UICI-8-1

QUARTERLY REPORTS (Q4)

2022

November 7, 2022

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: 2022 4th Quarter Injection Report for Wells WDW-1, WDW-2, WDW-3 and WDW-4 HF Sinclair.

Dear Mr. Chavez,

Enclosed, please find the Fourth Quarter 2022 sampling results for fluids injected into WDW-1, WDW-2, WDW-3 and WDW-4 and a table showing the various volumes and pressures as required under Permit Condition 2.1.1, Quarterly Reports.

Over the Fourth Quarter, the average injection pressure for each well is as reported, 872 psig for WDW-1, 1,026 psig for WDW-2, 995 psig for WDW-3 and 259 psig for WDW-4. The average flows for each well is reported as, WDW-1, 104 gpm, WDW-2, 82 gpm, WDW-3, 115 gpm and WDW-4, 289 gpm. There were no significant loses from the glycol expansion tanks Well Annulus Monitoring System (WAMS).The quarterly effluent analyses indicate parameters are within permit limits.

This report covers the period from July 1, 2022 to September 30, 2022. HF Sinclair has disposed a total of 2,077,303 barrels of fluid into the four wells during the fourth quarter 2022. The volume per well is:

- 369,600 barrels into WDW-1: 30-015-27592
- 290,023 barrels into WDW-2: 30-015-20894
- 407,246 barrels into WDW-3: 30-015-26575
- 1,010,434 barrels into WDW-4: 30-015-44677

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions or comments, please contact Randy Dade at 575-746-5281

Respectfully,

Kawika Tupou
Environmental Manager
HF Sinclair

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2019 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

		Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	V (b
30-015-27592 WDW-1														Previo
Jan-19		1,272	1,400	897	248	301	80	576	734	219	263,589	319,920	85,029	2
Feb-19		1,270	1,400	885	196	293	97	364	576	170	188,160	281,280	103,097	1
Mar-19		1,184	1,356	1,100	125	150	106	456	701	323	132,857	159,429	112,663	1
Monthly Avg		1,242			190								TOTAL	5
30-015-20894 WDW-2														Previo
Jan-19		1,262	1,400	932	71	94	8	390	543	230	75,463	99,909	8,503	7
Feb-19		1,252	1,381	1,057	64	81	29	410	588	284	61,440	77,760	27,840	6
Mar-19		1,157	1,300	1,044	50	77	26	432	659	304	53,143	81,840	27,634	5
Monthly Avg		1,224			62								TOTAL	1
30-015-26575 WDW-3														Previo
Jan-19		1,177	1,400	906	87	144	0	741	938	598	92,469	153,051	0	9
Feb-19		1,116	1,258	899	69	109	0	700	930	561	66,240	104,640	0	6
Mar-19		1,064	1,151	999	56	86	25	659	839	592	59,520	91,406	26,571	5
Monthly Avg		1,119			71								TOTAL	2
30-015-44677 WDW-4														Previo
Jan-19		58	89	37	422	683	178	152	227	107	202,560	327,840	72,960	2
Feb-19		50	98	36	238	729	82	159	226	111	228,480	699,840	78,720	2
Mar-19		80	337	51	263	351	192	167	253	96	279,531	373,063	204,069	2
Monthly Avg		63			308								TOTAL	7

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2022 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average INJ. Pressure (psig)	Maximum INJ. Pressure (psig)	Minimum INJ. Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volu (barr
30-015-27592 WDW-1													
Oct-21	993	1,205	719	228	292	116	81	257	5	7,817	10,011	3,977	**242,**
Nov-21	1,111	1,228	780	208	255	159	37	142	0	7,131	8,743	5,451	**299,**
Dec-21	1,126	1,248	996	217	265	162	51	118	16	7,440	9,086	5,554	**312,**
Monthly Avg	1,077			218								**TOTAL**	854,
30-015-20894 WDW-2													
Oct-21	987	1,123	0	77	91	53	295	574	96	2,640	3,120	1,817	**81,8**
Nov-21	1,034	1,254	790	82	110	41	177	384	96	2,811	3,771	1,406	**118,**
Dec-21	993	1,145	891	90	106	73	146	323	104	3,086	3,634	2,503	**129,**
Monthly Avg	1,005			83								**TOTAL**	329,
30-015-26575 WDW-3													
Oct-21	894	1,000	0	113	141	75	309	490	180	3,874	4,834	2,571	**120,**
Nov-21	874	952	772	103	125	82	441	644	225	3,531	4,286	2,811	**148,**
Dec-21	868	930	735	94	113	54	460	626	398	3,223	3,068	1,851	**135,**
Monthly Avg	879			103								**TOTAL**	403,
30-015-44677 WDW-4													
Oct-21	145	187	0	155	253	88	84	189	52	5,314	8,674	3,017	**164,**
Nov-21	143	180	119	159	249	77	79	124	53	5,451	8,537	2,640	**228,**
Dec-21	171	189	160	240	284	208	94	125	71	8,229	9,737	7,131	**345,**
Monthly Avg	153			185								**TOTAL**	89,

Total
WDW1 854,
WDW2 329,

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2019 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

		Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	V (b
30-015-27592 WDW-1														Previo
Jan-19		1,272	1,400	897	248	301	80	576	734	219	263,589	319,920	85,029	2
Feb-19		1,270	1,400	885	196	293	97	364	576	170	188,160	281,280	103,097	1
Mar-19		1,184	1,356	1,100	125	150	106	456	701	323	132,857	159,429	112,663	1
Monthly Avg		1,242			190								TOTAL	5
30-015-20894 WDW-2														Previo
Jan-19		1,262	1,400	932	71	94	8	390	543	230	75,463	99,909	8,503	7
Feb-19		1,252	1,381	1,057	64	81	29	410	588	284	61,440	77,760	27,840	6
Mar-19		1,157	1,300	1,044	50	77	26	432	659	304	53,143	81,840	27,634	5
Monthly Avg		1,224			62								TOTAL	1
30-015-26575 WDW-3														Previo
Jan-19		1,177	1,400	906	87	144	0	741	938	598	92,469	153,051	0	9
Feb-19		1,116	1,258	899	69	109	0	700	930	561	66,240	104,640	0	6
Mar-19		1,064	1,151	999	56	86	25	659	839	592	59,520	91,406	26,571	5
Monthly Avg		1,119			71								TOTAL	2
30-015-44677 WDW-4														Previo
Jan-19		58	89	37	422	683	178	152	227	107	202,560	327,840	72,960	2
Feb-19		50	98	36	238	729	82	159	226	111	228,480	699,840	78,720	2
Mar-19		80	337	51	263	351	192	167	253	96	279,531	373,063	204,069	2
Monthly Avg		63			308								TOTAL	7
														Tot

