22/2021**	Analysis Date: **1/4/2022**	SeqNo: **2989224** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.0020	0.5000	0	95.9	80	120	0.745	20	
Selenium	0.49	0.050	0.5000	0	97.7	80	120	0.211	20	

Sample ID: **MB-64703**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **64703**	RunNo: **85207**
Prep Date: **12/22/2021**	Analysis Date: **1/12/2022**	SeqNo: **2997505** Units: **mg/L**

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

Sample ID: **LCS-64703**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **64703**	RunNo: **85207**
Prep Date: **12/22/2021**	Analysis Date: **1/12/2022**	SeqNo: **2997517** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.41	0.020	0.5000	0	82.0	80	120			

Sample ID: **LCSD-64703**	SampType: **LCSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSS02**	Batch ID: **64703**	RunNo: **85207**
Prep Date: **12/22/2021**	Analysis Date: **1/12/2022**	SeqNo: **2997518** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.42	0.020	0.5000	0	83.9	80	120	2.38	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: mb-1 alk	SampType: mblk	TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982466	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 alk	SampType: lcs	TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982467	Units: mg/L CaCO3						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	74.80	20.00	80.00	0	93.5	90	110			

Sample ID: mb-2 alk	SampType: mblk	TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982479	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-2 alk	SampType: lcs	TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982480	Units: mg/L CaCO3						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.32	20.00	80.00	0	94.2	90	110			

Sample ID: mb-3 alk	SampType: mblk	TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982502	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-3 alk	SampType: lcs	TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R84794	RunNo: 84794							
Prep Date:	Analysis Date: 12/27/2021	SeqNo: 2982503	Units: mg/L CaCO3						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	74.96	20.00	80.00	0	93.7	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: 2112C79-001CDUP	SampType: DUP	TestCode: Specific Gravity							
Client ID: WDW-1,2,3 & 4 Efflu	Batch ID: R85017	RunNo: 85017							
Prep Date:	Analysis Date: 1/7/2022	SeqNo: 2991233	Units:						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.001	0						0.0999	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112C79

21-Jan-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: MB-64762	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 64762	RunNo: 84892							
Prep Date: 12/28/2021	Analysis Date: 12/30/2021	SeqNo: 2966299	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-64762	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 64762	RunNo: 84892							
Prep Date: 12/28/2021	Analysis Date: 12/30/2021	SeqNo: 2966300	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	80	120			

Qualifiers:

- *: Value exceeds Maximum Contaminant Level.
- B: Analyte detected in the associated Method Blank
- D: Sample Diluted Due to Matrix
- E: Estimated value
- 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
- PQL: Practical Quantitative Limit
- RL: Reporting Limit
- S: % Recovery outside of range due to dilution or matrix interference

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Navajo Refining Work Order Number: 2112C79 RcptNo: 1

Received By: Isaiah Ortiz 12/22/2021 7:26:00 AM I Ortiz
Completed By: Sean Livingston 12/22/2021 8:57:18 AM S Livingston
Reviewed By: HPA 12/22/21

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(a)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(a)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☑ No ☑ NA ☐ see exception
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 3 3 (or 12 unless noted)
Adjusted? yes
Checked by: JN 12/22/21

Special Handling (if applicable)

15. 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:

16. Additional remarks: 0.5ml of HNO3 was added to sample 001E for pH. JN 12/22/21

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5	Good				

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Navajo Refining Co.

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

Phone #: 575-748-3311

email or Fax#: 575-746-5451

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

Turn-Around Time: Standard X Rush

Project Name: Quarterly WDW-1, 2, 3 & 4 Inj Well

Project #: P.O. # 251641

Project Manager: Randy Dade

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.5°+0

HEAL No. 2112C79

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Specific Gravity, HCO3, CO3, Cl, SO4, TDS, pH, cond., Fl, Cation/anion bal., Br, Eh40	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	Chlordane 8081A
12/21/21	10:15	Liquid	WDW-1, 2, 3 & 4 Effluent	3	Neat/H2SO4	001	X						X	
12/21/21	10:15	Liquid	WDW-1, 2, 3 & 4 Effluent	1	HNO3						X	X		
12/21/21	10:15	Liquid	WDW-1, 2, 3 & 4 Effluent	3	HCL			X						
12/21/21	10:15	Liquid	WDW-1, 2, 3 & 4 Effluent	2	Neat				X					
12/21/21	10:15	Liquid	WDW-1, 2, 3 & 4 Effluent	2	Neat					X				
12/21/21	10:15	Liquid	WDW-1, 2, 3 & 4 Effluent	1	Neat									x
			Trip Blank per sample bottle 12/22/21			002								

Date	Time	Relinquished by	Received by	Date	Time
12/21/21	11:30	Brady Hubbard / Brady Hubbard	[signature]	12/21/21	1130
12/21/21	1900	[signature]	[signature] courier	12/22/21	0725

Remarks: Send results to Scott Denton, Mike Holder, and Randy Dade.

pH 6.97, 34.8C

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

May 13, 2022

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

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2203E91

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/29/2022 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: 2203E91
Date: 5/13/2022

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order 2203E91
Date Reported: 5/13/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 3/28/2022 9:35:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: JME	
Chlordane	ND	0.00050	0.030		mg/L	1	4/8/2022 11:41:10 AM	66537
Endrin	ND	0.000049	0.020		mg/L	1	4/8/2022 11:41:10 AM	66537
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	4/8/2022 11:41:10 AM	66537
Heptachlor	ND	0.000041	0.0080		mg/L	1	4/8/2022 11:41:10 AM	66537
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	4/8/2022 11:41:10 AM	66537
Methoxychlor	ND	0.000048	10		mg/L	1	4/8/2022 11:41:10 AM	66537
Toxaphene	ND	0.00050	0.50		mg/L	1	4/8/2022 11:41:10 AM	66537
Surr: Decachlorobiphenyl	87.1	0	73-119		%Rec	1	4/8/2022 11:41:10 AM	66537
Surr: Tetrachloro-m-xylene	117	0	36.6-84.1	S	%Rec	1	4/8/2022 11:41:10 AM	66537
EPA METHOD 300.0: ANIONS							Analyst: CAS	
Fluoride	35	2.0	5.0	*	mg/L	50	4/8/2022 10:49:57 AM	R87132
Chloride	720	12	25	*	mg/L	50	4/8/2022 10:49:57 AM	R87132
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	3/29/2022 4:27:18 PM	R86833
Bromide	0.81	0.25	0.50		mg/L	5	3/29/2022 4:27:18 PM	R86833
Nitrogen, Nitrate (As N)	0.75	0.050	0.50		mg/L	5	3/29/2022 4:27:18 PM	R86833
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	3/29/2022 4:27:18 PM	R86833
Sulfate	2300	12	25	*	mg/L	50	4/8/2022 10:49:57 AM	R87132
EPA METHOD 6020A: TCLP METALS							Analyst: DBK	
Arsenic	0.0078	0.0050	5.0	J	mg/L	10	3/30/2022 2:59:41 PM	66484
Lead	ND	0.0050	5.0		mg/L	10	3/30/2022 2:59:41 PM	66484
Selenium	0.087	0.0050	1.0	J	mg/L	10	3/30/2022 2:59:41 PM	66484
EPA METHOD 7470A: MERCURY							Analyst: VP	
Mercury	0.00094	0.000091	0.020	J	mg/L	1	3/30/2022 2:32:07 PM	66490
EPA METHOD 6010B: DISSOLVED METALS							Analyst: JLF	
Calcium	480	0.58	10		mg/L	10	4/5/2022 6:20:12 PM	A87057
Magnesium	140	0.34	10		mg/L	10	4/5/2022 6:20:12 PM	A87057
Potassium	130	2.1	10		mg/L	10	4/5/2022 6:20:12 PM	A87057
Sodium	640	4.2	10		mg/L	10	4/8/2022 12:49:55 PM	A87128
EPA 6010B: TCLP METALS							Analyst: JLF	
Barium	0.041	0.0053	100	J	mg/L	5	4/5/2022 3:54:17 PM	66484
Cadmium	ND	0.0058	1.0		mg/L	5	4/5/2022 3:54:17 PM	66484
Chromium	ND	0.0084	5.0		mg/L	5	4/5/2022 3:54:17 PM	66484
Silver	0.0068	0.0083	5.0	J	mg/L	5	4/5/2022 3:54:17 PM	66484
EPA METHOD 8270C TCLP							Analyst: DAM	
2-Methylphenol	ND	0.00051	200		mg/L	1	4/13/2022 11:15:48 PM	66542
3+4-Methylphenol	ND	0.00045	200		mg/L	1	4/13/2022 11:15:48 PM	66542

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order 2203E91
Date Reported: 5/13/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 3/28/2022 9:35:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	4/13/2022 11:15:48 PM	66542
Hexachlorobenzene	ND	0.00068	0.13		mg/L	1	4/13/2022 11:15:48 PM	66542
Hexachlorobutadiene	ND	0.00062	0.50		mg/L	1	4/13/2022 11:15:48 PM	66542
Hexachloroethane	ND	0.00045	3.0		mg/L	1	4/13/2022 11:15:48 PM	66542
Nitrobenzene	ND	0.00051	2.0		mg/L	1	4/13/2022 11:15:48 PM	66542
Pentachlorophenol	ND	0.00059	100		mg/L	1	4/13/2022 11:15:48 PM	66542
Pyridine	ND	0.00093	5.0		mg/L	1	4/13/2022 11:15:48 PM	66542
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	4/13/2022 11:15:48 PM	66542
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	4/13/2022 11:15:48 PM	66542
Cresols, Total	ND	0.00051	200		mg/L	1	4/13/2022 11:15:48 PM	66542
Surr: 2-Fluorophenol	46.8	0	15-118		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: Phenol-d5	36.0	0	15-92.9		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: 2,4,6-Tribromophenol	60.4	0	15-150		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: Nitrobenzene-d5	63.3	0	15-135		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: 2-Fluorobiphenyl	51.4	0	15-134		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: 4-Terphenyl-d14	74.5	0	15-168		%Rec	1	4/13/2022 11:15:48 PM	66542
TCLP VOLATILES BY 8260B							Analyst: CCM	
Benzene	ND	0.00023	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
2-Butanone	ND	0.0020	200		mg/L	200	4/6/2022 9:14:00 PM	T87039
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
Chloroform	ND	0.00013	6.0		mg/L	200	4/6/2022 9:14:00 PM	T87039
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/6/2022 9:14:00 PM	T87039
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/6/2022 9:14:00 PM	T87039
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/6/2022 9:14:00 PM	T87039
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/6/2022 9:14:00 PM	T87039
Chlorobenzene	ND	0.00016	100		mg/L	200	4/6/2022 9:14:00 PM	T87039
Surr: 1,2-Dichloroethane-d4	104	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
Surr: 4-Bromofluorobenzene	99.3	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
Surr: Dibromofluoromethane	105	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
Surr: Toluene-d8	95.6	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
SM2510B: SPECIFIC CONDUCTANCE							Analyst: LRN	
Conductivity	8300	10	10		µmhos/c	1	4/5/2022 1:59:25 PM	R87025
SM4500-H+B / 9040C: PH							Analyst: LRN	
pH	7.72			H	pH units	1	4/5/2022 1:59:25 PM	R87025
SM2320B: ALKALINITY							Analyst: LRN	

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Estimated value
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order 2203E91
Date Reported: 5/13/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 3/28/2022 9:35:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: LRN	
Bicarbonate (As CaCO3)	477.1	20.00	20.00		mg/L Ca	1	4/5/2022 1:59:25 PM	R87028
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/5/2022 1:59:25 PM	R87028
Total Alkalinity (as CaCO3)	477.1	20.00	20.00		mg/L Ca	1	4/5/2022 1:59:25 PM	R87028
SPECIFIC GRAVITY							Analyst: CAS	
Specific Gravity	0.9988	0	0			1	4/11/2022 4:41:00 PM	R87158
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS	
Total Dissolved Solids	4660	100	100	*D	mg/L	1	4/7/2022 11:00:00 AM	66599
SM 2540D: TSS							Analyst: KS	
Suspended Solids	14	4.0	4.0		mg/L	1	4/5/2022 10:39:00 AM	66600

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Analytical Report
Lab Order 2203E91
Date Reported: 5/13/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City of POTW
Collection Date: 3/28/2022 10:05:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							**Analyst: JME**	
Chlordane	ND	0.00060	0.030		mg/L	1	4/8/2022 12:07:30 PM	66537
Endrin	ND	0.000049	0.020		mg/L	1	4/8/2022 12:07:30 PM	66537
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	4/8/2022 12:07:30 PM	66537
Heptachlor	ND	0.000041	0.0080		mg/L	1	4/8/2022 12:07:30 PM	66537
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	4/8/2022 12:07:30 PM	66537
Methoxychlor	ND	0.000048	10		mg/L	1	4/8/2022 12:07:30 PM	66537
Toxaphene	ND	0.00050	0.50		mg/L	1	4/8/2022 12:07:30 PM	66537
Surr: Decachlorobiphenyl	97.6	0	73-119		%Rec	1	4/8/2022 12:07:30 PM	66537
Surr: Tetrachloro-m-xylene	73.1	0	36.6-84.1		%Rec	1	4/8/2022 12:07:30 PM	66537
EPA METHOD 300.0: ANIONS							**Analyst: CAS**	
Fluoride	1.1	0.040	0.10		mg/L	1	4/8/2022 11:02:18 AM	R87132
Chloride	100	5.0	10		mg/L	20	3/29/2022 5:29:21 PM	R86833
Nitrogen, Nitrite (As N)	0.049	0.0053	0.10	J	mg/L	1	3/29/2022 4:52:07 PM	R86833
Bromide	ND	0.060	0.10		mg/L	1	3/29/2022 4:52:07 PM	R86833
Nitrogen, Nitrate (As N)	4.9	0.010	0.10		mg/L	1	3/29/2022 4:52:07 PM	R86833
Phosphorus, Orthophosphate (As P)	2.0	0.25	0.50		mg/L	1	3/29/2022 4:52:07 PM	R86833
Sulfate	740	5.0	10	*	mg/L	20	3/29/2022 5:29:21 PM	R86833
EPA METHOD 6020A: TCLP METALS							**Analyst: DBK**	
Arsenic	ND	0.0050	5.0		mg/L	10	3/30/2022 3:04:15 PM	66484
Lead	ND	0.0050	5.0		mg/L	10	3/30/2022 3:04:15 PM	66484
Selenium	ND	0.0050	1.0		mg/L	10	3/30/2022 3:04:15 PM	66484
EPA METHOD 7470A: MERCURY							**Analyst: VP**	
Mercury	ND	0.000091	0.020		mg/L	1	3/30/2022 2:34:11 PM	66490
EPA METHOD 6010B: DISSOLVED METALS							**Analyst: JLF**	
Calcium	220	0.58	10		mg/L	10	4/5/2022 6:23:18 PM	A87057
Magnesium	84	0.034	1.0		mg/L	1	4/5/2022 6:46:41 PM	A87057
Potassium	1.9	0.21	1.0		mg/L	1	4/5/2022 6:46:41 PM	A87057
Sodium	81	2.1	5.0		mg/L	5	4/8/2022 12:52:47 PM	A87128
EPA 6010B: TCLP METALS							**Analyst: JLF**	
Barium	0.022	0.0011	100	J	mg/L	1	4/5/2022 7:11:20 PM	66484
Cadmium	ND	0.0012	1.0		mg/L	1	4/5/2022 7:11:20 PM	66484
Chromium	0.0024	0.0017	5.0	J	mg/L	1	4/5/2022 7:11:20 PM	66484
Silver	0.0032	0.0013	5.0	J	mg/L	1	4/5/2022 7:11:20 PM	66484
EPA METHOD 8270C TCLP							**Analyst: DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	4/13/2022 11:56:36 PM	66542
3+4-Methylphenol	ND	0.00046	200		mg/L	1	4/13/2022 11:56:36 PM	66542

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Lab Order 2203E91
Date Reported: 5/13/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City of POTW
Collection Date: 3/28/2022 10:05:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	4/13/2022 11:56:36 PM	66542
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	4/13/2022 11:56:36 PM	66542
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	4/13/2022 11:56:36 PM	66542
Hexachloroethane	ND	0.00045	3.0		mg/L	1	4/13/2022 11:56:36 PM	66542
Nitrobenzene	ND	0.00051	2.0		mg/L	1	4/13/2022 11:56:36 PM	66542
Pentachlorophenol	ND	0.00059	100		mg/L	1	4/13/2022 11:56:36 PM	66542
Pyridine	ND	0.00093	5.0		mg/L	1	4/13/2022 11:56:36 PM	66542
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	4/13/2022 11:56:36 PM	66542
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	4/13/2022 11:56:36 PM	66542
Cresols, Total	ND	0.00051	200		mg/L	1	4/13/2022 11:56:36 PM	66542
Surr: 2-Fluorophenol	58.8	0	15-116		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: Phenol-d5	43.1	0	15-92.9		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: 2,4,6-Tribromophenol	61.6	0	15-150		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: Nitrobenzene-d5	70.6	0	15-138		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: 2-Fluorobiphenyl	59.1	0	15-134		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: 4-Terphenyl-d14	86.0	0	16-168		%Rec	1	4/13/2022 11:56:36 PM	66542
TCLP VOLATILES BY 8260B							Analyst: CCM	
Benzene	ND	0.00023	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
2-Butanone	ND	0.0020	200		mg/L	200	4/6/2022 9:37:00 PM	T87039
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
Chloroform	ND	0.00013	6.0		mg/L	200	4/6/2022 9:37:00 PM	T87039
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/6/2022 9:37:00 PM	T87039
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/6/2022 9:37:00 PM	T87039
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/6/2022 9:37:00 PM	T87039
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/6/2022 9:37:00 PM	T87039
Chlorobenzene	ND	0.00016	100		mg/L	200	4/6/2022 9:37:00 PM	T87039
Surr: 1,2-Dichloroethane-d4	108	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
Surr: 4-Bromofluorobenzene	97.5	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
Surr: Dibromofluoromethane	107	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
Surr: Toluene-d8	96.7	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
SM2510B: SPECIFIC CONDUCTANCE							Analyst: LRN	
Conductivity	1700	10	10		µmhos/c	1	4/5/2022 2:19:18 PM	R87028
SM4500-H+B / 9040C: PH							Analyst: LRN	
pH	7.29			H	pH units	1	4/5/2022 2:19:18 PM	R87028
SM2320B: ALKALINITY							Analyst: LRN	

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Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: LRN	
Bicarbonate (As CaCO3)	35.00	20.00	20.00		mg/L Ca	1	4/5/2022 2:19:16 PM	R87025
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/5/2022 2:19:16 PM	R87025
Total Alkalinity (as CaCO3)	35.00	20.00	20.00		mg/L Ca	1	4/5/2022 2:19:16 PM	R87025
SPECIFIC GRAVITY							Analyst: CAS	
Specific Gravity	0.9900	0	0			1	4/11/2022 4:41:00 PM	R87156
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS	
Total Dissolved Solids	1380	40.0	40.0	*D	mg/L	1	4/7/2022 11:00:00 AM	66699
SM 2540D: TSS							Analyst: KS	
Suspended Solids	9.0	4.0	4.0		mg/L	1	4/5/2022 10:33:00 AM	66600

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	WDW-1,2,3 & 4 Effluent 2203E91-001		CTB to City of POTW 2203E91-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	640	27.84	81	3.52								
Potassium	130	3.32	1.9	0.05								
Calcium	460	22.95	220	10.98								
Magnesium	140	11.52	64	5.27								
Total Cations		65.64		19.82								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2300	47.89	740	15.41								
Chloride	720	20.31	100	2.82								
Bicarbonate (CaCO3)	477.1	9.53	35.00	0.70								
Carbonate (CaCO3)												
Phosphate (P)			2.0	0.19								
Nitrite (N)												
Nitrate (N)	0.75	0.05	4.9	0.35	-							
Fluoride	35	1.84	1.1	0.06								
Bromide	0.61	0.01										
Total Anions		79.63		19.53								
Elect. Cond. (µMhos/cm)	6300		1700									
CATION/ANION RATIO		0.82		1.01								
% Difference		10		1								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4660		1380									
TDS (calculated)	4715		1257									
Ratio meas TDS:calc TDS		1.0		1.1								
Ratio Meas. TDS:EC		0.74		0.81								
Ratio Calc. TDS:EC		0.75		0.74								
Ratio of anion sum:EC		1.3		1.1								
Ratio of cation sum:EC		1.0		1.2								

* Analyte not detected (below method detection limit).
** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.
GENERALLY ACCEPTED RANGES
Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%
Ratio measured TDS:calculated TDS – 1.0-1.2. Ratio Calculated TDS:EC – 0.55-0.7. Ratio Measured TDS:EC–0.55-0.7. Ratio of anion sum:EC – 0.9-1.1.
Ratio of cation sum:EC – 0.9-1.1

ANALYTICAL REPORT

April 07, 2022

Cp Tc Ss Cn Sr Qc Gl Al Sc

Hall Environmental Analysis Laboratory

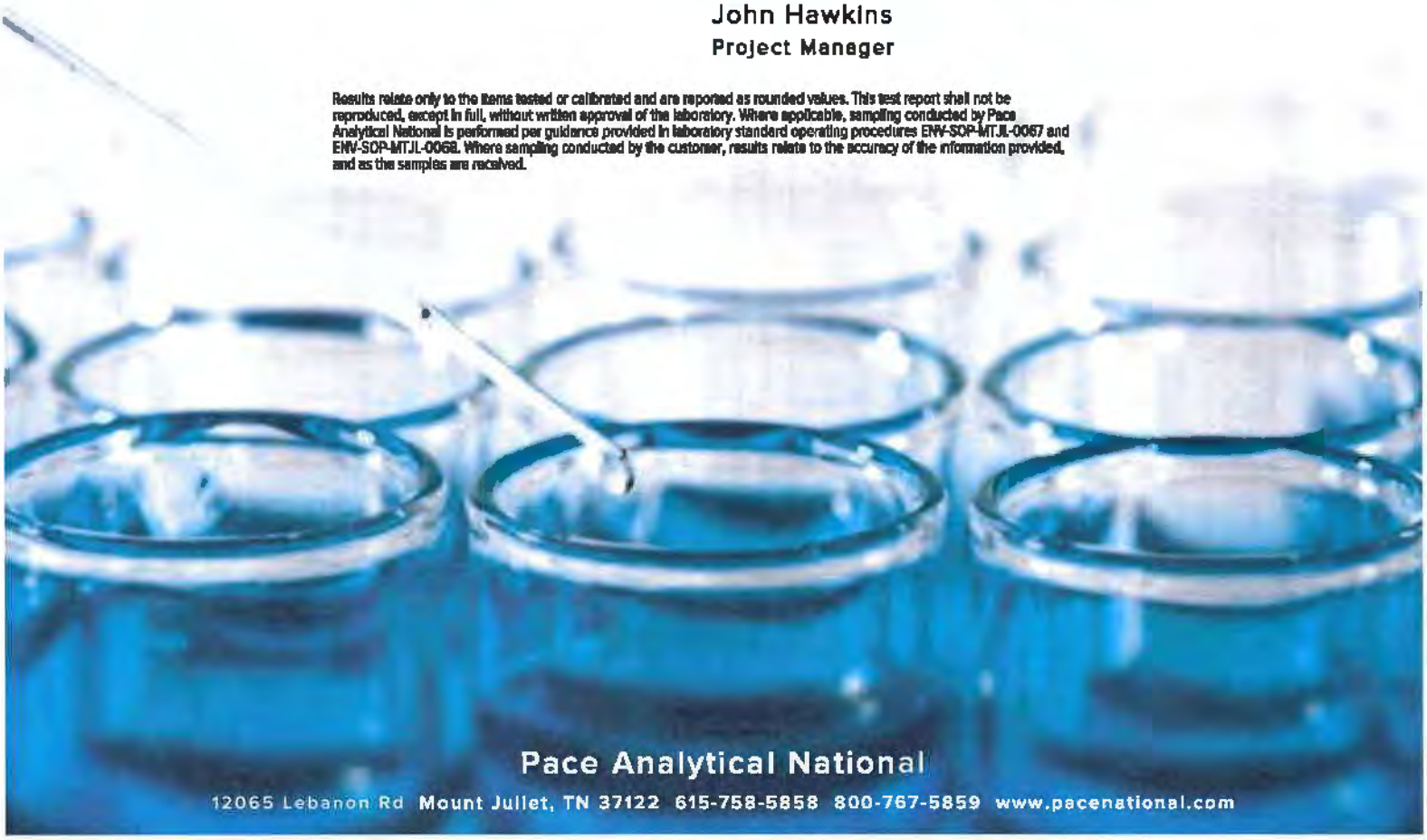
Sample Delivery Group:	L1476728
Samples Received:	03/30/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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SAMPLE SUMMARY

2203E91-001F WDW-1,2,3 & 4 EFFLUENT L1476728-01 Waste

Collected by | Collected date/time 03/28/22 09:35 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1841054	1	03/31/22 12:11	03/31/22 12:11	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1842932	1	04/05/22 04:17	04/06/22 13:13	HLA	Mt. Juliet, TN

2203E91-001G WDW-1,2,3 & 4 EFFLUENT L1476728-02 GW

Collected by | Collected date/time 03/28/22 09:35 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1840372	1	03/31/22 01:58	03/31/22 01:58	ARD	Mt. Juliet, TN

2203E91-001H WDW-1,2,3 & 4 EFFLUENT L1476728-03 GW

Collected by | Collected date/time 03/28/22 09:35 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1841262	1	03/31/22 17:11	04/01/22 10:12	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1840723	1	03/30/22 20:33	03/30/22 20:33	TWF	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1842212	1	04/05/22 12:00	04/05/22 12:00	GI	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1840943	1	03/31/22 01:00	03/31/22 01:00	WOS	Mt. Juliet, TN

2203E91-002F CTB TO CITY OF POTW L1476728-04 Waste

Collected by | Collected date/time 03/28/22 10:05 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1841054	1	03/31/22 12:11	03/31/22 12:11	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1842932	1	04/05/22 04:17	04/06/22 14:11	AO	Mt. Juliet, TN

2203E91-002G CTB TO CITY OF POTW L1476728-05 GW

Collected by | Collected date/time 03/28/22 10:05 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1840372	1	03/31/22 01:58	03/31/22 01:58	ARD	Mt. Juliet, TN

2203E91-002H CTB TO CITY OF POTW L1476728-06 GW

Collected by | Collected date/time 03/28/22 10:05 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1841262	1	03/31/22 17:11	04/01/22 10:13	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1840723	1	03/30/22 20:34	03/30/22 20:34	TWF	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1843431	1	04/06/22 11:38	04/06/22 11:38	SCM	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1840943	1	03/31/22 01:00	03/31/22 01:00	WOS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John V Hawkins

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

2203E91-001F WDW-1,2,3 & 4 EFFLUENT
Collected date/time: 03/28/22 09:35

SAMPLE RESULTS - 01
L1476728

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		3/31/2022 12:11:40 PM	WG1841054
Fluid	1		3/31/2022 12:11:40 PM	WG1841054
Initial pH	N/A		3/31/2022 12:11:40 PM	WG1841054
Final pH	N/A		3/31/2022 12:11:40 PM	WG1841054

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	04/06/2022 13:13	WG1842932
2,4-D	ND		0.00200	10	1	04/06/2022 13:13	WG1842932
(S) 2,4-Dichlorophenyl Acetic Acid	*41.0*		*14.0-158*			*04/06/2022 13:13*	WG1842932

2203E91-001G WDW-1,2,3 & 4 EFFLUENT
Collected date/time: 03/28/22 09:35

SAMPLE RESULTS - 02
L1476728

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	34.9	T8	1	03/31/2022 01:58	WG1840372

2203E91-001H WDW-1,2,3 & 4 EFFLUENT
Collected date/time: 03/28/22 09:35

SAMPLE RESULTS - 03
L1476728

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	0.0103		0.00500	1	04/01/2022 10:12	WG1841262

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		0.0500	1	03/30/2022 20:33	WG1840723

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.47	T8	1	04/05/2022 12:00	WG1842212

Sample Narrative:
L1476728-03 WG1842212: 7.47 at 18.5C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	03/31/2022 01:00	WG1840943

2203E91-002F CTB TO CITY OF POTW
Collected date/time: 03/28/22 10 05

SAMPLE RESULTS - 04
L1476728

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		3/31/2022 12:11:40 PM	WG1841054
Fluid	1		3/31/2022 12:11:40 PM	WG1841054
Initial pH	N/A		3/31/2022 12:11:40 PM	WG1841054
Final pH	N/A		3/31/2022 12:11:40 PM	WG1841054

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	04/06/2022 14:11	WG1842932
2,4-D	ND		0.00200	10	1	04/06/2022 14:11	WG1842932
(S) 2,4-Dichlorophenyl Acetic Acid	*40.6*		*14.0-158*			*04/06/2022 14:11*	WG1842932

2203E91-002G CTB TO CITY OF POTW
Collected date/time: 03/28/22 10:05

SAMPLE RESULTS - 05
L1476728

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	65.8	T8	1	03/31/2022 01:58	WG1840372

2203E91-002H CTB TO CITY OF POTW
Collected date/time: 03/28/22 10:05

SAMPLE RESULTS - 06
L1476728

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	04/01/2022 10:13	WG1841262

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		0.0500	1	03/30/2022 20:34	WG1840723

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.20	TB	1	04/06/2022 11:38	WG1843431

Sample Narrative:
L1476728-06 WG1843431: 7.20 @ 20.55C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	03/31/2022 01:00	WG1840943

1 Cp
2 Tc
3 Ss
4 Cn
Sr
6 Qc
7 Gl
8 Al
9 Sc

WG1840372

Wet Chemistry by Method 2580

QUALITY CONTROL SUMMARY

L1476728-02,05

L1476010-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-17 03/31/22 01:58 • (DUP) R3775877-3 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	190	192	1	2.00		20

L1476010-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-18 03/31/22 01:58 • (DUP) R3775877-4 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	240	240	1	0.600		20

L1476010-19 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-19 03/31/22 01:58 • (DUP) R3775877-5 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	295	294	1	0.900		20

L1476010-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-20 03/31/22 01:58 • (DUP) R3775877-6 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	285	279	1	6.50		20

L1476010-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-21 03/31/22 01:58 • (DUP) R3775877-7 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	292	289	1	3.10		20

L1476010-22 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-22 03/31/22 01:58 • (DUP) R3775877-8 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	291	281	1	9.60		20

WG1840372

Wet Chemistry by Method 2580

QUALITY CONTROL SUMMARY

L1476728-02,05

L1476010-23 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-23 03/31/22 01:58 • (DUP) R3775877-9 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	296	291	1	4.20		20

L1476010-24 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-24 03/31/22 01:58 • (DUP) R3775877-10 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	-36.3	-40.8	1	0.000		20

L1476728-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1476728-02 03/31/22 01:58 • (DUP) R3775877-11 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	34.8	42.7	1	7.80		20

L1476728-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1476728-05 03/31/22 01:58 • (DUP) R3775877-12 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	65.8	68.0	1	2.20		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3775877-1 03/31/22 01:58 • (LCSD) R3775877-2 03/31/22 01:58

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD mV	RPD Limits mV
ORP	108	110	110	102	102	85.0-105			0.300	20

WG1841262

Wet Chemistry by Method 4500 CN E-2016

QUALITY CONTROL SUMMARY

L1476719-01,02

Method Blank (MB)

(MB) R3776480-1 04/01/22 09:57

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Reactive Cyanide	U		0.00180	0.00500

L1476719-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1476719-01 04/01/22 10:04 • (DUP) R3776480-3 04/01/22 10:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Cyanide	ND	ND	1	0.000		20