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2022 SECOND QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average INJ. Pressure (psig)	Maximum INJ. Pressure	Minimum INJ. Pressure	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volu (barr
30-015-27592 WDW-1													
Jan-22	917	1,128	578	193	263	108	18	46	0	6,617	9,017	3,703	**205,**
Feb-22	858	1,136	422	200	266	80	0	3	0	6,857	9,120	2,743	**192,**
Mar-22	1,158	1,335	804	237	282	125	1	7	0	8,126	9,669	4,286	**251,**
Monthly Avg	978			210								**TOTAL**	649,
30-015-20894 WDW-2													
Jan-22	907	1,077	600	122	172	76	410	1,219	91	4,183	5,897	2,606	**129,**
Feb-22	814	1,028	685	81	137	0	818	987	478	2,777	4,697	0	**77,7**
Mar-22	1,010	1,146	827	102	190	50	786	1,196	427	3,497	6,514	6,000	**108,**
Monthly Avg	910			102								**TOTAL**	315,
30-015-26575 WDW-3													
Jan-22	786	976	697	69	122	41	459	1,047	62	2,366	4,183	1,406	**73,3**
Feb-22	760	876	685	70	291	7	585	1,188	292	2,400	9,977	240	**67,2**
Mar-22	881	1,000	779	97	125	70	595	921	319	3,326	4,286	2,400	**103,**
Monthly Avg	809			79								**TOTAL**	243,
30-015-44677 WDW-4													
Jan-22	230	682	155	308	541	191	118	223	43	10,560	18,549	6,549	**327,**
Feb-22	339	1500	150	364	542	164	176	239	110	12,480	18,583	5,623	**349,**
Mar-22	167	184	146	200	238	123	160	247	63	6,857	8,160	4,217	**212,**
Monthly Avg	245			291								**TOTAL**	89,

Total
WDW1 649,
WDW2 315,

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2019 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

		Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	V (b
30-015-27592 WDW-1														Previo
Jan-19	1,272	1,400	897	248	301	80	576	734	219	263,589	319,920	85,029	2
Feb-19	1,270	1,400	885	196	293	97	364	576	170	188,160	281,280	103,097	1
Mar-19	1,184	1,356	1,100	125	150	106	456	701	323	132,857	159,429	112,663	1
Monthly Avg	1,242			190								TOTAL	5
30-015-20894 WDW-2														Previo
Jan-19	1,262	1,400	932	71	94	8	390	543	230	75,463	99,909	8,503	7
Feb-19	1,252	1,381	1,057	64	81	29	410	588	284	61,440	77,760	27,840	6
Mar-19	1,157	1,300	1,044	50	77	26	432	659	304	53,143	81,840	27,634	5
Monthly Avg	1,224			62								TOTAL	1
30-015-26575 WDW-3														Previo
Jan-19	1,177	1,400	906	87	144	0	741	938	598	92,469	153,051	0	9
Feb-19	1,116	1,258	899	69	109	0	700	930	561	66,240	104,640	0	6
Mar-19	1,064	1,151	999	56	86	25	659	839	592	59,520	91,406	26,571	5
Monthly Avg	1,119			71								TOTAL	2
30-015-44677 WDW-4														Previo
Jan-19	58	89	37	422	683	178	152	227	107	202,560	327,840	72,960	2
Feb-19	50	98	36	238	729	82	159	226	111	228,480	699,840	78,720	2
Mar-19	80	337	51	263	351	192	167	253	96	279,531	373,063	204,069	2
Monthly Avg	63			308								TOTAL	7

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2022 THIRD QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average INJ Pressure (psig)	Maximum INJ Pressure (psig)	Minimum INJ Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volu (barr
30-015-27592 WDW-1													
Apr-22	1,114	1,333	883	249	313	171	113	911	0	8,537	10,731	5,863	**256,**
May-22	1,020	1,187	504	275	340	221	587	1,004	296	9,428	11,657	7,587	**282,**
Jun-22	1,062	1,163	849	252	332	105	598	865	255	8,640	11,382	3,600	**259,**
Monthly Avg	1,065			259								**TOTAL**	798,
30-015-20894 WDW-2													
Apr-22	1,000	1,092	837	223	302	157	965	1,243	709	7,646	10,354	5,383	**229,**
May-22	1,102	1,250	921	225	320	163	864	1,197	626	7,714	10,921	5,388	**231,**
Jun-22	1,026	1,143	851	216	303	74	708	880	534	7,406	10,389	2,537	**222,**
Monthly Avg	1,043			221								**TOTAL**	682,
30-015-26575 WDW-3													
Apr-22	881	983	735	95	118	58	444	746	128	3,257	4,046	1,989	**97,7**
May-22	979	1,150	764	112	131	69	258	491	32	3,840	4,491	2,366	**115,**
Jun-22	958	1,066	602	107	125	60	449	676	189	3,669	4,286	2,057	**110,**
Monthly Avg	939			105								**TOTAL**	322,
30-015-44677 WDW-4													
Apr-22	170	204	136	195	298	100	178	261	97	6,686	10,217	3,429	**200,**
May-22	209	237	178	249	285	198	213	265	166	8,537	9,771	6,789	**256,**
Jun-22	251	304	215	297	352	248	197	249	137	10,183	12,069	8,503	**305,**
Monthly Avg	210			247								**TOTAL**	862,

Total I

WDW1 798,

WDW2 682,

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2019 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

		Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	V (b
30-015-27592 WDW-1														Previo
Jan-19	1,272	1,400	897	248	301	80	576	734	219	263,589	319,920	85,029	2
Feb-19	1,270	1,400	885	196	293	97	364	576	170	188,160	281,280	103,097	1
Mar-19	1,184	1,356	1,100	125	150	106	456	701	323	132,857	159,429	112,663	1
Monthly Avg	1,242			190								TOTAL	5
30-015-20894 WDW-2														Previo
Jan-19	1,262	1,400	932	71	94	8	390	543	230	75,463	99,909	8,503	7
Feb-19	1,252	1,381	1,057	64	81	29	410	588	284	61,440	77,760	27,840	6
Mar-19	1,157	1,300	1,044	50	77	26	432	659	304	53,143	81,840	27,634	5
Monthly Avg	1,224			62								TOTAL	1
30-015-26575 WDW-3														Previo
Jan-19	1,177	1,400	906	87	144	0	741	938	598	92,469	153,051	0	9
Feb-19	1,116	1,258	899	69	109	0	700	930	561	66,240	104,640	0	6
Mar-19	1,064	1,151	999	56	86	25	659	839	592	59,520	91,406	26,571	5
Monthly Avg	1,119			71								TOTAL	2
30-015-44677 WDW-4														Previo
Jan-19	58	89	37	422	683	178	152	227	107	202,560	327,840	72,960	2
Feb-19	50	98	36	238	729	82	159	226	111	228,480	699,840	78,720	2
Mar-19	80	337	51	263	351	192	167	253	96	279,531	373,063	204,069	2
Monthly Avg	63			308								TOTAL	7