L1476734-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1476734-01 04/01/22 10:14 • (DUP) R3776480-6 04/01/22 10:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3776480-2 04/01/22 09:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Cyanide	0.100	0.0952	95.2	87.1-120	

L1476720-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1476720-02 04/01/22 10:06 • (MS) R3776480-4 04/01/22 10:09 • (MSD) R3776480-5 04/01/22 10:10

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	0.0394	0.136	0.136	96.6	96.6	1	90.0-110			0.000	20

L1476734-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1476734-02 04/01/22 10:16 • (MS) R3776480-7 04/01/22 10:17 • (MSD) R3776480-8 04/01/22 10:18

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.0897	0.0833	89.7	83.3	1	90.0-110	J6		7.40	20

WG1840723

Wet Chemistry by Method 4500 S2 D-2011

QUALITY CONTROL SUMMARY

L1476728-03,06

Method Blank (MB)

(MB) R3775845-1 03/30/22 20:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3775845-2 03/30/22 20:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.503	101	85.0-115	

L1476728-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1476728-06 03/30/22 20:34 • (MS) R3775845-4 03/30/22 20:38 • (MSD) R3775845-5 03/30/22 20:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	1.00	ND	0.472	0.484	47.2	48.4	1	80.0-120			2.51	20

WG1842212

Wet Chemistry by Method 9040C

QUALITY CONTROL SUMMARY

L1476728-03

Laboratory Control Sample (LCS)

(LCS) R3777702-1 04/05/22 12:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 19.4C

WG1843431

Wet Chemistry by Method 9040C

QUALITY CONTROL SUMMARY

L1476726-06

L1476010-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-17 04/06/22 10:26 • (DUP) R3778150-2 04/06/22 10:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
Corrosivity by pH	7.47	7.49	1	0.267		1

Sample Narrative:
OS: 7.47 @ 19.97C
DUP: 7.49 @ 19.85C

L1476677-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1476677-01 04/06/22 11:25 • (DUP) R3778150-3 04/06/22 11:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		
Corrosivity by pH	7.49	7.51	1	1.07	J3	

Sample Narrative:
OS: 7.49 @ 20.46C
DUP: 7.51 @ 20.50C

Laboratory Control Sample (LCS)

(LCS) R3778150-1 04/06/22 10:21

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.91	99.1	99.0-101	

Sample Narrative:
LCS: 9.91 @ 19.97C

WG1840943

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

L1476728-03,05

L1476517-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1476517-02 03/31/22 01:00 • (DUP) R3776327-3 03/31/22 01:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3776327-1 03/31/22 01:00 • (LCSD) R3776327-2 03/31/22 01:00

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	125	129	98.8	102	96.0-104			3.16	10

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

WG1842932

QUALITY CONTROL SUMMARY

Chlorinated Acid Herbicides (GC) by Method 8151A

L1476728-01,04

Method Blank (MB)

(MB) R3778206-1 04/06/22 10:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	50.8			14.0-158

Laboratory Control Sample (LCS)

(LCS) R3778206-2 04/06/22 10:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0287	57.4	50.0-125	
2,4-D	0.0500	0.0257	51.4	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			47.0	14.0-158	

L1473617-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1473617-01 04/06/22 10:31 • (MS) R3778206-3 04/06/22 10:46 • (MSD) R3778206-4 04/06/22 11:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0240	0.0227	48.0	45.4	1	50.0-125	J6	J6	5.57	20
2,4-D	0.0500	ND	0.0230	0.0216	46.0	43.2	1	50.0-120	J6	J6	6.28	20
(S) 2,4-Dichlorophenyl Acetic Acid					42.0	39.8		14.0-158				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different then 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2976
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C947
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

H009

SUBCONTRACTOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L1476728

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2203E91-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	3/28/2022 9:35:00 AM	1	8151TCLP *RUSH 7 DAY TAT*	01
2	2203E91-001G	WDW-1,2,3 & 4 Effluent	125HDP	Aqueous	3/28/2022 9:35:00 AM	1	ORP *RUSH 7 DAY TAT*	02
3	2203E91-001H	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	3/28/2022 9:35:00 AM	3	RCI *RUSH 7 DAY TAT*	03
4	2203E91-002F	CTB to City of POTW	1LAMGU	Aqueous	3/28/2022 10:05:00 AM	1	8151TCLP *RUSH 7 DAY TAT*	04
5	2203E91-002G	CTB to City of POTW	125HDP	Aqueous	3/28/2022 10:05:00 AM	1	ORP *RUSH 7 DAY TAT*	05
6	2203E91-002H	CTB to City of POTW	500HDPE	Aqueous	3/28/2022 10:05:00 AM	3	RCI *RUSH 7 DAY TAT*	06

Sample Receipt Checklist
COC Seal Present Intact:
COC Signed Accurate:
Bottles arrive intact:
Correct bottles used:
Sufficient volume sent:
RAD Screen <0.5 mR/hr:
If Applicable
VOA Zero Headspace:
Pres.Correct/Check:

1.6+0=1.6 DR 17
5528 5947 9547

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By	Date	Time	Received By	Date	Time
Relinquished By: [signature]	Date: 3/29/2022	Time: 9:43 AM	Received By: [signature]	3/30/22	0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH (circled) Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples: ______ °C   Attempt to Cool ? ______

Comments: ______

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 300.0: Anions						
Client ID: PBW	Batch ID: R86833	RunNo: 86833						
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066895	Units: mg/L					

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

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 300.0: Anions						
Client ID: LCSW	Batch ID: R86833	RunNo: 86833						
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066896	Units: mg/L					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.2	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.7	90	110			
Bromide	2.4	0.10	2.500	0	97.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.9	90	110			
Sulfate	9.4	0.50	10.00	0	93.6	90	110			

Sample ID: 2203E91-002CMS	SampType: MS	TestCode: EPA Method 300.0: Anions						
Client ID: CTB to City of POT	Batch ID: R86833	RunNo: 86833						
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066925	Units: mg/L					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0.04900	92.5	83.4	105			
Bromide	2.4	0.10	2.500	0	97.1	91.2	106			
Phosphorus, Orthophosphate (As P	6.1	0.50	5.000	2.040	80.5	80.1	109			

Sample ID: 2203E91-002CMSD	SampType: MSD	TestCode: EPA Method 300.0: Anions						
Client ID: CTB to City of POT	Batch ID: R86833	RunNo: 86833						
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066926	Units: mg/L					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0.04900	93.1	83.4	105	0.855	20	
Bromide	2.4	0.10	2.500	0	97.9	91.2	106	0.911	20	
Phosphorus, Orthophosphate (As P	6.2	0.50	5.000	2.040	82.3	80.1	109	1.52	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Estimated value
- 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
- PQL Practical Quantitative Limit
- RL Reporting Limit
- S % Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB	SampType: mblk	TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R87132	RunNo: 87132							
Prep Date:	Analysis Date: 4/6/2022	SeqNo: 3080891	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								
Sulfate	ND	0.50								

Sample ID: LCS	SampType: lcs	TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R87132	RunNo: 87132							
Prep Date:	Analysis Date: 4/6/2022	SeqNo: 3080892	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	95.5	90	110			
Sulfate	9.8	0.50	10.00	0	95.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2283E91

13-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-66484	SampType: MBLK	TestCode: EPA Method 6020A: TCLP Metals							
Client ID: PBW	Batch ID: 66484	RunNo: 86949							
Prep Date: 3/29/2022	Analysis Date: 3/30/2022	SeqNo: 3067909	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: MSLLLCS-66484	SampType: LCSLL	TestCode: EPA Method 6020A: TCLP Metals							
Client ID: BatchQC	Batch ID: 66484	RunNo: 86949							
Prep Date: 3/29/2022	Analysis Date: 3/30/2022	SeqNo: 3067910	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00087	0.0010	0.001000	0	87.0	70	130			J
Lead	0.0011	0.0010	0.001000	0	107	70	130			
Selenium	0.00091	0.0010	0.001000	0	90.9	70	130			J

Sample ID: MSLCS-66484	SampType: LCS	TestCode: EPA Method 6020A: TCLP Metals							
Client ID: LCSW	Batch ID: 66484	RunNo: 86949							
Prep Date: 3/29/2022	Analysis Date: 3/30/2022	SeqNo: 3067911	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0	98.6	80	120			
Lead	0.051	0.0010	0.05000	0	102	80	120			
Selenium	0.048	0.0010	0.05000	0	96.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Estimated value
- 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
- PQL Practical Quantitative Limit
- RL Reporting Limit
- S % Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-66537	SampType: MBLK	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: PBW	Batch ID: 66537	RunNo: 87097							
Prep Date: 3/31/2022	Analysis Date: 4/8/2022	SeqNo: 3080552	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0028		0.002500		113	73	119			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		75.6	36.6	84.1			

Sample ID: MB-66537	SampType: MBLK	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: PBW	Batch ID: 66537	RunNo: 87097							
Prep Date: 3/31/2022	Analysis Date: 4/8/2022	SeqNo: 3080553	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0029		0.002500		116	73	119			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		76.7	36.6	84.1			

Sample ID: LCS-66537	SampType: LCS	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: LCSW	Batch ID: 66537	RunNo: 87097							
Prep Date: 3/31/2022	Analysis Date: 4/8/2022	SeqNo: 3080554	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	96.9	56.3	126			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.9	45.8	103			
Heptachlor	0.00037	0.00010	0.0005000	0	74.3	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.6	50.1	116			
Methoxychlor	0.00051	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0029		0.002500		115	73	119			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		60.6	36.6	84.1			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Estimated value
- 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
- PQL Practical Quantitative Limit
- RL Reporting Limit
- S % Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: LCS-66537	SampType: LCS	TestCode: EPA Method 8081: Pesticides TCLP							
Client ID: LCSW	Batch ID: 66537	RunNo: 87697							
Prep Date: 3/31/2022	Analysis Date: 4/8/2022	SeqNo: 3080565	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	101	56.3	126			
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	82.5	45.6	103			
Heptachlor	0.00038	0.00010	0.0005000	0	76.4	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.7	50.1	116			
Methoxychlor	0.00052	0.00010	0.0005000	0	104	15	203			
Surr: Decachlorobiphenyl	0.0030		0.002500		119	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		63.5	38.6	84.1			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- E Estimated value
- 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
- PQL Practical Quantitative Limit
- RL Reporting Limit
- S % Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: 100ng 624 lcs	SampType: LCS	TestCode: TCLP Volatiles by 8260B
Client ID: LCSW	Batch ID: T87039	RunNo: 87039
Prep Date:	Analysis Date: 4/6/2022	SeqNo: 3077978 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.021	0.50	0.02000	0	105	70	130			J
1,1-Dichloroethene	0.020	0.70	0.02000	0	101	70	130			J
Trichloroethene (TCE)	0.020	0.50	0.02000	0	101	70	130			J
Chlorobenzene	0.021	100	0.02000	0	105	70	130			J
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		101	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		104	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		101	70	130			
Surr: Toluene-d8	0.0099		0.01000		99.9	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

15-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: mb-66542	SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID: PBW	Batch ID: 66542	RunNo: 87231						
Prep Date: 4/1/2022	Analysis Date: 4/13/2022	SeqNo: 3084459	Units: mg/L					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		55.0	15	118			
Surr: Phenol-d5	0.082		0.2000		41.0	15	92.9			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		62.7	15	150			
Surr: Nitrobenzene-d5	0.065		0.1000		65.3	15	136			
Surr: 2-Fluorobiphenyl	0.052		0.1000		51.8	15	134			
Surr: 4-Terphenyl-d14	0.075		0.1000		74.5	15	168			

Sample ID: lcs-66542	SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID: LCSW	Batch ID: 66542	RunNo: 87231						
Prep Date: 4/1/2022	Analysis Date: 4/13/2022	SeqNo: 3084459	Units: mg/L					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.056	0.00010	0.1000	0	55.8	19	106			
3+4-Methylphenol	0.11	0.00010	0.2000	0	53.3	16.3	112			
2,4-Dinitrotoluene	0.034	0.00010	0.1000	0	34.3	15	99.6			
Hexachlorobenzene	0.052	0.00010	0.1000	0	52.4	41.9	111			
Hexachlorobutadiene	0.042	0.00010	0.1000	0	41.6	15	91.5			
Hexachloroethane	0.048	0.00010	0.1000	0	48.3	15	87.5			
Nitrobenzene	0.059	0.00010	0.1000	0	59.3	19.3	114			
Pentachlorophenol	0.057	0.00010	0.1000	0	56.7	29	103			
Pyridine	0.039	0.00010	0.1000	0	39.3	15	92.6			
2,4,5-Trichlorophenol	0.052	0.00010	0.1000	0	51.7	25.2	114			
2,4,6-Trichlorophenol	0.053	0.00010	0.1000	0	52.9	25.7	112			
Cresols, Total	0.16	0.00010	0.3000	0	54.1	15	145			
Surr: 2-Fluorophenol	0.092		0.2000		46.9	15	118			
Surr: Phenol-d5	0.071		0.2000		35.3	15	92.9			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		61.8	15	150			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: lcs-66542	SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID: LCSW	Batch ID: 66542	RunNo: 87231						
Prep Date: 4/1/2022	Analysis Date: 4/13/2022	SeqNo: 3084459	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.058		0.1000		58.5	15	136			
Surr: 2-Fluorobiphenyl	0.051		0.1000		50.6	15	134			
Surr: 4-Terphenyl-d14	0.077		0.1000		77.0	15	168			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: lcs-1 100.2uS sC	SampType: lcs	TestCode: SM2510B: Specific Conductance
Client ID: LCSW	Batch ID: R87028	RunNo: 87028
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3875403 Units: µmhos/cm

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	100.2	0	100	85	115			

Sample ID: lcs-2 100.2uS sC	SampType: lcs	TestCode: SM2510B: Specific Conductance
Client ID: LCSW	Batch ID: R87028	RunNo: 87028
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3875427 Units: µmhos/cm

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	100.2	0	104	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91
13-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-66490	SampType: MBLK	TestCode: EPA Method 7470A: Mercury							
Client ID: PBW	Batch ID: 66490	RunNo: 86987							
Prep Date: 3/30/2022	Analysis Date: 3/30/2022	SeqNo: 3068731	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-66490	SampType: LCSLL	TestCode: EPA Method 7470A: Mercury							
Client ID: BatchQC	Batch ID: 66490	RunNo: 86987							
Prep Date: 3/30/2022	Analysis Date: 3/30/2022	SeqNo: 3068732	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00019	0.00020	0.0001500	0	129	50	150			J

Sample ID: LCS-66490	SampType: LCS	TestCode: EPA Method 7470A: Mercury							
Client ID: LCSW	Batch ID: 66490	RunNo: 86987							
Prep Date: 3/30/2022	Analysis Date: 3/30/2022	SeqNo: 3068733	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	92.4	85	115			

Sample ID: LCSD-66490	SampType: LCSD	TestCode: EPA Method 7470A: Mercury							
Client ID: LCSS02	Batch ID: 66490	RunNo: 86987							
Prep Date: 3/30/2022	Analysis Date: 3/30/2022	SeqNo: 3068734	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	91.1	85	115	1.45	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-A	SampType: MBLK	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: PBW	Batch ID: A87057	RunNo: 87057							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3077196	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								

Sample ID: LCS-A	SampType: LCS	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: LCSW	Batch ID: A87057	RunNo: 87057							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3077198	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	55	1.0	50.00	0	111	80	120			
Magnesium	53	1.0	50.00	0	107	80	120			
Potassium	53	1.0	50.00	0	106	80	120			

Sample ID: LCSD-A	SampType: LCSD	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: LCSS02	Batch ID: A87057	RunNo: 87057							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3077199	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	56	1.0	50.00	0	112	80	120	0.933	20	
Magnesium	54	1.0	50.00	0	108	80	120	0.834	20	
Potassium	53	1.0	50.00	0	107	80	120	0.832	20	

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: PBW	Batch ID: A87128	RunNo: 87128							
Prep Date:	Analysis Date: 4/6/2022	SeqNo: 3080438	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: LCSW	Batch ID: A87128	RunNo: 87128							
Prep Date:	Analysis Date: 4/6/2022	SeqNo: 3080440	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	95.4	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

15-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-66484	SampType: MBLK	TestCode: EPA 6010B: TCLP Metals							
Client ID: PBW	Batch ID: 66484	RunNo: 86886							
Prep Date: 3/29/2022	Analysis Date: 3/31/2022	SeqNo: 3069869	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: LCS-66484	SampType: LCS	TestCode: EPA 6010B: TCLP Metals							
Client ID: LCSW	Batch ID: 66484	RunNo: 86886							
Prep Date: 3/29/2022	Analysis Date: 3/31/2022	SeqNo: 3069891	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	99.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Sample ID: 2203E91-001EMS	SampType: MS	TestCode: EPA 6010B: TCLP Metals							
Client ID: WDW-1,2,3 & 4 Efflu	Batch ID: 66484	RunNo: 87057							
Prep Date: 3/29/2022	Analysis Date: 4/5/2022	SeqNo: 3077186	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.010	0.5000	0.04065	89.8	75	125			
Cadmium	0.45	0.010	0.5000	0	90.8	75	125			
Chromium	0.44	0.030	0.5000	0	88.0	75	125			
Silver	0.096	0.025	0.1000	0.006833	89.5	75	125			

Sample ID: 2203E91-001EMSD	SampType: MSD	TestCode: EPA 6010B: TCLP Metals							
Client ID: WDW-1,2,3 & 4 Efflu	Batch ID: 66484	RunNo: 87057							
Prep Date: 3/29/2022	Analysis Date: 4/5/2022	SeqNo: 3077187	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.010	0.5000	0.04065	91.3	75	125	1.47	20	
Cadmium	0.47	0.010	0.5000	0	93.0	75	125	2.43	20	
Chromium	0.45	0.030	0.5000	0	89.5	75	125	1.69	20	
Silver	0.094	0.025	0.1000	0.006833	86.9	75	125	2.72	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: mb-1 alk	SampType: mblk	TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R87028	RunNo: 87028							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3075482	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 alk	SampType: lcs	TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R87028	RunNo: 87028							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3075483	Units: mg/L CaCO3						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.64	20.00	80.00	0	92.0	90	110			

Sample ID: mb-2 alk	SampType: mblk	TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R87028	RunNo: 87028							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3075505	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-2 alk	SampType: lcs	TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R87028	RunNo: 87028							
Prep Date:	Analysis Date: 4/5/2022	SeqNo: 3075506	Units: mg/L CaCO3						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.64	20.00	80.00	0	92.3	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-66599	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids
Client ID: PBW	Batch ID: 66599	RunNo: 87062
Prep Date: 4/4/2022	Analysis Date: 4/7/2022	SeqNo: 3077421 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-66599	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids
Client ID: LCSW	Batch ID: 66599	RunNo: 87062
Prep Date: 4/4/2022	Analysis Date: 4/7/2022	SeqNo: 3077422 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203E91

15-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: MB-66600	SampType: MBLK	TestCode: SM 2540D: TSS							
Client ID: PBW	Batch ID: 66600	RunNo: 87001							
Prep Date: 4/4/2022	Analysis Date: 4/5/2022	SeqNo: 3074139	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: LCS-66600	SampType: LCS	TestCode: SM 2540D: TSS							
Client ID: LCSW	Batch ID: 66600	RunNo: 87001							
Prep Date: 4/4/2022	Analysis Date: 4/5/2022	SeqNo: 3074140	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	92	4.0	92.40	0	99.6	83.44	119.05			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2203E91 | RcptNo: 1

Received By: Sean Livingston 3/29/2022 8:15:00 AM Sean Livingston
Completed By: Sean Livingston 3/29/2022 9:09:25 AM Sean Livingston
Reviewed By: JA 3/29/22

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 4 (<2 or >12 unless noted)
Adjusted? NO
Checked by: KPG 3/29/22

Special Handling (if applicable)

15. 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:

16. Additional remarks: Poured off from unpreserved 002C 2 of 2 for ORP 125mL 002G - KPG 3/29/22

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5	Good				

Poured off from unpres 001C 1 of 2 for ORP 125mL 001G - KPG 3/29/22

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#: 575-748-5451

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

Turn-Around Time:
Standard ☐ Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard

On Ice: ☒ Yes ☐ No

Sample Temperature: 0.6 -0.1 = 0.5°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. 2203E91	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X						
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X					
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X				
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X			
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X		
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X	
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X
3/28/22	10:05	Liquid	CTB to City POTW	**	**	002	X						
3/28/22	10:05	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
3/28/22	10:05	Liquid	CTB to City POTW	1-1L Amber	none				X				
3/28/22	10:05	Liquid	CTB to City POTW	***	***					X			
3/28/22	10:05	Liquid	CTB to City POTW	1-250ml P	HNO4						X		
3/28/22	10:05	Liquid	CTB to City POTW	1-1L Amber	none							X	
3/28/22	10:05	Liquid	CTB to City POTW	1-1L Amber	none								X

Date:	Time:	Relinquished by:	Received by:	Date	Time
3-28-22	10:30	Brady Hubbard			
3/28/22	1900			3/29/22	8:15

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.
Will suffice for Quarterly WDW-1, 2, 3 & 4 Inj Well

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

May 25, 2022

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

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2204B57

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/27/2022 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: **2204B57**
Date: **5/25/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001A

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
2-Butanone	ND	0.0020	200		mg/L	200	4/27/2022 10:15:00 PM	T87552
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
Chloroform	ND	0.00013	6.0		mg/L	200	4/27/2022 10:15:00 PM	T87552
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/27/2022 10:15:00 PM	T87552
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/27/2022 10:15:00 PM	T87552
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/27/2022 10:15:00 PM	T87552
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/27/2022 10:15:00 PM	T87552
Chlorobenzene	ND	0.00016	100		mg/L	200	4/27/2022 10:15:00 PM	T87552
Surr: 1,2-Dichloroethane-d4	99.6	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552
Surr: 4-Bromofluorobenzene	97.7	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552
Surr: Dibromofluoromethane	102	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552
Surr: Toluene-d8	90.8	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001B

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.0050	0.030	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Endrin	ND	0.00049	0.020	D	mg/L	10	5/18/2022 10:41:44 AM	67182
gamma-BHC (Lindane)	ND	0.00041	0.40	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Heptachlor	ND	0.00041	0.0080	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Heptachlor epoxide	ND	0.00047	0.0080	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Methoxychlor	ND	0.00046	10	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Toxaphene	ND	0.0050	0.50	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Surr: Decachlorobiphenyl	0	0	73-119	SD	%Rec	10	5/18/2022 10:41:44 AM	67182
Surr: Tetrachloro-m-xylene	0	0	36.6-84.1	SD	%Rec	10	5/18/2022 10:41:44 AM	67182
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	5/3/2022 5:44:26 PM	67188
3+4-Methylphenol	ND	0.00045	200		mg/L	1	5/3/2022 5:44:26 PM	67188
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	5/3/2022 5:44:26 PM	67188
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	5/3/2022 5:44:26 PM	67188
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	5/3/2022 5:44:26 PM	67188
Hexachloroethane	ND	0.00045	3.0		mg/L	1	5/3/2022 5:44:26 PM	67188
Nitrobenzene	ND	0.00051	2.0		mg/L	1	5/3/2022 5:44:26 PM	67188
Pentachlorophenol	ND	0.00059	100		mg/L	1	5/3/2022 5:44:26 PM	67188
Pyridine	0.0059	0.00093	5.0	J	mg/L	1	5/3/2022 5:44:26 PM	67188
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	5/3/2022 5:44:26 PM	67188
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	5/3/2022 5:44:26 PM	67188
Cresols, Total	ND	0.00051	200		mg/L	1	5/3/2022 5:44:26 PM	67188
Surr: 2-Fluorophenol	42.8	0	15-118		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: Phenol-d5	34.5	0	15-92.9		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: 2,4,6-Tribromophenol	46.4	0	15-150		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: Nitrobenzene-d5	68.1	0	15-136		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: 2-Fluorobiphenyl	60.5	0	15-134		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: 4-Terphenyl-d14	83.9	0	15-168		%Rec	1	5/3/2022 5:44:26 PM	67188

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001C

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	24	0.80	2.0	*	mg/L	20	4/27/2022 9:16:29 PM	R87581
Chloride	600	25	50	*	mg/L	100	5/5/2022 7:33:05 PM	R87788
Nitrogen, Nitrite (As N)	0.17	0.027	0.50	J	mg/L	5	4/27/2022 9:03:38 PM	R87581
Bromide	0.62	0.25	0.50		mg/L	5	4/27/2022 9:03:38 PM	R87581
Nitrogen, Nitrate (As N)	0.88	0.050	0.50		mg/L	5	4/27/2022 9:03:38 PM	R87581
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	4/27/2022 9:03:38 PM	R87581
Sulfate	2400	25	50	*	mg/L	100	5/5/2022 7:33:05 PM	R87788
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	6500	10	10		µmhos/c	1	4/28/2022 4:12:20 PM	R87620
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.33			H	pH units	1	4/28/2022 4:12:20 PM	R87620
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	626.9	20.00	20.00		mg/L Ca	1	4/28/2022 4:12:20 PM	R87620
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/28/2022 4:12:20 PM	R87620
Total Alkalinity (as CaCO3)	626.9	20.00	20.00		mg/L Ca	1	4/28/2022 4:12:20 PM	R87620
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9981	0	0			1	5/10/2022 4:15:00 PM	R87962
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	4640	100	100	*D	mg/L	1	5/5/2022 1:25:00 PM	67191
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	21	4.0	4.0		mg/L	1	5/4/2022 12:57:00 PM	67224

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001D

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	490	2.9	50		mg/L	50	5/16/2022 8:36:22 AM	A88011
Magnesium	160	1.7	50		mg/L	50	5/16/2022 8:36:22 AM	A88011
Potassium	100	10	50		mg/L	50	5/16/2022 8:36:22 AM	A88011
Sodium	580	21	50		mg/L	50	5/16/2022 8:36:22 AM	A88011

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001E

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.012	0.0025	5.0	J	mg/L	5	5/4/2022 12:10:37 PM	67111
Lead	ND	0.0025	5.0		mg/L	5	5/2/2022 4:17:19 PM	67111
Selenium	0.29	0.0025	1.0	J	mg/L	5	5/2/2022 4:17:19 PM	67111
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	5/2/2022 1:09:17 PM	67181
EPA 6010B: TCLP METALS							Analyst: **JLF**	
Barium	0.051	0.0011	100	J	mg/L	1	4/28/2022 3:31:14 PM	67111
Cadmium	ND	0.0012	1.0		mg/L	1	4/28/2022 3:31:14 PM	67111
Chromium	ND	0.0017	5.0		mg/L	1	4/28/2022 3:31:14 PM	67111
Silver	0.0066	0.0013	5.0	J	mg/L	1	4/28/2022 3:31:14 PM	67111

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002A

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
2-Butanone	ND	0.0020	200		mg/L	200	4/27/2022 10:38:00 PM	T87552
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
Chloroform	ND	0.00013	6.0		mg/L	200	4/27/2022 10:38:00 PM	T87552
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/27/2022 10:38:00 PM	T87552
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/27/2022 10:38:00 PM	T87552
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/27/2022 10:38:00 PM	T87552
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/27/2022 10:38:00 PM	T87552
Chlorobenzene	ND	0.00016	100		mg/L	200	4/27/2022 10:38:00 PM	T87552
Surr: 1,2-Dichloroethane-d4	96.2	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552
Surr: 4-Bromofluorobenzene	96.1	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552
Surr: Dibromofluoromethane	103	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552
Surr: Toluene-d8	91.1	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002B

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	5/18/2022 11:08:06 AM	67182
Endrin	ND	0.000049	0.020		mg/L	1	5/18/2022 11:08:06 AM	67182
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	5/18/2022 11:08:06 AM	67182
Heptachlor	ND	0.000041	0.0080		mg/L	1	5/18/2022 11:08:06 AM	67182
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	5/18/2022 11:08:06 AM	67182
Methoxychlor	ND	0.000046	10		mg/L	1	5/18/2022 11:08:06 AM	67182
Toxaphene	ND	0.00050	0.50		mg/L	1	5/18/2022 11:08:06 AM	67182
Surr: Decachlorobiphenyl	80.7	0	73-119		%Rec	1	5/18/2022 11:08:06 AM	67182
Surr: Tetrachloro-m-xylene	59.8	0	36.6-84.1		%Rec	1	5/18/2022 11:08:06 AM	67182
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	5/3/2022 7:54:16 PM	67188
3+4-Methylphenol	ND	0.00045	200		mg/L	1	5/3/2022 7:54:16 PM	67188
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	5/3/2022 7:54:16 PM	67188
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	5/3/2022 7:54:16 PM	67188
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	5/3/2022 7:54:16 PM	67188
Hexachloroethane	ND	0.00045	3.0		mg/L	1	5/3/2022 7:54:16 PM	67188
Nitrobenzene	ND	0.00051	2.0		mg/L	1	5/3/2022 7:54:16 PM	67188
Pentachlorophenol	ND	0.00059	100		mg/L	1	5/3/2022 7:54:16 PM	67188
Pyridine	ND	0.00093	5.0		mg/L	1	5/3/2022 7:54:16 PM	67188
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	5/3/2022 7:54:16 PM	67188
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	5/3/2022 7:54:16 PM	67188
Cresols, Total	ND	0.00051	200		mg/L	1	5/3/2022 7:54:16 PM	67188
Surr: 2-Fluorophenol	65.0	0	15-118		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: Phenol-d5	45.0	0	15-92.9		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: 2,4,6-Tribromophenol	79.1	0	15-150		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: Nitrobenzene-d5	75.4	0	15-136		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: 2-Fluorobiphenyl	71.3	0	15-134		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: 4-Terphenyl-d14	82.1	0	15-168		%Rec	1	5/3/2022 7:54:16 PM	67188

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002C

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	1.3	0.040	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Chloride	58	5.0	10		mg/L	20	4/27/2022 9:42:12 PM	R87581
Nitrogen, Nitrite (As N)	ND	0.0053	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Bromide	ND	0.050	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Nitrogen, Nitrate (As N)	1.5	0.010	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Phosphorus, Orthophosphate (As P)	1.8	0.25	0.50		mg/L	1	4/27/2022 9:29:20 PM	R87581
Sulfate	960	5.0	10	*	mg/L	20	4/27/2022 9:42:12 PM	R87581
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	1700	10	10		µmhos/c	1	4/28/2022 4:36:53 PM	R87620
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.36			H	pH units	1	4/28/2022 4:36:53 PM	R87620
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	49.16	20.00	20.00		mg/L Ca	1	4/28/2022 4:36:53 PM	R87620
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/28/2022 4:36:53 PM	R87620
Total Alkalinity (as CaCO3)	49.16	20.00	20.00		mg/L Ca	1	4/28/2022 4:36:53 PM	R87620
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9986	0	0			1	5/10/2022 4:15:00 PM	R87962
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	1500	20.0	20.0	*	mg/L	1	5/5/2022 1:25:00 PM	67191
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	9.0	4.0	4.0		mg/L	1	5/4/2022 12:57:00 PM	67224

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002D

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	250	0.29	5.0		mg/L	5	5/16/2022 8:40:17 AM	A88011
Magnesium	75	0.034	1.0		mg/L	1	5/16/2022 8:38:16 AM	A88011
Potassium	2.1	0.21	1.0		mg/L	1	5/16/2022 8:38:16 AM	A88011
Sodium	60	0.42	1.0		mg/L	1	5/16/2022 8:38:16 AM	A88011