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2022 FOURTH QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average INJ Pressure (psig)	Maximum INJ Pressure	Minimum INJ Pressure	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volu (barr
30-015-27592 WDW-1													
Jul-22	955	1,019	687	112	135	84	332	490	229	3,840	4,629	2,880	**161,**
Aug-22	896	1,015	751	106	122	97	394	640	236	3,634	4,183	3,326	**112,**
Sep-22	765	987	0	93	112	0	433	654	0	3,189	3,840	0	**95,6**
Monthly Avg	872			104								**TOTAL**	369,
30-015-20894 WDW-2													
Jul-22	1,069	1,293	968	86	102	75	803	974	715	2,949	3,497	2,571	**123,**
Aug-22	972	1,207	754	77	100	56	525	938	305	2,640	3,429	1,920	**81,8**
Sep-22	1,037	1,075	978	82	89	73	303	528	0	2,811	3,051	2,503	**84,3**
Monthly Avg	1,026			82								**TOTAL**	290,
30-015-26575 WDW-3													
Jul-22	1,000	1,249	930	118	135	107	676	777	593	4,046	4,629	3,669	**169,**
Aug-22	976	1,069	767	112	130	68	540	746	366	3,840	4,457	2,331	**119,**
Sep-22	1,010	1,070	950	115	127	99	423	538	323	3,943	4,354	3,394	**118,**
Monthly Avg	995			115								**TOTAL**	407,
30-015-44677 WDW-4													
Jul-22	258	589	191	266	318	5.49	176	258	113	9,120	10,903	189	**383,**
Aug-22	258	301	164	299	369	63	150	247	93	10,251	12,651	2,160	**317,**
Sep-22	260	280	210	301	329	235	92	146	62	10,320	11,280	8,057	**309,**
Monthly Avg	259			289								**TOTAL**	1,010

	Total I
WDW1	369,
WDW2	290,

From: Holder, Mike
To: Chavez, Carl, EMNRD
Cc: Goetze, Phillip, EMNRD; Holder, Mike; Tupou, Kawika
Subject: RE: [EXTERNAL] HF Sinclair Navajo Refining, LLC: Status of RDU Sampling Plan Implementation
Date: Monday, November 21, 2022 7:30:53 PM
Attachments: RDU production 21 Nov 2022.pdf

Carl,

In the January 28, 2022 (revised March 11, 2022) letter entitled "Verification of Non-Hazardous Injection Fluids from RDU Process – Pilot Sampling Plan" (PSP), we described the conditions appropriate for sampling the Refinery/RDU WWTP discharge to the UIC wells (and cooling tower blowdown to the City of Artesia POTW) after the RDU is online. Page 2 of 3 of Appendix A states this condition as when "the RDU is online and corresponding operations are normal and representative". When this condition is met, 4 sample events will occur once per week for a total of 4 weeks.

Normal and representative operating conditions do not necessarily mean "full-scale" or "full-rate" operations. We interpret full-rate to be the RDU design production of 9,000 bpd. However, actual RDU operations may not be able sustain this design level for four consecutive weeks due to such general factors as existing refinery operational limitations and RDU product margin (market) conditions.

The RDU was intended to normally run between a minimum of 4,500 bpd to a maximum of 9,000 bpd. Based on the current business climate, our plans are to run as close to 9,000 bpd through most of the end of the year (i.e., during the PSP 4 week post-RDU sampling period) but the following issues can influence that rate.

The RDU is a significant hydrogen consumer and requires Navajo to make near the maximum hydrogen production to achieve an RDU rate of 9,000 bpd. The existing Refinery has three units that make hydrogen: Unit 63 (small "steam methane reformer" or SMR), Unit 64 (large SMR), and the CCR (naphtha reformer). Any operational "setbacks" in any of those three units result in less hydrogen for consumption across the entire plant. The hydrogen needs of the refinery at the time depend on how it is distributed to all the units that consume hydrogen (not just the RDU). For the most part all the other refinery units will be reduced first depending on inventory and other needs with the RDU being the last to be reduced. However, facility-wide conditions may dictate that a reduction of RDU operations could be necessary.

Availability of feed stock for the RDU is also something that could dictate how much we charge the RDU, thereby effecting production. For example, recent work being done in the PTU (which pretreats the RDU feedstock) limited RDU production to 6,500 bpd. This situation was remedied and, coupled with extra feed in tanks, we were able to increase to a 9,000 bpd rate. Nevertheless, a situation such as this could potentially occur again in the future, thereby limiting the RDU production below full design.

The attached table presents a history of RDU feed rates from Jul 1, 2022 to Nov 15, 2022 and gives more examples of some of the technical issues and obstacles that effect daily rate variability.

Further, the RDU is a relatively new technology and, in Artesia, a “grassroots construction”. Consequently, we have experienced challenges early in operation due to rate limitations or unit outages associated with addressing unforeseen issues. The nature of these issues makes forecasting them very difficult but we have every intention in maximizing the unit rates outside of these issues.

Our goal is to commence with the PSP post-RDU sampling as soon as we increase production to 9,000 bpd (or close to it). We will attempt to maintain as high a rate as possible during the four week PSP schedule, but cannot definitively guarantee this due to the refinery operational issues such as those described above. Further, increasing the RDU production rate from lower levels it not straightforward and instantaneous. For instance, if facility conditions dictate that we decrease RDU charge to 7,500 bpd, we can only increase the rate 1,000 barrels per 12 hour shift. Therefore, we cannot simply make a quick adjustment for a PSP weekly sample day as there will be a time element involved.

To give OCD a first indication of any effects from the RDU on the WWTP effluent discharged to the UIC wells, we offer the most recently submitted quarterly monitoring report required by the UICI-8 Discharge permit. This routine monitoring, conducted on September 28, 2022, was not part of the formal PSP post-RDU sampling. On this date, the charge rate for the RDU was 6,230 bpd (see table). Analytical results for permit parameters did not differ from pre-RDU samples and all concentrations were below TCLP limits.

In summary, we will attempt to maintain the RDU production rate as close to the 9,000 bpd design as possible during the PSP 4-week sampling period, but may need to sample at reduced rates if refinery conditions dictate in order to stay on schedule. As we have discovered since the RDU start-up operational rates between 4,500 bpd to 9,000 bpd can be considered normal and representative.

Please let me know if you’d like to discuss and I can set a call with our engineers. With any luck we are hoping to start sampling next week. Hope you have a great Thanksgiving!