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002E

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.0011	0.00050	5.0	J	mg/L	1	5/4/2022 12:12:01 PM	67111
Lead	0.00091	0.00050	5.0	J	mg/L	1	5/2/2022 4:12:09 PM	67111
Selenium	0.0034	0.00050	1.0	J	mg/L	1	5/2/2022 4:12:09 PM	67111
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	5/2/2022 1:11:25 PM	67181
EPA 6010B: TCLP METALS							Analyst: **JLF**	
Barium	0.027	0.0011	100	J	mg/L	1	4/28/2022 3:37:46 PM	67111
Cadmium	ND	0.0012	1.0		mg/L	1	4/28/2022 3:37:46 PM	67111
Chromium	0.0050	0.0017	5.0	J	mg/L	1	4/28/2022 3:37:46 PM	67111
Silver	0.0035	0.0013	5.0	J	mg/L	1	4/28/2022 3:37:46 PM	67111

Refer to the QC Summary report and 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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	WDW-1,2,3 & 4 Effluent 2204B57-001		CTB to City of POTW 2204B57-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	580	25.23	60	2.61								
Potassium	100	2.56	2.1	0.05								
Calcium	490	24.45	250	12.48								
Magnesium	160	13.17	75	6.17								
Total Cations		65.41		21.31								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2400	49.97	960	19.99								
Chloride	600	16.93	58	1.64								
Bicarbonate (CaCO3)	626.9	12.53	49.16	0.98								
Carbonate (CaCO3)												
Phosphate (P)			1.8	0.17								
Nitrite (N)	0.17	0.01										
Nitrate (N)	0.9	0.06	1.5	0.11	-							
Fluoride	24	1.26	1.3	0.07								
Bromide	0.62	0.01										
Total Anions		80.77		22.96								
Elect. Cond. (µMhos/cm)	6500		1700									
CATION/ANION RATIO		0.81		0.93								
% Difference		11		4								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4640		1500									
TDS (calculated)	4735		1448									
Ratio meas TDS:calc TDS		1.0		1.0								
Ratio Meas. TDS:EC		0.71		0.88								
Ratio Calc. TDS:EC		0.73		0.85								
Ratio of anion sum:EC		1.2		1.4								
Ratio of cation sum:EC		1.0		1.3								

* Analyte not detected (below method detection limit).
** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%
Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.
Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

May 16, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1487566

Samples Received: 04/28/2022

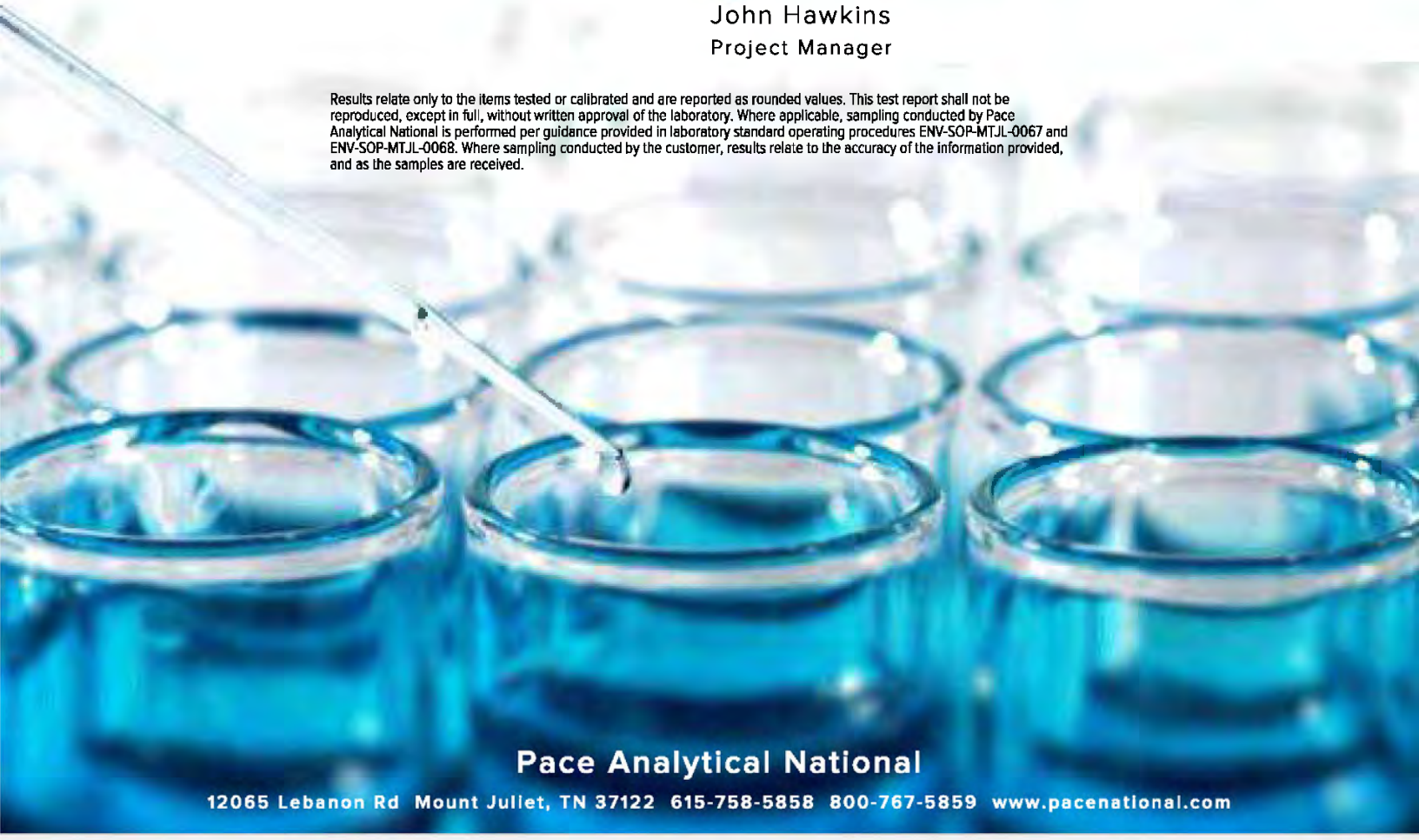
Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2204B57-001F WDW-1,2,3 & 4 EFFLUENT L1487566-01 Waste

Collected by | Collected date/time 04/26/22 09:25 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1859202	1	05/05/22 14:00	05/05/22 14:00	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1860542	1	05/09/22 02:53	05/10/22 02:08	HMH	Mt. Juliet, TN

2204B57-001G WDW-1,2,3 & 4 EFFLUENT L1487566-02 GW

Collected by | Collected date/time 04/26/22 09:25 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1859241	1	05/06/22 11:27	05/06/22 11:27	ARD	Mt. Juliet, TN

2204B57-001H WDW-1,2,3 & 4 EFFLUENT L1487566-03 GW

Collected by | Collected date/time 04/26/22 09:25 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1859852	1	05/07/22 18:20	05/09/22 17:49	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1862545	1	05/13/22 17:59	05/13/22 17:59	SMW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1859881	1	05/09/22 13:45	05/09/22 13:45	EPW	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1858842	1	05/05/22 19:00	05/05/22 19:00	WOS	Mt. Juliet, TN

2204B57-002F CTB TO CITY OF POTW L1487566-04 Waste

Collected by | Collected date/time 04/26/22 09:50 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1859202	1	05/05/22 14:00	05/05/22 14:00	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1860542	1	05/09/22 02:53	05/10/22 02:23	HMH	Mt. Juliet, TN

2204B57-002G CTB TO CITY OF POTW L1487566-05 GW

Collected by | Collected date/time 04/26/22 09:50 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1859241	1	05/06/22 11:27	05/06/22 11:27	ARD	Mt. Juliet, TN

2204B57-002H CTB TO CITY OF POTW L1487566-06 GW

Collected by | Collected date/time 04/26/22 09:50 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1859852	1	05/07/22 18:20	05/09/22 17:53	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1862546	1	05/12/22 18:30	05/12/22 18:30	AW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1859881	1	05/09/22 13:45	05/09/22 13:45	EPW	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1858842	1	05/05/22 19:00	05/05/22 19:00	WOS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1487566-06	2204B57-002H CTB TO CITY OF POTW	4500 S2 D-2011

SAMPLE RESULTS - 01

Collected date/time: 04/26/22 09:25

L1487566

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		5/5/2022 2:00:42 PM	WG1859202
Fluid	1		5/5/2022 2:00:42 PM	WG1859202
Initial pH	N/A		5/5/2022 2:00:42 PM	WG1859202
Final pH	N/A		5/5/2022 2:00:42 PM	WG1859202

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	J4	0.00200	1	1	05/10/2022 02:08	WG1860542
2,4-D	ND	J4	0.00200	10	1	05/10/2022 02:08	WG1860542
(S) 2,4-Dichlorophenyl Acetic Acid	*89.6*		*14.0-158*			*05/10/2022 02:08*	WG1860542

SAMPLE RESULTS - 02

L1487566

Collected date/time: 04/26/22 09:25

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	157	T8	1	05/06/2022 11:27	WG1859241

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	0.0133		0.00500	1	05/09/2022 17:49	WG1859852

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	0.108	Q	0.0500	1	05/13/2022 17:59	WG1862545

Sample Narrative:

L1487566-03 WG1862545: Ran out of hold due to supply chain issues.

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.25	T8	1	05/09/2022 13:45	WG1859881

Sample Narrative:

L1487566-03 WG1859881: 7.25 at 20.5C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	05/05/2022 19:00	WG1858842

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		5/5/2022 2:00:42 PM	WG1859202
Fluid	1		5/5/2022 2:00:42 PM	WG1859202
Initial pH	N/A		5/5/2022 2:00:42 PM	WG1859202
Final pH	N/A		5/5/2022 2:00:42 PM	WG1859202

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	J4	0.00200	1	1	05/10/2022 02:23	WG1860542
2,4-D	ND	J4	0.00200	10	1	05/10/2022 02:23	WG1860542
(S) 2,4-Dichlorophenyl Acetic Acid	*81.2*		*14.0-158*			*05/10/2022 02:23*	WG1860542

SAMPLE RESULTS - 05

Collected date/time: 04/26/22 09:50

L1487566

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	149	T8	1	05/06/2022 11:27	WG1859241

SAMPLE RESULTS - 06

Collected date/time: 04/26/22 09:50

L1487566

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	05/09/2022 17:53	WG1859852

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND	Q	0.0500	1	05/12/2022 18:30	WG1862546

Sample Narrative:

L1487566-06 WG1862546: Ran out of hold due to supply chain issues.

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.54	T8	1	05/09/2022 13:45	WG1859881

Sample Narrative:

L1487566-06 WG1859881: 7.54 at 19.9C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	05/05/2022 19:00	WG1858842

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

WG1859241
Wet Chemistry by Method 2580

QUALITY CONTROL SUMMARY

L1487566-02,05

L1487566-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-02 05/06/22 11:27 • (DUP) R3788898-3 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	157	149	1	7.80		20

L1487566-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-05 05/06/22 11:27 • (DUP) R3788898-4 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	149	156	1	7.20		20

L1487958-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-01 05/06/22 11:27 • (DUP) R3788898-5 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	359	359	1	0.200		20

L1487958-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-02 05/06/22 11:27 • (DUP) R3788898-6 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	87.0	87.1	1	0.100		20

L1487958-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-03 05/06/22 11:27 • (DUP) R3788898-7 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	314	313	1	0.600		20

L1487958-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-04 05/06/22 11:27 • (DUP) R3788898-8 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	302	301	1	0.400		20

WG1859241

Wet Chemistry by Method 2580

QUALITY CONTROL SUMMARY

L1487566-02,05

L1487958-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-05 05/06/22 11:27 • (DUP) R3788898-9 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	316	316	1	0.100		20

L1487958-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-06 05/06/22 11:27 • (DUP) R3788898-10 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	73.9	76.5	1	2.60		20

L1487958-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-07 05/06/22 11:27 • (DUP) R3788898-11 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	197	197	1	0.800		20

L1487958-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-08 05/06/22 11:27 • (DUP) R3788898-12 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	251	255	1	3.70		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3788898-1 05/06/22 11:27 • (LCSD) R3788898-2 05/06/22 11:27

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	108	115	99.5	106	90.0-110			7.40	20

WG1859852

Wet Chemistry by Method 4500 CN E-2016

QUALITY CONTROL SUMMARY

L1487566-03,05

Method Blank (MB)

(MB) R3789863-1 05/09/22 17:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1487559-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487559-02 05/09/22 17:37 • (DUP) R3789863-3 05/09/22 17:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1487566-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-03 05/09/22 17:49 • (DUP) R3789863-8 05/09/22 17:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0133	0.0142	1	6.55		20

Laboratory Control Sample (LCS)

(LCS) R3789863-2 05/09/22 17:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.108	108	87.1-120	

L1487559-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487559-03 05/09/22 17:41 • (MS) R3789863-4 05/09/22 17:42 • (MSD) R3789863-5 05/09/22 17:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0996	0.105	99.6	105	1	90.0-110			5.28	20

L1487562-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487562-01 05/09/22 17:44 • (MS) R3789863-6 05/09/22 17:45 • (MSD) R3789863-7 05/09/22 17:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0869	0.0920	86.9	92.0	1	90.0-110	J6		5.70	20

WG1862545
Wet Chemistry by Method 4500 S2 D-2011

QUALITY CONTROL SUMMARY

L1487566-03

Method Blank (MB)

(MB) R3791750-1 05/13/22 17:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3791750-2 05/13/22 17:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.555	111	85.0-115	

WG1862546

Wet Chemistry by Method 4500 S2 D-2011

QUALITY CONTROL SUMMARY

L1487566-06

Method Blank (MB)

(MB) R3791378-1 05/12/22 18:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3791378-2 05/12/22 18:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.528	106	85.0-115	

L1487566-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487566-06 05/12/22 18:30 • (MS) R3791378-3 05/12/22 18:30 • (MSD) R3791378-4 05/12/22 18:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	0.500	ND	0.536	0.529	107	106	1	80.0-120			1.31	20

Sample Narrative:

OS: Ran out of hold due to supply chain issues.