Mike

Summary of HFNR RDU Feed and Product Rundown (barrels per day)					
Date	Raw Feed to RDU Process	Recycle Feed to RDU Process	Total Combined Feed to RDU Process	Product Rundown	Technical Issues
1-Jul-2022	5073	0	5073	4962	
2-Jul-2022	5086	0	5086	5155	
3-Jul-2022	5053	0	5053	5134	
4-Jul-2022	5055	0	5055	5104	
5-Jul-2022	5068	0	5068	5003	
6-Jul-2022	5048	0	5048	5237	
7-Jul-2022	5030	0	5030	4270	
8-Jul-2022	5043	0	5043	5047	
9-Jul-2022	5041	0	5041	4892	
10-Jul-2022	5039	0	5039	5056	
11-Jul-2022	5051	0	5051	4959	
12-Jul-2022	5056	0	5056	4822	
13-Jul-2022	5049	765	5814	5071	
14-Jul-2022	5012	612	5624	5444	
15-Jul-2022	5019	938	5957	5516	
16-Jul-2022	5037	999	6036	5168	
17-Jul-2022	5045	968	6012	5919	
18-Jul-2022	5063	960	6023	6225	
19-Jul-2022	5035	953	5988	5487	
20-Jul-2022	5093	931	6024	5467	
21-Jul-2022	5080	0	5080	4827	
22-Jul-2022	4652	0	4652	4740	
23-Jul-2022	4538	0	4538	4467	
24-Jul-2022	4553	0	4553	4507	
25-Jul-2022	4575	0	4575	4327	
26-Jul-2022	4566	0	4566	4256	
27-Jul-2022	4547	0	4547	4409	
28-Jul-2022	4577	0	4577	5069	
29-Jul-2022	4606	0	4606	4428	
30-Jul-2022	4627	0	4627	4610	
31-Jul-2022	4545	0	4545	3947	
1-Aug-2022	4596	0	4596	5048	
2-Aug-2022	390	0	390	0	RDU down from Aug 2 to Aug 17 because unit compressor was tripped for an unknown reason. Valves would not hold and had to be set off resulting in a prolonged outage. RDU went back up from Aug 17 to Aug 22.
3-Aug-2022	390	0	390	0	
4-Aug-2022	404	0	404	0	
5-Aug-2022	417	0	417	0	
6-Aug-2022	417	0	417	0	
7-Aug-2022	447	0	447	0	
8-Aug-2022	400	0	400	0	
9-Aug-2022	400	0	400	1	
10-Aug-2022	435	0	435	0	
11-Aug-2022	456	0	456	0	
12-Aug-2022	426	0	426	0	
13-Aug-2022	400	0	400	0	
14-Aug-2022	410	0	410	0	
15-Aug-2022	413	0	413	2	
16-Aug-2022	395	0	395	0	
17-Aug-2022	380	3192	3572	0	
18-Aug-2022	4644	0	4644	1	
19-Aug-2022	4646	0	4646	3973	
20-Aug-2022	4540	0	4540	0	
21-Aug-2022	4527	0	4527	0	
22-Aug-2022	4539	0	4539	0	
23-Aug-2022	5135	0	5135	4116	

Summary of HFNR RDU Feed and Product Rundown (barrels per day)					
Date	Raw Feed to RDU Process	Recycle Feed to RDU Process	Total Combined Feed to RDU Process	Product Rundown	Technical Issues
24-Aug-2022	5120	789	5909	5637	
25-Aug-2022	5730	994	6724	6135	
26-Aug-2022	5762	1004	6766	6442	
27-Aug-2022	5764	1013	6777	6103	
28-Aug-2022	5753	1004	6757	6584	
29-Aug-2022	5724	1015	6739	5777	
30-Aug-2022	5741	999	6739	6110	
31-Aug-2022	6247	1001	7248	6884	
1-Sep-2022	7081	996	8077	7402	
2-Sep-2022	7653	996	8649	8721	
3-Sep-2022	7693	1008	8701	8232	
4-Sep-2022	7732	1000	8732	8154	
5-Sep-2022	7706	996	8702	7933	
6-Sep-2022	7656	1004	8660	7653	
7-Sep-2022	8571	0	8571	7717	
8-Sep-2022	9151	0	9151	8815	
9-Sep-2022	8582	0	8582	8450	
10-Sep-2022	7668	0	7668	6879	
11-Sep-2022	6678	0	6678	6703	
12-Sep-2022	5765	0	5765	5708	
13-Sep-2022	576	0	576	0	RDU down from Sep 13 to Sep 20 because the unit had an exchanger leak and had to be shutdown. Valve issues again resulted in an extended outage. RDU went back up on Sep 21.
14-Sep-2022	536	0	536	0	
15-Sep-2022	510	0	510	1	
16-Sep-2022	513	0	513	0	
17-Sep-2022	522	0	522	0	
18-Sep-2022	505	0	505	0	
19-Sep-2022	497	0	497	0	
20-Sep-2022	512	1870	2382	0	
21-Sep-2022	3223	0	3223	0	
22-Sep-2022	4226	0	4226	3383	
23-Sep-2022	4265	0	4265	2750	
24-Sep-2022	4728	0	4728	4714	
25-Sep-2022	4935	0	4935	4084	
26-Sep-2022	4916	1080	5996	5326	
27-Sep-2022	4940	1077	6018	5835	
28-Sep-2022	5150	1080	6230	6541	
29-Sep-2022	6881	1078	7959	7084	
30-Sep-2022	8484	0	8484	8236	
1-Oct-2022	9207	0	9207	8419	
2-Oct-2022	9175	0	9175	8579	
3-Oct-2022	9255	0	9255	8791	
4-Oct-2022	9168	0	9168	9036	
5-Oct-2022	9177	0	9177	8316	
6-Oct-2022	9184	0	9184	8564	
7-Oct-2022	9153	0	9153	8631	
8-Oct-2022	9273	0	9273	8453	
9-Oct-2022	9127	0	9127	8544	
10-Oct-2022	9197	0	9197	8692	
11-Oct-2022	9168	0	9168	8547	
12-Oct-2022	9172	0	9172	8593	
13-Oct-2022	9137	0	9137	7948	
14-Oct-2022	9171	0	9171	7810	
15-Oct-2022	9178	0	9178	8310	
16-Oct-2022	9191	0	9191	9108	

Summary of HFNR RDU Feed and Product Rundown (barrels per day)					
Date	Raw Feed to RDU Process	Recycle Feed to RDU Process	Total Combined Feed to RDU Process	Product Rundown	Technical Issues
17-Oct-2022	9162	0	9162	8305	
18-Oct-2022	9326	0	9326	8940	
19-Oct-2022	9308	0	9308	8758	
20-Oct-2022	9167	0	9167	8266	
21-Oct-2022	9334	0	9334	8378	
22-Oct-2022	9092	1044	10136	9035	
23-Oct-2022	8032	1024	9056	8286	
24-Oct-2022	4739	1015	5754	0	RDU down from Oct 25 to Oct 27 due to loss of naphtha reformer and a steam methane reformer (both producers of hydrogen) and subsequent insufficient hydrogen supply to RDU. RDU swept with nitrogen on Oct 27 (for cooling) and went back up on Oct 28.
25-Oct-2022	671	968	1639	1	
26-Oct-2022	671	0	671	0	
27-Oct-2022	665	14346	15012	0	
28-Oct-2022	5001	0	5001	5	
29-Oct-2022	6288	596	6884	7313	
30-Oct-2022	7966	584	8550	6346	
31-Oct-2022	7634	604	8238	8155	
1-Nov-2022	8516	1493	10008	8611	
2-Nov-2022	7644	1504	9147	8458	
3-Nov-2022	7493	1504	8997		
4-Nov-2022	7484	1504	8988		
5-Nov-2022	7513	1504	9017		
6-Nov-2022	7750	1504	9254		
7-Nov-2022	7240	1504	8744		RDU down from Nov 7 (8:00 PM) to Nov 12 due to loss of boiler feed water to whole refinery. RDU brought back up on Nov 13 (12:00 PM)
8-Nov-2022	816	0	816		
9-Nov-2022	816	0	816		
10-Nov-2022	816	0	816		
11-Nov-2022	816	0	816		
12-Nov-2022	816	0	816		
13-Nov-2022	4000	500	4500		
14-Nov-2022	4500	1021	5521		
15-Nov-2022	5000	1044	6044		

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2022 FOURTH QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
30-015-27592 WDW-1												49,927,824
Jul-22	955	112	135	84	332	490	229	3,840	4,629	2,880	**161,280**	50,089,104
Aug-22	896	106	122	97	394	640	236	3,634	4,183	3,326	**112,663**	50,201,767
Sep-22	765	93	112	0	433	654	0	3,189	3,840	0	**95,657**	50,297,424
Monthly Avg	872	104								**TOTAL**	369,600	
30-015-20894 WDW-2												30,757,701
Jul-22	1,069	86	102	75	803	974	715	2,949	3,497	2,571	**123,840**	30,881,541
Aug-22	972	77	100	56	525	938	305	2,640	3,429	1,920	**81,840**	30,963,381
Sep-22	1,037	82	89	73	303	528	0	2,811	3,051	2,503	**84,343**	31,047,724
Monthly Avg	1,026	82								**TOTAL**	290,023	
30-015-26575 WDW-3												22,251,681
Jul-22	1,000	118	135	107	676	777	593	4,046	4,629	3,669	**169,920**	22,421,601
Aug-22	976	112	130	68	540	746	366	3,840	4,457	2,331	**119,040**	22,540,641
Sep-22	1,010	115	127	99	423	538	323	3,943	4,354	3,394	**118,286**	22,658,927
Monthly Avg	995	115								**TOTAL**	407,246	
30-015-44677 WDW-4												8,654,195
Jul-22	258	266	318	5.49	176	258	113	9,120	10,903	189	**383,040**	9,037,235
Aug-22	258	299	369	63	150	247	93	10,251	12,651	2,160	**317,794**	9,355,029
Sep-22	260	301	329	235	92	146	62	10,320	11,280	8,057	**309,600**	9,664,629
Monthly Avg	259	289								**TOTAL**	1,010,434	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	369,600	49,927,824	50,297,424
WDW2	290,023	30,757,701	31,047,724
WDW3	407,246	22,251,681	22,658,927
WDW4	1,010,434	8,654,195	9,664,629
	2,077,303		

Pace Analytical®

ANALYTICAL REPORT

October 21, 2022

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

Hall Environmental Analysis Laboratory

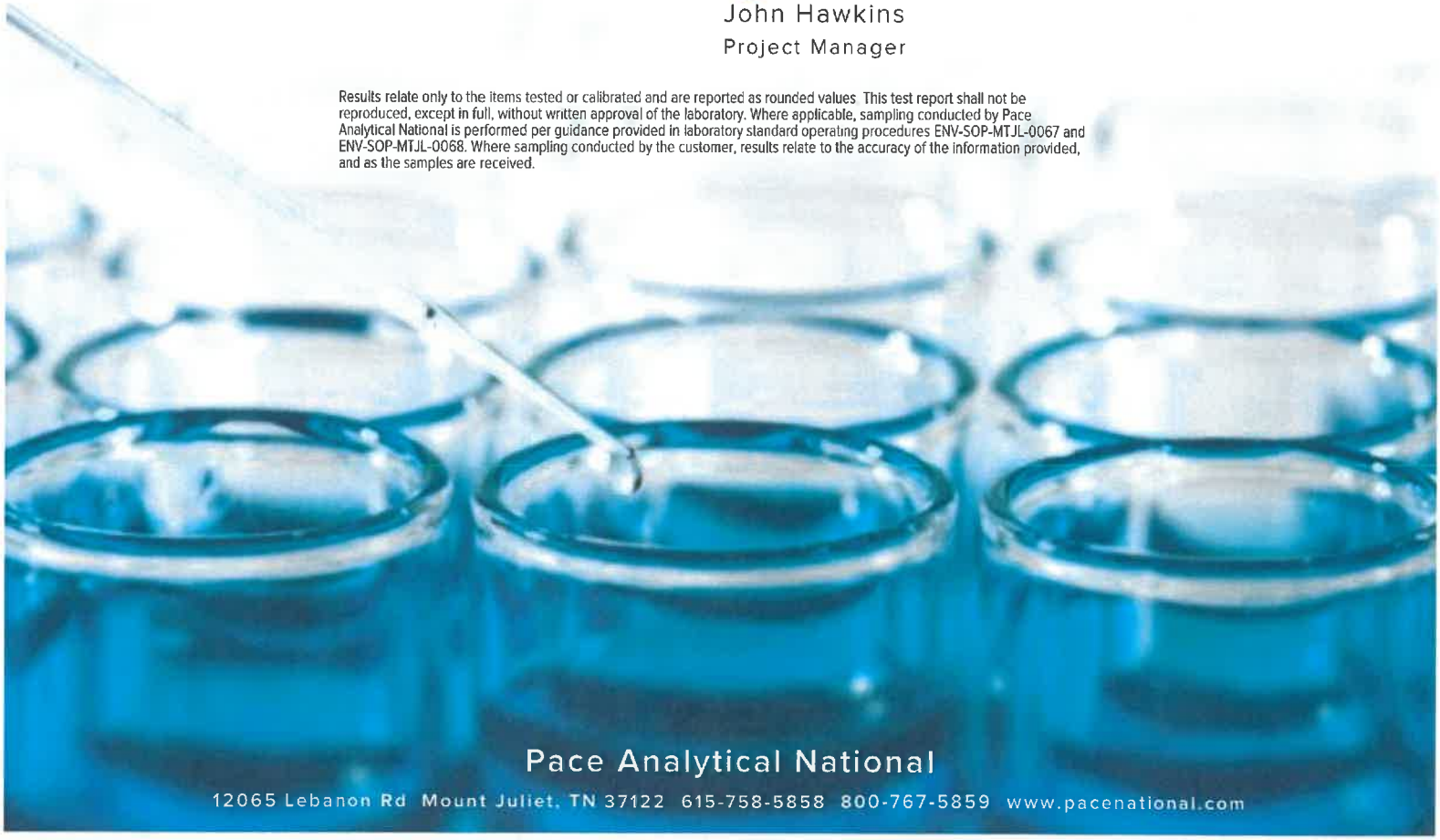
Sample Delivery Group:	L1542745
Samples Received:	10/04/2022
Project Number:	
Description:	