WG1859881

QUALITY CONTROL SUMMARY

Wet Chemistry by Method 9040C

L1487586-03,05

Laboratory Control Sample (LCS)

(LCS) R3789960-1 05/09/22 13:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 21.1C

WG1858842

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

L1487566-03,06

L1487566-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-06 05/05/22 19:00 • (DUP) R3788643-3 05/05/22 19:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3788643-1 05/05/22 19:00 • (LCSD) R3788643-2 05/05/22 19:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	130	130	103	103	96.0-104			0.000	10

WG1860542

Chlorinated Acid Herbicides (GC) by Method 8151A

QUALITY CONTROL SUMMARY

L1487566-01,04

Method Blank (MB)

(MB) R3790044-1 05/09/22 21:28

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*76.4*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3790044-2 05/09/22 21:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0641	128	50.0-125	E J4
2,4-D	0.0500	0.0873	175	50.0-120	E J4
(S) 2,4-Dichlorophenyl Acetic Acid			*144*	*14.0-158*	

L1487556-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487556-01 05/10/22 01:24 • (MS) R3790044-3 05/10/22 01:38 • (MSD) R3790044-4 05/10/22 01:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0355	0.0374	71.0	74.8	1	50.0-125			5.21	20
2,4-D	0.0500	ND	0.0546	0.0497	109	99.4	1	50.0-120	E		9.40	20
(S) 2,4-Dichlorophenyl Acetic Acid					*75.9*	*68.4*		*14.0-158*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [2]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

A199

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

SUB CONTRACTOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L1487506

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2204B57-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	4/26/2022 9:25:00 AM	1	8151TCLP *RUSH 7 DAY TAT*	-01
2	2204B57-001G	WDW-1,2,3 & 4 Effluent	125HDP	Aqueous	4/26/2022 9:25:00 AM	1	ORP *RUSH 7 DAY TAT*	-02
3	2204B57-001H	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	4/26/2022 9:25:00 AM	3	RCI *RUSH 7 DAY TAT*	-03
4	2204B57-002F	CTB to City of POTW	1LAMGU	Aqueous	4/26/2022 9:50:00 AM	1	8151TCLP *RUSH 7 DAY TAT*	-04
5	2204B57-002G	CTB to City of POTW	125HDP	Aqueous	4/26/2022 9:50:00 AM	1	ORP *RUSH 7 DAY TAT*	-05
6	2204B57-002H	CTB to City of POTW	500HDPE	Aqueous	4/26/2022 9:50:00 AM	3	RCI *RUSH 7 DAY TAT*	-06

7767 0976 9790

Sample Receipt Checklist

Custody Seal Present (Intact): Y / N — If Applicable
COC Signed Accurate: Y / N — VOA Zero Headspace: Y / N
Bottles Arrive Intact: Y / N — Preservation Checked: Y / N
Correct Bottles Used: Y / N — DRAFT
Sufficient Volume Sent: Y / N — 3.8 to = 3.8
PM: Screen <0.5 mR/hr: Y / N

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you

Relinquished By	Date	Time	Received By	Date	Time
[signature]	4/27/2022	10:38 AM	[signature]	4/28/22	0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R87581**	RunNo: **87581**							
Prep Date:	Analysis Date: **4/27/2022**	SeqNo: **3099704**	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								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R87581**	RunNo: **87581**							
Prep Date:	Analysis Date: **4/27/2022**	SeqNo: **3099705**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	99.5	90	110			
Chloride	4.6	0.50	5.000	0	92.5	90	110			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	98.0	90	110			
Bromide	2.4	0.10	2.500	0	97.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	92.6	90	110			
Sulfate	10	0.50	10.00	0	100	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R87788**	RunNo: **87788**							
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3109682**	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: **R87788**	RunNo: **87788**							
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3109683**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.8	90	110			
Sulfate	10	0.50	10.00	0	101	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67111**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **67111**	RunNo: **87655**
Prep Date: **4/27/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103419** Units: **mg/L**

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

Sample ID: **MSLLLCS-67111**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **67111**	RunNo: **87655**
Prep Date: **4/27/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103420** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0012	0.0010	0.001000	0	124	70	130			
Selenium	0.00099	0.0010	0.001000	0	98.7	70	130			J

Sample ID: **MSLCS-67111**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **67111**	RunNo: **87655**
Prep Date: **4/27/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103421** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.052	0.0010	0.05000	0	103	80	120			
Selenium	0.048	0.0010	0.05000	0	96.0	80	120			

Sample ID: **MB-67111**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **67111**	RunNo: **87716**
Prep Date: **4/27/2022**	Analysis Date: **5/4/2022**	SeqNo: **3107038** Units: **mg/L**

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

Sample ID: **MSLLLCS-67111**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **67111**	RunNo: **87716**
Prep Date: **4/27/2022**	Analysis Date: **5/4/2022**	SeqNo: **3107039** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00096	0.0010	0.001000	0	96.1	70	130			J

Sample ID: **MSLCS-67111**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **67111**	RunNo: **87716**
Prep Date: **4/27/2022**	Analysis Date: **5/4/2022**	SeqNo: **3107040** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0010	0.05000	0	99.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67182**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **67182**	RunNo: **88093**
Prep Date: **5/2/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		94.2	73	119			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.6	36.6	84.1			

Sample ID: **MB-67182**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **67182**	RunNo: **88093**
Prep Date: **5/2/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123052** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		92.2	73	119			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.8	36.6	84.1			

Sample ID: **LCS-67182**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **67182**	RunNo: **88093**
Prep Date: **5/2/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123054** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00047	0.00010	0.0005000	0	93.5	56.3	126			
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	81.0	45.8	103			
Heptachlor	0.00027	0.00010	0.0005000	0	53.2	33.7	104			
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	85.9	50.1	116			
Methoxychlor	0.00055	0.00010	0.0005000	0	111	15	203			
Surr: Decachlorobiphenyl	0.0022		0.002500		87.0	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.1	36.6	84.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-67182**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **67182**	RunNo: **88093**
Prep Date: **5/2/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123055** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00047	0.00010	0.0005000	0	94.4	56.3	126			
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	82.4	45.8	103			
Heptachlor	0.00027	0.00010	0.0005000	0	53.4	33.7	104			
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.3	50.1	116			
Methoxychlor	0.00052	0.00010	0.0005000	0	103	15	203			
Surr: Decachlorobiphenyl	0.0021		0.002500		85.3	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.2	36.6	84.1			

Sample ID: **LCSD-67182**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **67182**	RunNo: **88093**
Prep Date: **5/2/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123056** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.9	56.3	126	2.57	20	
gamma-BHC (Lindane)	0.00042	0.00010	0.0005000	0	83.6	45.8	103	3.16	20	
Heptachlor	0.00034	0.00010	0.0005000	0	67.7	33.7	104	24.0	20	R
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.7	50.1	116	4.30	20	
Methoxychlor	0.00054	0.00010	0.0005000	0	108	15	203	2.80	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		88.7	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.0	36.6	84.1	0	0	

Sample ID: **LCSD-67182**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **67182**	RunNo: **88093**
Prep Date: **5/2/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123057** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	96.0	56.3	126	1.73	20	
gamma-BHC (Lindane)	0.00043	0.00010	0.0005000	0	85.1	45.8	103	3.12	20	
Heptachlor	0.00034	0.00010	0.0005000	0	67.6	33.7	104	23.5	20	R
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.5	50.1	116	3.56	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	103	15	203	0.199	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		87.5	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		68.7	36.6	84.1	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW**	Batch ID: **T87552**	RunNo: **87552**
Prep Date:	Analysis Date: **4/27/2022**	SeqNo: **3099812** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.022	0.50	0.02000	0	108	70	130			J
1,1-Dichloroethene	0.020	0.70	0.02000	0	102	70	130			J
Trichloroethene (TCE)	0.021	0.50	0.02000	0	104	70	130			J
Chlorobenzene	0.020	100	0.02000	0	99.4	70	130			J
Surr: 1,2-Dichloroethane-d4	0.0097		0.01000		96.6	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		99.8	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		101	70	130			
Surr: Toluene-d8	0.0091		0.01000		91.2	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **T87552**	RunNo: **87552**
Prep Date:	Analysis Date: **4/27/2022**	SeqNo: **3099813** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0099		0.01000		99.0	70	130			
Surr: 4-Bromofluorobenzene	0.0099		0.01000		99.4	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		101	70	130			
Surr: Toluene-d8	0.0092		0.01000		92.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-67188**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **67188**	RunNo: **87709**
Prep Date: **5/2/2022**	Analysis Date: **5/3/2022**	SeqNo: **3105691** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.14		0.2000		69.3	15	118			
Surr: Phenol-d5	0.094		0.2000		46.9	15	92.9			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		69.0	15	150			
Surr: Nitrobenzene-d5	0.082		0.1000		82.0	15	136			
Surr: 2-Fluorobiphenyl	0.072		0.1000		71.5	15	134			
Surr: 4-Terphenyl-d14	0.076		0.1000		75.8	15	168			

Sample ID: **lcs-67188**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **67188**	RunNo: **87709**
Prep Date: **5/2/2022**	Analysis Date: **5/3/2022**	SeqNo: **3105692** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.077	0.00010	0.1000	0	77.0	19	106			
3+4-Methylphenol	0.16	0.00010	0.2000	0	82.4	16.3	112			
2,4-Dinitrotoluene	0.056	0.00010	0.1000	0	55.7	15	99.6			
Hexachlorobenzene	0.070	0.00010	0.1000	0	70.2	41.8	111			
Hexachlorobutadiene	0.057	0.00010	0.1000	0	56.6	15	91.5			
Hexachloroethane	0.064	0.00010	0.1000	0	64.5	15	87.5			
Nitrobenzene	0.072	0.00010	0.1000	0	71.6	19.3	114			
Pentachlorophenol	0.063	0.00010	0.1000	0	63.0	29	103			
Pyridine	0.018	0.00010	0.1000	0	18.3	15	92.6			
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	77.7	25.2	114			
2,4,6-Trichlorophenol	0.076	0.00010	0.1000	0	75.7	25.7	112			
Cresols, Total	0.24	0.00010	0.3000	0	80.6	15	145			
Surr: 2-Fluorophenol	0.13		0.2000		62.8	15	118			
Surr: Phenol-d5	0.086		0.2000		43.0	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.6	15	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-67188**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **67188**	RunNo: **87709**
Prep Date: **5/2/2022**	Analysis Date: **5/3/2022**	SeqNo: **3105692** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	15	136			
Surr: 2-Fluorobiphenyl	0.069		0.1000		69.4	15	134			
Surr: 4-Terphenyl-d14	0.085		0.1000		84.9	15	168			

Sample ID: **2204b57-001bms**	SampType: **MS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **67188**	RunNo: **87709**
Prep Date: **5/2/2022**	Analysis Date: **5/3/2022**	SeqNo: **3105694** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.075	0.00010	0.1000	0	74.9	15.8	101			
3+4-Methylphenol	0.16	0.00010	0.2000	0	79.1	16.9	97.9			
2,4-Dinitrotoluene	0.058	0.00010	0.1000	0	57.5	20.1	90.5			
Hexachlorobenzene	0.072	0.00010	0.1000	0	71.6	34	108			
Hexachlorobutadiene	0.063	0.00010	0.1000	0	63.0	15	99.7			
Hexachloroethane	0.068	0.00010	0.1000	0	67.9	15	86.4			
Nitrobenzene	0.073	0.00010	0.1000	0	72.6	15	109			
Pentachlorophenol	0.024	0.00010	0.1000	0	24.1	15	130			
Pyridine	0.049	0.00010	0.1000	0.005858	42.9	15	82			
2,4,5-Trichlorophenol	0.073	0.00010	0.1000	0	73.0	28.1	105			
2,4,6-Trichlorophenol	0.064	0.00010	0.1000	0	64.3	21.5	110			
Cresols, Total	0.23	0.00010	0.3000	0	77.7	15	127			
Surr: 2-Fluorophenol	0.12		0.2000		60.6	15	118			
Surr: Phenol-d5	0.086		0.2000		43.2	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.1	15	150			
Surr: Nitrobenzene-d5	0.079		0.1000		78.9	15	136			
Surr: 2-Fluorobiphenyl	0.070		0.1000		70.4	15	134			
Surr: 4-Terphenyl-d14	0.082		0.1000		81.6	15	168			

Sample ID: **2204b57-001bmsd**	SampType: **MSD**	TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **67188**	RunNo: **87709**
Prep Date: **5/2/2022**	Analysis Date: **5/3/2022**	SeqNo: **3105695** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.080	0.00010	0.1000	0	80.2	15.8	101	6.81	20	
3+4-Methylphenol	0.17	0.00010	0.2000	0	84.2	16.9	97.9	6.20	20	
2,4-Dinitrotoluene	0.059	0.00010	0.1000	0	59.2	20.1	90.5	2.89	20	
Hexachlorobenzene	0.077	0.00010	0.1000	0	76.6	34	108	6.76	20	
Hexachlorobutadiene	0.066	0.00010	0.1000	0	66.0	15	99.7	4.73	20	
Hexachloroethane	0.069	0.00010	0.1000	0	68.9	15	86.4	1.50	20	
Nitrobenzene	0.076	0.00010	0.1000	0	75.9	15	109	4.40	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2204b57-001bmsd**	SampType: **MSD**	TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **67188**	RunNo: **87709**
Prep Date: **5/2/2022**	Analysis Date: **5/3/2022**	SeqNo: **3105695** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.040	0.00010	0.1000	0	39.5	15	130	48.7	20	R
Pyridine	0.056	0.00010	0.1000	0.005858	49.7	15	82	13.1	20	
2,4,5-Trichlorophenol	0.077	0.00010	0.1000	0	77.3	28.1	105	5.68	20	
2,4,6-Trichlorophenol	0.076	0.00010	0.1000	0	75.8	21.5	110	16.4	20	
Cresols, Total	0.25	0.00010	0.3000	0	82.9	15	127	6.40	20	
Surr: 2-Fluorophenol	0.13		0.2000		66.1	15	118	0	0	
Surr: Phenol-d5	0.096		0.2000		47.8	15	92.9	0	0	
Surr: 2,4,6-Tribromophenol	0.16		0.2000		81.0	15	150	0	0	
Surr: Nitrobenzene-d5	0.081		0.1000		81.2	15	136	0	0	
Surr: 2-Fluorobiphenyl	0.073		0.1000		73.3	15	134	0	0	
Surr: 4-Terphenyl-d14	0.078		0.1000		78.3	15	168	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 98.6uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101479** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	98.60	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67181**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **PBW**	Batch ID: **67181**	RunNo: **87656**							
Prep Date: **5/2/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103457**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-67181**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **BatchQC**	Batch ID: **67181**	RunNo: **87656**							
Prep Date: **5/2/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103458**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00014	0.00020	0.0001500	0	95.6	50	150			J

Sample ID: **LCS-67181**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **LCSW**	Batch ID: **67181**	RunNo: **87656**							
Prep Date: **5/2/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103459**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A88011**	RunNo: **88011**
Prep Date:	Analysis Date: **5/16/2022**	SeqNo: **3119568** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A88011**	RunNo: **88011**
Prep Date:	Analysis Date: **5/16/2022**	SeqNo: **3119570** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	51	1.0	50.00	0	103	80	120			
Potassium	51	1.0	50.00	0	102	80	120			
Sodium	50	1.0	50.00	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67111**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **67111**	RunNo: **87611**
Prep Date: **4/27/2022**	Analysis Date: **4/28/2022**	SeqNo: **3100575** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	0.0028	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-67111**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **67111**	RunNo: **87611**
Prep Date: **4/27/2022**	Analysis Date: **4/28/2022**	SeqNo: **3100577** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	93.9	80	120			
Cadmium	0.48	0.0020	0.5000	0	95.5	80	120			B
Chromium	0.47	0.0060	0.5000	0	93.9	80	120			
Silver	0.096	0.0050	0.1000	0	96.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101381**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101382**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.12	20.00	80.00	0	95.2	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101404**	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-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101405**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.60	20.00	80.00	0	94.5	90	110			

Sample ID: **mb-3 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101427**	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-3 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101428**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.32	20.00	80.00	0	95.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67191**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **67191**	RunNo: **87767**							
Prep Date: **5/3/2022**	Analysis Date: **5/5/2022**	SeqNo: **3108756**	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-67191**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **67191**	RunNo: **87767**							
Prep Date: **5/3/2022**	Analysis Date: **5/5/2022**	SeqNo: **3108757**	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	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67224**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **67224**	RunNo: **87726**							
Prep Date: **5/3/2022**	Analysis Date: **5/4/2022**	SeqNo: **3106971**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-67224**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **67224**	RunNo: **87726**							
Prep Date: **5/3/2022**	Analysis Date: **5/4/2022**	SeqNo: **3106972**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	90	4.0	92.40	0	97.4	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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 | Work Order Number: 2204B57 | RcptNo: 1

Received By: Juan Rojas 4/27/2022 7:10:00 AM

Completed By: Sean Livingston 4/27/2022 10:32:16 AM

Reviewed By: KPG 4-27-22

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 6 4 (<2 or >12 unless noted)

Adjusted? NO

Checked by: JN 4/27/22

Special Handling (if applicable)

15. 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: _____

16. Additional remarks: Poured off 125ml from samples 001B 2 of 2, 002B 2 of 2. for orp analysis. JN 4/27/22.

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.6	Good				

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

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

Turn-Around Time:
Standard ☐ Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard

On Ice: ☒ Yes ☐ No

Sample Temperature: 0.3+0.3=0.6

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. 2204857	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X						
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X					
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X				
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X			
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X		
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X	
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X
4/26/22	9:50	Liquid	CTB to City POTW	**	**	002	X						
4/26/22	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
4/26/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none				X				
4/26/22	9:50	Liquid	CTB to City POTW	***	***					X			
4/26/22	9:50	Liquid	CTB to City POTW	1-250ml P	HNO4						X		
4/26/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none							X	
4/26/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none								X