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

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

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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Hall Environmental Analysis Laboratory

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SAMPLE SUMMARY

2209H25-001FG WDW-1,2,3 & 4 EFFLUENT L1542745-01 GW			Collected by	Collected date/time 09/28/22 23:18	Received date/time 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

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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

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2209H25-001FG WDW-1,2,3 & 4 EFFLUENT
Collected date/time: 09/28/22 23:18

SAMPLE RESULTS - 01
L1542745

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-D3	*129*		*70.0-130*			*10/13/2022 17:54*	WG1938291

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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

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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 mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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 mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
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 mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3845870-2 10/07/22 12:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
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 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	0.0880	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.

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WG1937600

Wet Chemistry by Method 4500 CN E-2016

QUALITY CONTROL SUMMARY

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

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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 mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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 mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3844889-2 10/05/22 11:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
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 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	0.414	0.397	82.8	79.4	1	80.0-120		J6	4.19	20

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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

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Received by OCD: 12/20/2022 11:27:42 AM

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	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
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	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	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) R3845562-1 10/06/22 03:00 • (LCSD) R3845562-2 10/06/22 03:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	128	124	101	98.1	96.0-104			3.18	10

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Received by OCD: 12/20/2022 11:27:42 AM

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		

Cp Tc Ss Cn Sr Qc Gl Al Sc

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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.

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

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	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
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.

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

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Received by OCD: 12/20/2022 11:27:42 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

1046

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: 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 4.1 °C Attempt to Cool? _____

Comments: _____

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 01, 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.: 2207304

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/8/2022 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

Analytical Report
Lab Order **2207304**
Date Reported: **8/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2207304-001 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 7/7/2022 9:45:00 AM
Received Date: 7/8/2022 6:50:00 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	7/18/2022 1:20:38 PM	68767
Endrin	ND	0.000062	0.020		mg/L	1	7/18/2022 1:20:38 PM	68767
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	7/18/2022 1:20:38 PM	68767
Heptachlor	ND	0.000041	0.0080		mg/L	1	7/18/2022 1:20:38 PM	68767
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	7/18/2022 1:20:38 PM	68767
Methoxychlor	ND	0.000075	10		mg/L	1	7/18/2022 1:20:38 PM	68767
Toxaphene	ND	0.00050	0.50		mg/L	1	7/18/2022 1:20:38 PM	68767
Surr: Decachlorobiphenyl	65.1	0	48.4-132		%Rec	1	7/18/2022 1:20:38 PM	68767
Surr: Tetrachloro-m-xylene	38.6	0	29.4-106		%Rec	1	7/18/2022 1:20:38 PM	68767
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	2.1	0.46	2.0		mg/L	20	7/8/2022 2:53:13 PM	R89353
Chloride	81	5.0	10		mg/L	20	7/8/2022 2:53:13 PM	R89353
Nitrogen, Nitrite (As N)	ND	0.0096	0.10		mg/L	1	7/8/2022 2:40:21 PM	R89353
Bromide	ND	0.050	0.10		mg/L	1	7/8/2022 2:40:21 PM	R89353
Nitrogen, Nitrate (As N)	1.7	0.020	0.10		mg/L	1	7/8/2022 2:40:21 PM	R89353
Phosphorus, Orthophosphate (As P)	7.5	5.0	10	J	mg/L	20	7/8/2022 2:53:13 PM	R89353
Sulfate	1200	12	25	*	mg/L	50	7/14/2022 11:17:44 PM	R89489
EPA METHOD 6020A: TOTAL METALS							Analyst: **DBK**	
Arsenic	0.0013	0.00050	5.0	J	mg/L	1	7/29/2022 4:21:34 PM	68941
Lead	ND	0.0025	5.0		mg/L	5	7/29/2022 4:36:15 PM	68941
Selenium	0.0040	0.00050	1.0	J	mg/L	1	7/29/2022 4:21:34 PM	68941
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	7/8/2022 3:20:26 PM	68642
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	330	0.29	5.0		mg/L	5	7/11/2022 1:38:34 PM	A89369
Magnesium	100	0.17	5.0		mg/L	5	7/11/2022 1:38:34 PM	A89369
Potassium	2.6	0.21	1.0		mg/L	1	7/11/2022 1:32:49 PM	A89369
Sodium	77	0.42	1.0		mg/L	1	7/11/2022 1:32:49 PM	A89369
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **JRR**	
Barium	0.023	0.0011	100	J	mg/L	1	7/25/2022 1:21:53 PM	68941
Cadmium	ND	0.0012	1.0		mg/L	1	7/25/2022 1:21:53 PM	68941
Chromium	0.0035	0.0017	5.0	J	mg/L	1	7/28/2022 9:58:57 AM	68941
Silver	0.0062	0.0013	5.0	J	mg/L	1	7/25/2022 1:21:53 PM	68941
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.050	2000		mg/L	1	7/18/2022 5:15:03 PM	68749
3+4-Methylphenol	ND	0.051	2000		mg/L	1	7/18/2022 5:15:03 PM	68749

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 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