Date	Time	Relinquished by	Received by	Date	Time
4-26-22	11:15	Brady Hubbard	A Cumming	4/26/22	1115
4/26/22	1900	A Cumming	COURIER	4/27/22	7:10

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 09, 2022

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

RE: Quarterly WDW 1 2 3 4 Inj Well OrderNo.: 2209H25

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/30/2022 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: **2209H25**
Date: **11/9/2022**

CLIENT: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2209H25**
Date Reported: **11/9/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 9/28/2022 11:18:00 PM
Lab ID: 2209H25-001 **Matrix:** AQUEOUS **Received Date:** 9/30/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	10/20/2022 10:53:00 AM	70615
Endrin	ND	0.000062	0.020		mg/L	1	10/20/2022 10:53:00 AM	70615
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	10/20/2022 10:53:00 AM	70615
Heptachlor	ND	0.000041	0.0080		mg/L	1	10/20/2022 10:53:00 AM	70615
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	10/20/2022 10:53:00 AM	70615
Methoxychlor	ND	0.000075	10		mg/L	1	10/20/2022 10:53:00 AM	70615
Toxaphene	ND	0.00050	0.50		mg/L	1	10/20/2022 10:53:00 AM	70615
Surr: Decachlorobiphenyl	55.0	0	40.9-111		%Rec	1	10/20/2022 10:53:00 AM	70615
Surr: Tetrachloro-m-xylene	77.3	0	15-107		%Rec	1	10/20/2022 10:53:00 AM	70615
EPA METHOD 300.0: ANIONS							Analyst: **JMT**	
Fluoride	65	0.92	2.0	*	mg/L	20	9/30/2022 1:53:36 PM	R91467
Chloride	490	25	50	*	mg/L	100	10/3/2022 1:19:11 PM	R91508
Nitrogen, Nitrite (As N)	0.31	0.057	0.50	J	mg/L	5	9/30/2022 1:15:01 PM	R91467
Bromide	0.45	0.25	0.50	J	mg/L	5	9/30/2022 1:15:01 PM	R91467
Nitrogen, Nitrate (As N)	2.5	0.10	0.50		mg/L	5	9/30/2022 1:15:01 PM	R91467
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	9/30/2022 1:15:01 PM	R91467
Sulfate	2300	25	50	*	mg/L	100	10/3/2022 1:19:11 PM	R91508
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.027	0.0025	5.0	J	mg/L	5	10/19/2022 2:08:07 PM	70719
Lead	ND	0.0025	5.0		mg/L	5	10/19/2022 2:08:07 PM	70719
Selenium	0.040	0.0025	1.0	J	mg/L	5	10/19/2022 2:08:07 PM	70719
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	10/10/2022 3:50:37 PM	70693
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	400	0.29	5.0		mg/L	5	10/12/2022 12:52:32 PM	A91762
Magnesium	130	0.17	5.0		mg/L	5	10/12/2022 12:52:32 PM	A91762
Potassium	230	1.0	5.0		mg/L	5	10/12/2022 12:52:32 PM	A91762
Sodium	880	4.2	10		mg/L	10	10/12/2022 1:28:12 PM	A91762
EPA 6010B: TCLP							Analyst: **JRR**	
Barium	0.049	0.0011	100	J	mg/L	1	10/12/2022 1:36:42 PM	70719
Cadmium	ND	0.0012	1.0		mg/L	1	10/12/2022 1:36:42 PM	70719
Chromium	ND	0.0017	5.0		mg/L	1	10/12/2022 1:36:42 PM	70719
Silver	0.0058	0.0013	5.0	J	mg/L	1	10/12/2022 1:36:42 PM	70719
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	10/14/2022 12:10:38 AM	70605
3+4-Methylphenol	ND	0.0051	200		mg/L	1	10/14/2022 12:10:38 AM	70605

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209H25**
Date Reported: **11/9/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 9/28/2022 11:18:00 PM
Lab ID: 2209H25-001 **Matrix:** AQUEOUS **Received Date:** 9/30/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	10/14/2022 12:10:38 AM	70605
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	10/14/2022 12:10:38 AM	70605
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	10/14/2022 12:10:38 AM	70605
Hexachloroethane	ND	0.014	3.0		mg/L	1	10/14/2022 12:10:38 AM	70605
Nitrobenzene	ND	0.0049	2.0		mg/L	1	10/14/2022 12:10:38 AM	70605
Pentachlorophenol	ND	0.027	100		mg/L	1	10/14/2022 12:10:38 AM	70605
Pyridine	ND	0.014	5.0		mg/L	1	10/14/2022 12:10:38 AM	70605
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	10/14/2022 12:10:38 AM	70605
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	10/14/2022 12:10:38 AM	70605
Cresols, Total	ND	0.027	200		mg/L	1	10/14/2022 12:10:38 AM	70605
Surr: 2-Fluorophenol	61.6	0	18.1-88.9		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: Phenol-d5	45.3	0	17-61.5		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: 2,4,6-Tribromophenol	87.2	0	29.8-104		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: Nitrobenzene-d5	71.4	0	22.2-111		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: 2-Fluorobiphenyl	61.8	0	24.6-96.3		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: 4-Terphenyl-d14	90.8	0	53.4-124		%Rec	1	10/14/2022 12:10:38 AM	70605
TCLP VOLATILES BY 8260B							Analyst: **BRM**	
Benzene	ND	0.00023	0.50		mg/L	200	10/11/2022 9:34:52 PM	A91711
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	10/11/2022 9:34:52 PM	A91711
2-Butanone	ND	0.0020	200		mg/L	200	10/11/2022 9:34:52 PM	A91711
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	10/11/2022 9:34:52 PM	A91711
Chloroform	ND	0.00013	6.0		mg/L	200	10/11/2022 9:34:52 PM	A91711
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	10/11/2022 9:34:52 PM	A91711
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	10/11/2022 9:34:52 PM	A91711
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	10/11/2022 9:34:52 PM	A91711
Trichloroethene (TCE)	0.036	0.00020	0.50	J	mg/L	200	10/11/2022 9:34:52 PM	A91711
Vinyl chloride	ND	0.00032	0.20		mg/L	200	10/11/2022 9:34:52 PM	A91711
Chlorobenzene	ND	0.00016	100		mg/L	200	10/11/2022 9:34:52 PM	A91711
Surr: 1,2-Dichloroethane-d4	122	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
Surr: Dibromofluoromethane	103	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
Surr: Toluene-d8	106	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JTT**	
Conductivity	6900	10	10		µmhos/c	1	10/4/2022 3:32:18 PM	R91537
SM4500-H+B / 9040C: PH							Analyst: **JTT**	
pH	8.04			H	pH units	1	10/4/2022 3:32:18 PM	R91537
SM2320B: ALKALINITY							Analyst: **JTT**	

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209H25**
Date Reported: **11/9/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 9/28/2022 11:18:00 PM
Lab ID: 2209H25-001 **Matrix:** AQUEOUS **Received Date:** 9/30/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **JTT**	
Bicarbonate (As CaCO3)	582.9	20.00	20.00		mg/L Ca	1	10/4/2022 3:32:18 PM	R91537
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	10/4/2022 3:32:18 PM	R91537
Total Alkalinity (as CaCO3)	582.9	20.00	20.00		mg/L Ca	1	10/4/2022 3:32:18 PM	R91537
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9989	0	0			1	10/3/2022 2:34:00 PM	R91481
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	5120	200	200	*D	mg/L	1	10/5/2022 8:58:00 AM	70542
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	28	4.0	4.0		mg/L	1	10/4/2022 11:09:00 AM	70560

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Pace Analytical®

ANALYTICAL REPORT

October 21, 2022

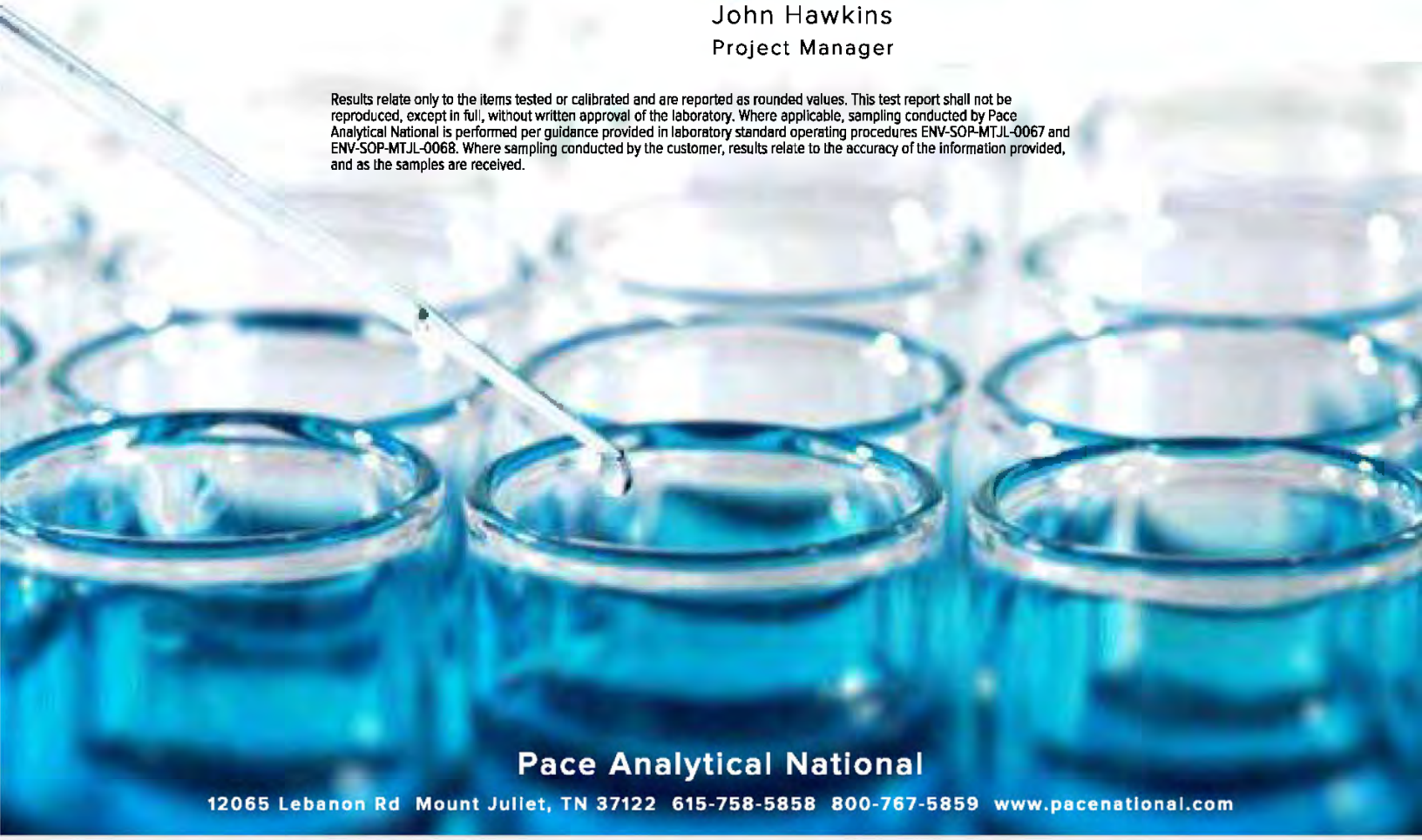
Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1542745
Samples Received:	10/04/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

2209H25-001FG WDW-1,2,3 & 4 EFFLUENT L1542745-01 GW

Collected by	Collected date/time	Received date/time
	09/28/22 23:18	10/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1937384	1	10/06/22 11:56	10/06/22 11:56	JTM	Mt. Juliet, TN
Wet Chemistry by Method 2580	WG1946070	1	10/21/22 07:45	10/21/22 07:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1937600	1	10/06/22 17:42	10/07/22 12:41	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1937427	1	10/05/22 12:02	10/05/22 12:02	JAR	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1941732	1	10/12/22 17:00	10/12/22 17:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1937917	1	10/06/22 03:00	10/06/22 03:00	AAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321	WG1938291	2	10/09/22 14:25	10/13/22 17:54	MSB	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1542745-01	2209H25-001FG WDW-1,2,3 & 4 EFFLUENT	4500 CN E-2016

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

Lab Sample ID	Project Sample ID	Method
L1542745-01	2209H25-001FG WDW-1,2,3 & 4 EFFLUENT	4500 CN E-2016

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		10/6/2022 11:56:16 AM	WG1937384
Fluid	1		10/6/2022 11:56:16 AM	WG1937384
Initial pH	N/A		10/6/2022 11:56:16 AM	WG1937384
Final pH	N/A		10/6/2022 11:56:16 AM	WG1937384

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	mV				
ORP	129	T8	1	10/21/2022 07:45	WG1946070

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Cyanide	0.0207		0.00500	1	10/07/2022 12:41	WG1937600

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Sulfide	ND	J6	0.0500	1	10/05/2022 12:02	WG1937427

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
pH	7.83	T8	1	10/12/2022 17:00	WG1941732

Sample Narrative:

L1542745-01 WG1941732: 7.83 at 19.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	deg F				
Flashpoint	DNF at 170		1	10/06/2022 03:00	WG1937917

Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
2,4-D	ND		0.0400	10	2	10/13/2022 17:54	WG1938291
2,4,5-TP (Silvex)	ND		0.0400	1	2	10/13/2022 17:54	WG1938291
(S) 2,4-DB-03	*129*		*70.0-130*			*10/13/2022 17:54*	WG1938291

WG1946070

Wet Chemistry by Method 2580

QUALITY CONTROL SUMMARY

L1542745-01

L1542745-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542745-01 10/21/22 07:45 • (DUP) R3851271-3 10/21/22 07:45

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	129	130	1	1.00		20

L1547426-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1547426-06 10/21/22 07:45 • (DUP) R3851271-4 10/21/22 07:45

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	286	289	1	3.70		20

L1547868-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1547868-01 10/21/22 07:45 • (DUP) R3851271-5 10/21/22 07:45

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	336	336	1	0.100		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3851271-1 10/21/22 07:45 • (LCSD) R3851271-2 10/21/22 07:45

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	109	111	110	102	101	90.0-110			0.500	20

WG1937600
Wet Chemistry by Method 4500 CN E-2016

QUALITY CONTROL SUMMARY

L1542745-01

Method Blank (MB)

(MB) R3845870-1 10/07/22 12:16

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Reactive Cyanide	U		0.00180	0.00500

L1542733-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542733-01 10/07/22 12:22 • (DUP) R3845870-3 10/07/22 12:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Cyanide	ND	ND	1	0.000		20

L1542734-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1542734-02 10/07/22 12:30 • (DUP) R3845870-6 10/07/22 12:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3845870-2 10/07/22 12:17

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Cyanide	0.100	0.0985	98.5	87.1-120	

L1542733-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1542733-02 10/07/22 12:24 • (MS) R3845870-4 10/07/22 12:25 • (MSD) R3845870-5 10/07/22 12:26

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.0880	0.0881	88.0	88.1	1	90.0-110	J6	J6	0.114	20

Sample Narrative:
MS: Matrix spike failure due to matrix interference.
MSD: Matrix spike failure due to matrix interference.

WG1937600

QUALITY CONTROL SUMMARY

Wet Chemistry by Method 4500 CN E-2016

L1542745-01

L1542742-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1542742-01 10/07/22 12:32 • (MS) R3845870-7 10/07/22 12:33 • (MSD) R3845870-8 10/07/22 12:34

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0957	0.0953	93.7	93.3	1	90.0-110			0.419	20

WG1937427

Wet Chemistry by Method 4500 S2 D-2011

QUALITY CONTROL SUMMARY

L1542745-01

Method Blank (MB)

(MB) R3844889-1 10/05/22 11:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Reactive Sulfide	U		0.0250	0.0500

L1542751-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542751-01 10/05/22 12:04 • (DUP) R3844889-5 10/05/22 12:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Reactive Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3844889-2 10/05/22 11:56

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Sulfide	0.500	0.526	105	85.0-115	

L1542745-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1542745-01 10/05/22 12:02 • (MS) R3844889-3 10/05/22 12:03 • (MSD) R3844889-4 10/05/22 12:03

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Sulfide	0.500	ND	0.414	0.397	82.8	79.4	1	80.0-120		J6	4.19	20

WG1941732

Wet Chemistry by Method 9040C

QUALITY CONTROL SUMMARY

L1542745-01

L1542782-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542782-01 10/12/22 17:00 • (DUP) R3847780-2 10/12/22 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.54	7.53	1	0.133		1

Sample Narrative:

OS: 7.54 at 19C

DUP: 7.53 at 19.1C

Laboratory Control Sample (LCS)

(LCS) R3847780-1 10/12/22 17:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 20.4C

WG1937917

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

L1542745-01

L1534417-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1534417-01 10/06/22 03:00 • (DUP) R3845562-3 10/06/22 03:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

L1542757-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542757-01 10/06/22 03:00 • (DUP) R3845562-4 10/06/22 03:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3845562-1 10/06/22 03:00 • (LCSD) R3845562-2 10/06/22 03:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	125	128	124	101	98.1	96.0-104			3.18	10

WG1938291 QUALITY CONTROL SUMMARY

Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321 L1542745-01

Method Blank (MB)

(MB) R3848141-2 10/13/22 11:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U		0.0133	0.0400
2,4,5-TP (Silvex)	U		0.0133	0.0400
(S) 2,4-DB-D3	*259*	J1		*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3848141-1 10/13/22 11:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.200	0.194	97.0	70.0-130	
2,4,5-TP (Silvex)	0.200	0.260	130	70.0-130	
(S) 2,4-DB-D3			*270*	*70.0-130*	J1

L1539727-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1539727-01 10/13/22 12:07 • (MS) R3848141-3 10/13/22 12:28 • (MSD) R3848141-4 10/13/22 12:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.200	ND	0.188	0.210	94.0	105	2	70.0-130			11.1	30
2,4,5-TP (Silvex)	0.200	ND	0.281	0.298	141	149	2	70.0-130	J5	J5	5.87	30
(S) 2,4-DB-D3					*135*	*134*		*70.0-130*	J1	J1		

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [2]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX:	(615) 758-5859
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

LIS42745

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2209H25-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	9/28/2022 11:18:00 PM	1	8151TCLP
2	2209H25-001G	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	9/28/2022 11:18:00 PM	3	RCI, ORP

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 9/30/2022	Time: 10:29 AM	Received By:	Date: 10/4/22	Time: 09:00
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 4.9 °C Attempt to Cool ? _____
Comments: _____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275657** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
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: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275665** 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	109	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	99.3	90	110			
Bromide	2.5	0.10	2.500	0	99.8	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	104	90	110			
Phosphorus, Orthophosphate (As P)	4.6	0.50	5.000	0	92.8	90	110			

Sample ID: **2209H25-001CMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275681** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	4.7	0.50	5.000	0.3110	87.0	83.4	110			
Bromide	12	0.50	12.50	0.4460	94.6	89.4	110			
Nitrogen, Nitrate (As N)	15	0.50	12.50	2.517	100	89.5	113			
Phosphorus, Orthophosphate (As P)	21	2.5	25.00	0	85.6	80.1	109			

Sample ID: **2209H25-001CMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275682** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	4.7	0.50	5.000	0.3110	87.5	83.4	110	0.535	20	
Bromide	12	0.50	12.50	0.4460	94.9	89.4	110	0.236	20	
Nitrogen, Nitrate (As N)	15	0.50	12.50	2.517	101	89.5	113	0.322	20	
Phosphorus, Orthophosphate (As P)	22	2.5	25.00	0	86.4	80.1	109	0.902	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91508**	RunNo: **91508**
Prep Date:	Analysis Date: **10/3/2022**	SeqNo: **3277697** 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: **R91508**	RunNo: **91508**
Prep Date:	Analysis Date: **10/3/2022**	SeqNo: **3277698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.8	90	110			
Sulfate	9.6	0.50	10.00	0	96.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70719**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **70719**	RunNo: **91792**
Prep Date: **10/10/2022**	Analysis Date: **10/13/2022**	SeqNo: **3290983** Units: **mg/L**

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

Sample ID: **MSLLLCS-70719**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **70719**	RunNo: **91792**
Prep Date: **10/10/2022**	Analysis Date: **10/13/2022**	SeqNo: **3290984** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00089	0.0010	0.001000	0	89.3	70	130			J

Sample ID: **MSLCS-70719**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **70719**	RunNo: **91792**
Prep Date: **10/10/2022**	Analysis Date: **10/13/2022**	SeqNo: **3290985** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0010	0.05000	0	99.5	80	120			

Sample ID: **MB-70719**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **70719**	RunNo: **91927**
Prep Date: **10/10/2022**	Analysis Date: **10/19/2022**	SeqNo: **3297606** Units: **mg/L**

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

Sample ID: **MSLLLCS-70719**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **70719**	RunNo: **91927**
Prep Date: **10/10/2022**	Analysis Date: **10/19/2022**	SeqNo: **3297607** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00095	0.0010	0.001000	0	94.9	70	130			J
Selenium	0.00085	0.0010	0.001000	0	85.1	70	130			J

Sample ID: **MSLCS-70719**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **70719**	RunNo: **91927**
Prep Date: **10/10/2022**	Analysis Date: **10/19/2022**	SeqNo: **3297610** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.048	0.0010	0.05000	0	96.9	80	120			
Selenium	0.048	0.0010	0.05000	0	96.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70615**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299347** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0026		0.002500		102	40.9	111			
Surr: Tetrachloro-m-xylene	0.0024		0.002500		95.4	15	107			

Sample ID: **MB-70615**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299348** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0026		0.002500		103	40.9	111			
Surr: Tetrachloro-m-xylene	0.0023		0.002500		93.2	15	107			

Sample ID: **LCS-70615**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299349** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	99.6	56.3	126			
gamma-BHC (Lindane)	0.00045	0.00010	0.0005000	0	89.9	45.8	103			
Heptachlor	0.00035	0.00010	0.0005000	0	69.3	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.9	50.1	116			
Methoxychlor	0.00050	0.00010	0.0005000	0	99.9	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		95.8	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.6	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **LCS-70615**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299350** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.5	56.3	126			
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	91.2	45.8	103			
Heptachlor	0.00034	0.00010	0.0005000	0	68.8	33.7	104			
Heptachlor epoxide	0.00046	0.00010	0.0005000	0	91.7	50.1	116			
Methoxychlor	0.00048	0.00010	0.0005000	0	96.2	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		96.5	40.9	111			
Surr: Tetrachloro-m-xylene	0.0020		0.002500		81.4	15	107			

Sample ID: **LCSD-70615**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299351** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.7	56.3	126	3.96	20	
gamma-BHC (Lindane)	0.00044	0.00010	0.0005000	0	87.8	45.8	103	2.36	20	
Heptachlor	0.00032	0.00010	0.0005000	0	64.0	33.7	104	7.92	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	90.4	50.1	116	3.77	20	
Methoxychlor	0.00053	0.00010	0.0005000	0	105	15	203	5.02	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		88.0	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.2	15	107	0	0	

Sample ID: **LCSD-70615**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299352** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	91.0	56.3	126	9.03	20	
gamma-BHC (Lindane)	0.00044	0.00010	0.0005000	0	88.2	45.8	103	1.87	20	
Heptachlor	0.00032	0.00010	0.0005000	0	64.1	33.7	104	7.79	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.1	50.1	116	5.24	20	
Methoxychlor	0.00046	0.00010	0.0005000	0	92.8	15	203	7.42	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		88.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0018		0.002500		70.7	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW**	Batch ID: **A91711**	RunNo: **91711**
Prep Date:	Analysis Date: **10/11/2022**	SeqNo: **3286772** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.018	0.010	0.02000	0	89.0	70	130			
1,1-Dichloroethene	0.018	0.010	0.02000	0	90.6	70	130			
Trichloroethene (TCE)	0.018	0.010	0.02000	0	91.8	70	130			
Chlorobenzene	0.018	0.010	0.02000	0	90.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.014		0.01000		138	70	130			S
Surr: 4-Bromofluorobenzene	0.010		0.01000		102	70	130			
Surr: Dibromofluoromethane	0.012		0.01000		118	70	130			
Surr: Toluene-d8	0.010		0.01000		102	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **A91711**	RunNo: **91711**
Prep Date:	Analysis Date: **10/11/2022**	SeqNo: **3286774** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	0.00025	0.50								J
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.012		0.01000		122	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		113	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		103	70	130			
Surr: Toluene-d8	0.011		0.01000		108	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70605**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **70605**	RunNo: **91785**
Prep Date: **10/5/2022**	Analysis Date: **10/13/2022**	SeqNo: **3291329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		58.3	18.1	88.9			
Surr: Phenol-d5	0.088		0.2000		43.8	17	61.5			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		66.2	29.8	104			
Surr: Nitrobenzene-d5	0.066		0.1000		65.7	22.2	111			
Surr: 2-Fluorobiphenyl	0.059		0.1000		59.1	24.6	96.3			
Surr: 4-Terphenyl-d14	0.082		0.1000		81.9	53.4	124			

Sample ID: **LCS-70605**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **70605**	RunNo: **91785**
Prep Date: **10/5/2022**	Analysis Date: **10/13/2022**	SeqNo: **3291330** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.069	0.00010	0.1000	0	69.5	19	106			
3+4-Methylphenol	0.15	0.00010	0.2000	0	74.6	16.3	112			
2,4-Dinitrotoluene	0.048	0.00010	0.1000	0	48.3	15	99.6			
Hexachlorobenzene	0.063	0.00010	0.1000	0	62.7	41.8	111			
Hexachlorobutadiene	0.027	0.00010	0.1000	0	27.3	15	91.5			
Hexachloroethane	0.029	0.00010	0.1000	0	29.0	15	87.5			
Nitrobenzene	0.063	0.00010	0.1000	0	62.8	19.3	114			
Pentachlorophenol	0.060	0.00010	0.1000	0	60.0	29	103			
Pyridine	0.046	0.00010	0.1000	0	45.6	15	92.6			
2,4,5-Trichlorophenol	0.071	0.00010	0.1000	0	70.7	25.2	114			
2,4,6-Trichlorophenol	0.066	0.00010	0.1000	0	65.8	25.7	112			
Cresols, Total	0.22	0.00010	0.3000	0	72.9	15	145			
Surr: 2-Fluorophenol	0.11		0.2000		55.5	18.1	88.9			
Surr: Phenol-d5	0.083		0.2000		41.7	17	61.5			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		69.2	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **LCS-70605**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**							
Client ID: **LCSW**	Batch ID: **70605**	RunNo: **91785**							
Prep Date: **10/5/2022**	Analysis Date: **10/13/2022**	SeqNo: **3291330**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.068		0.1000		67.7	22.2	111			
Surr: 2-Fluorobiphenyl	0.064		0.1000		64.2	24.6	96.3			
Surr: 4-Terphenyl-d14	0.087		0.1000		87.0	53.4	124			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID:	**lcs-1 99.4uS eC**	SampType:	**LCS**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R91537**	RunNo:	**91537**					
Prep Date:		Analysis Date:	**10/4/2022**	SeqNo:	**3279123**	Units:	**µmhos/cm**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity		99	10	99.40	0	99.8	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70693**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **70693**	RunNo: **91673**
Prep Date: **10/10/2022**	Analysis Date: **10/10/2022**	SeqNo: **3284866** Units: **mg/L**

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

Sample ID: **LCSLL-70693**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **70693**	RunNo: **91673**
Prep Date: **10/10/2022**	Analysis Date: **10/10/2022**	SeqNo: **3284867** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00020	0.00020	0.0001500	0	135	50	150			

Sample ID: **LCS-70693**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **70693**	RunNo: **91673**
Prep Date: **10/10/2022**	Analysis Date: **10/10/2022**	SeqNo: **3284868** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A91762**	RunNo: **91762**
Prep Date:	Analysis Date: **10/12/2022**	SeqNo: **3289919** Units: **mg/L**

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

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A91762**	RunNo: **91762**
Prep Date:	Analysis Date: **10/12/2022**	SeqNo: **3289921** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	52	1.0	50.00	0	103	80	120			
Magnesium	52	1.0	50.00	0	105	80	120			
Potassium	52	1.0	50.00	0	104	80	120			
Sodium	51	1.0	50.00	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70719**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP**
Client ID: **PBW**	Batch ID: **70719**	RunNo: **91762**
Prep Date: **10/10/2022**	Analysis Date: **10/12/2022**	SeqNo: **3293715** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-70719**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP**
Client ID: **LCSW**	Batch ID: **70719**	RunNo: **91762**
Prep Date: **10/10/2022**	Analysis Date: **10/12/2022**	SeqNo: **3293717** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.5	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.2	80	120			
Chromium	0.48	0.0060	0.5000	0	96.7	80	120			
Silver	0.099	0.0050	0.1000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R91537**	RunNo: **91537**							
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279059**	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 alk**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R91537**	RunNo: **91537**							
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279060**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.64	20.00	80.00	0	97.0	90	110			

Sample ID: **mb-2 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R91537**	RunNo: **91537**							
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279082**	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-2 alk**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R91537**	RunNo: **91537**							
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279083**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.52	20.00	80.00	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	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **2209H25-001CDUP**	SampType: **DUP**	TestCode: **Specific Gravity**							
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **R91481**	RunNo: **91481**							
Prep Date:	Analysis Date: **10/3/2022**	SeqNo: **3276457**	Units:						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9998	0						0.0901	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70542**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **70542**	RunNo: **91532**
Prep Date: **10/3/2022**	Analysis Date: **10/5/2022**	SeqNo: **3278878** 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-70542**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **70542**	RunNo: **91532**
Prep Date: **10/3/2022**	Analysis Date: **10/5/2022**	SeqNo: **3278879** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70560**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **70560**	RunNo: **91514**							
Prep Date: **10/3/2022**	Analysis Date: **10/4/2022**	SeqNo: **3277855**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-70560**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **70560**	RunNo: **91514**							
Prep Date: **10/3/2022**	Analysis Date: **10/4/2022**	SeqNo: **3277856**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	98	4.0	91.90	0	107	83.89	119.7			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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 Work Order Number: 2209H25 RcptNo: 1

Received By: Juan Rojas 9/30/2022 7:30:00 AM

Completed By: Sean Livingston 9/30/2022 10:19:20 AM

Reviewed By: JR 9/30/22

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☑ No ☐ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐ HNO3
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)
Adjusted? yes
Checked by: KPG 9.30.22

Special Handling (if applicable)

15. 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:

16. Additional remarks: Added 0.5ml of HNO3 to sample 001E.
Filtered for 001D, adding ~0.4mL HNO3 for dissolved metals analysis, checked for proper pH< 2 - KPG 9.30.22

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5	Good				

Filter Lot # FJ9820x5

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

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

Turn-Around Time:
Standard X Rush

Project Name:
Quarterly WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☒ Yes ☐ No
Sample Temperature: 3+1.2=0.5

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. 2209425	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X						
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X					
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X				
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X			
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X		
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X	
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X

Date: 9.29.22 Time: 06:00 Relinquished by: Brady Hubbard Brady Hubbard
Received by: _____ Date: 9/29/22 Time: 600

Date: 9/29/22 Time: 710 Relinquished by: _____
Received by: _____ Date: 9/30/22 Time: 7:30

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.
0010 filtered from unpreserved bottle

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.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 202258

COMMENTS

Operator: HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	OGRID: 15694
	Action Number: 202258
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

COMMENTS

Created By	Comment	Comment Date
cchavez	Annual Report 2022 Submittal	11/22/2023

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 202258

CONDITIONS

Operator: HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	OGRID: 15694
	Action Number: 202258
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
cchavez	Conditions of Approval: 1. OCD Regulations require MIT Chart Recorder measurement during MITs; therefore, effective FY2024, use of pressure gauge measurements to satisfy OCD UIC Program MIT requirements is prohibited until further notice.	11/22/2023