Analytical Report
Lab Order **2207304**
Date Reported: **8/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 7/7/2022 9:45:00 AM
Lab ID: 2207304-001 **Matrix:** AQUEOUS **Received Date:** 7/8/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
2,4-Dinitrotoluene	ND	0.049	1.3		mg/L	1	7/18/2022 5:15:03 PM	68749
Hexachlorobenzene	ND	0.19	1.3		mg/L	1	7/18/2022 5:15:03 PM	68749
Hexachlorobutadiene	ND	0.17	5.0		mg/L	1	7/18/2022 5:15:03 PM	68749
Hexachloroethane	ND	0.14	30		mg/L	1	7/18/2022 5:15:03 PM	68749
Nitrobenzene	ND	0.049	20		mg/L	1	7/18/2022 5:15:03 PM	68749
Pentachlorophenol	ND	0.27	1000		mg/L	1	7/18/2022 5:15:03 PM	68749
Pyridine	ND	0.14	50		mg/L	1	7/18/2022 5:15:03 PM	68749
2,4,5-Trichlorophenol	ND	0.063	4000		mg/L	1	7/18/2022 5:15:03 PM	68749
2,4,6-Trichlorophenol	ND	0.059	20		mg/L	1	7/18/2022 5:15:03 PM	68749
Cresols, Total	ND	0.27	2000		mg/L	1	7/18/2022 5:15:03 PM	68749
Surr: 2-Fluorophenol	43.6	0	18.1-88.9		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: Phenol-d5	33.9	0	17-61.5		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: 2,4,6-Tribromophenol	51.0	0	29.8-104		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: Nitrobenzene-d5	53.0	0	22.2-111		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: 2-Fluorobiphenyl	46.7	0	24.6-96.3		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: 4-Terphenyl-d14	65.7	0	53.4-124		%Rec	1	7/18/2022 5:15:03 PM	68749
TCLP VOLATILES BY 8260B							Analyst: **RAA**	
Benzene	ND	0.00023	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
2-Butanone	ND	0.0020	200		mg/L	200	7/8/2022 9:50:03 PM	T89365
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
Chloroform	ND	0.00013	6.0		mg/L	200	7/8/2022 9:50:03 PM	T89365
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	7/8/2022 9:50:03 PM	T89365
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	7/8/2022 9:50:03 PM	T89365
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	7/8/2022 9:50:03 PM	T89365
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
Vinyl chloride	ND	0.00032	0.20		mg/L	200	7/8/2022 9:50:03 PM	T89365
Chlorobenzene	0.046	0.00016	100	J	mg/L	200	7/8/2022 9:50:03 PM	T89365
Surr: 1,2-Dichloroethane-d4	105	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
Surr: 4-Bromofluorobenzene	108	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
Surr: Dibromofluoromethane	109	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
Surr: Toluene-d8	98.9	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **MRA**	
Conductivity	2300	10	10		µmhos/c	1	7/11/2022 1:45:57 PM	R89444
SM4500-H+B / 9040C: PH							Analyst: **MRA**	
pH	8.02			H	pH units	1	7/11/2022 1:45:57 PM	R89444
SM2320B: ALKALINITY							Analyst: **MRA**	

Refer to the QC Summary report and 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 **2207304**
Date Reported: **8/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2207304-001 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 7/7/2022 9:45:00 AM
Received Date: 7/8/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **MRA**	
Bicarbonate (As CaCO3)	110.8	20.00	20.00		mg/L Ca	1	7/11/2022 1:45:57 PM	R89444
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	7/11/2022 1:45:57 PM	R89444
Total Alkalinity (as CaCO3)	110.8	20.00	20.00		mg/L Ca	1	7/11/2022 1:45:57 PM	R89444
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9967	0	0			1	7/15/2022 3:51:00 PM	R89563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	2090	20.0	20.0	*	mg/L	1	7/12/2022 3:08:00 PM	68680
SM 2540D: TSS							Analyst: **JMT**	
Suspended Solids	ND	4.0	4.0		mg/L	1	7/14/2022 12:38:00 PM	68755

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 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

Pace Analytical®

ANALYTICAL REPORT

July 22, 2022

Hall Environmental Analysis Laboratory

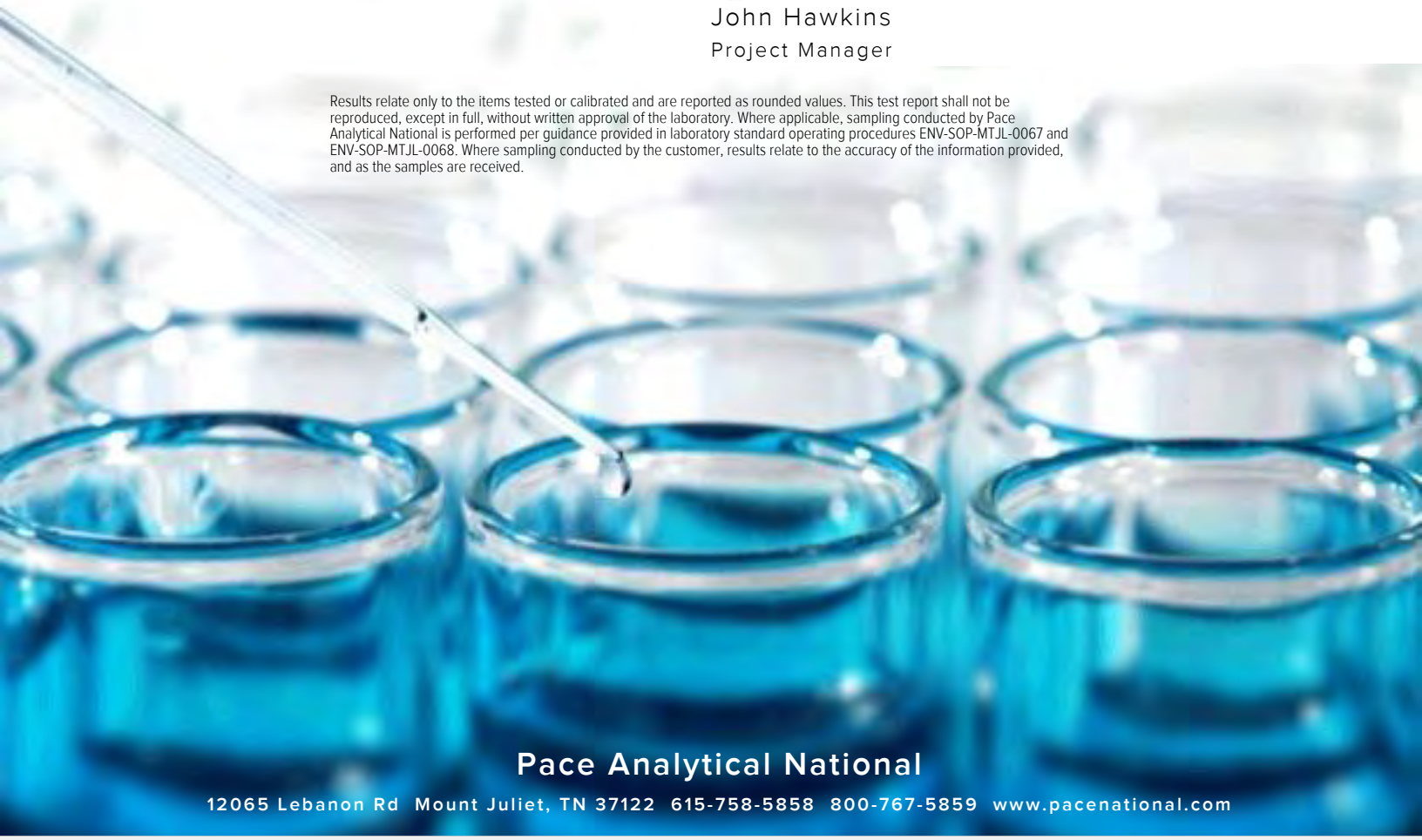
Sample Delivery Group:	L1513691
Samples Received:	07/12/2022
Project Number:	
Description:	

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

2207304-001F CTB TO CITY POTW L1513691-01 Waste

			Collected by	Collected date/time	Received date/time	
				07/07/22 09:45	07/12/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1893423	1	07/13/22 13:11	07/13/22 13:11	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1897565	1	07/20/22 09:03	07/20/22 18:10	KLA	Mt. Juliet, TN

2207304-001H CTB TO CITY POTW L1513691-02 GW

			Collected by	Collected date/time	Received date/time	
				07/07/22 09:45	07/12/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1897784	1	07/22/22 06:10	07/22/22 06:10	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1893603	1	07/13/22 21:21	07/14/22 12:09	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1897617	1	07/15/22 10:39	07/15/22 10:39	JAR	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1894936	1	07/14/22 11:00	07/14/22 11:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1893915	1	07/13/22 00:59	07/13/22 00:59	WOS	Mt. Juliet, TN

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.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/13/2022 1:11:50 PM	WG1893423
Fluid	1		7/13/2022 1:11:50 PM	WG1893423
Initial pH	N/A		7/13/2022 1:11:50 PM	WG1893423
Final pH	N/A		7/13/2022 1:11:50 PM	WG1893423

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	07/20/2022 18:10	WG1897565
2,4-D	ND		0.00200	10	1	07/20/2022 18:10	WG1897565
(S) 2,4-Dichlorophenyl Acetic Acid	*75.0*		*14.0-158*			*07/20/2022 18:10*	WG1897565

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	204	T8	1	07/22/2022 06:10	WG1897784

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND	J6	0.00500	1	07/14/2022 12:09	WG1893603

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND	Q	0.0500	1	07/15/2022 10:39	WG1897617

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	8.06	T8	1	07/14/2022 11:00	WG1894936

Sample Narrative:

L1513691-02 WG1894936: 8.06 at 19.9C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	07/13/2022 00:59	WG1893915

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

L1511985-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511985-01 07/22/22 06:10 • (DUP) R3817981-3 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	119	110	1	9.40		20

L1511985-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1511985-02 07/22/22 06:10 • (DUP) R3817981-4 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	119	126	1	6.60		20

L1512045-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512045-02 07/22/22 06:10 • (DUP) R3817981-5 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	292	287	1	5.20		20

L1512783-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-02 07/22/22 06:10 • (DUP) R3817981-6 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	230	227	1	3.00		20

L1512783-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-03 07/22/22 06:10 • (DUP) R3817981-7 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	184	185	1	1.70		20

L1512783-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-04 07/22/22 06:10 • (DUP) R3817981-8 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	190	188	1	1.30		20

L1512783-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-05 07/22/22 06:10 • (DUP) R3817981-9 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	185	185	1	0.700		20

L1512783-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-06 07/22/22 06:10 • (DUP) R3817981-10 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	197	197	1	0.500		20

L1512783-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-07 07/22/22 06:10 • (DUP) R3817981-11 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	200	198	1	2.00		20

L1512783-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-08 07/22/22 06:10 • (DUP) R3817981-12 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	186	185	1	0.800		20

L1513237-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-02 07/22/22 06:10 • (DUP) R3817981-13 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	188	187	1	0.900		20

L1513237-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-03 07/22/22 06:10 • (DUP) R3817981-14 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	188	187	1	1.00		20

L1513237-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-04 07/22/22 06:10 • (DUP) R3817981-15 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	193	194	1	1.10		20

L1513237-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-05 07/22/22 06:10 • (DUP) R3817981-16 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	198	197	1	0.100		20

L1513237-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-06 07/22/22 06:10 • (DUP) R3817981-17 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	194	194	1	0.600		20

L1513237-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-07 07/22/22 06:10 • (DUP) R3817981-18 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	195	196	1	0.900		20

L1513691-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513691-02 07/22/22 06:10 • (DUP) R3817981-19 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	204	211	1	6.60		20

L1514857-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-01 07/22/22 06:10 • (DUP) R3817981-20 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	439	437	1	1.40		20

Received by OCD: 12/20/2022 11:27:42 AM

L1514857-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-02 07/22/22 06:10 • (DUP) R3817981-21 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	319	317	1	2.10		20

L1514857-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-03 07/22/22 06:10 • (DUP) R3817981-22 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	331	331	1	0.300		20

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

(LCS) R3817981-1 07/22/22 06:10 • (LCSD) R3817981-2 07/22/22 06:10

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	107	113	98.9	104	90.0-110			5.70	20

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

Released to Imaging: 12/20/2022 11:31:23 AM

Method Blank (MB)

(MB) R3814752-1 07/14/22 11:50

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

L1513651-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1513651-01 07/14/22 12:07 • (DUP) R3814752-5 07/14/22 12:08

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

L1513935-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1513935-01 07/14/22 12:16 • (DUP) R3814752-8 07/14/22 12:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0110	ND	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R3814752-2 07/14/22 11:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0934	93.4	87.1-120	

L1513622-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1513622-02 07/14/22 12:03 • (MS) R3814752-3 07/14/22 12:04 • (MSD) R3814752-4 07/14/22 12:05

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	0.0968	0.0966	96.8	96.6	1	90.0-110			0.207	20

L1513691-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1513691-02 07/14/22 12:09 • (MS) R3814752-6 07/14/22 12:11 • (MSD) R3814752-7 07/14/22 12:12

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	0.0955	0.0783	95.5	78.3	1	90.0-110		J6	19.8	20

Method Blank (MB)

(MB) R3816793-1 07/15/22 10:34

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

L1513691-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513691-02 07/15/22 10:39 • (DUP) R3816793-4 07/15/22 10:39

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

Laboratory Control Sample (LCS)

(LCS) R3816793-2 07/15/22 10:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.473	94.6	85.0-115	

L1512611-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1512611-01 07/14/22 11:00 • (DUP) R3814730-2 07/14/22 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.23	8.24	1	0.121		1

Sample Narrative:

OS: 8.23 at 18.4C

DUP: 8.24 at 18.9C

L1514124-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1514124-01 07/14/22 11:00 • (DUP) R3814730-3 07/14/22 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.57	9.57	1	0.000		1

Sample Narrative:

OS: 9.57 at 20.5C

DUP: 9.57 at 20.8C

Laboratory Control Sample (LCS)

(LCS) R3814730-1 07/14/22 11:00

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

Sample Narrative:

LCS: 9.92 at 21.6C

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

Received by OCD: 12/20/2022 11:27:42 AM

L1513551-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1513551-01 07/13/22 00:59 • (DUP) R3813976-3 07/13/22 00:59

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) R3813976-1 07/13/22 00:59 • (LCSD) R3813976-2 07/13/22 00:59

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	126	130	99.9	103	96.0-104			3.13	10

Released to Imaging: 12/20/2022 11:31:23 AM

Method Blank (MB)

(MB) R3817546-1 07/20/22 17:10

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	*65.6*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3817546-2 07/20/22 17:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0402	80.4	50.0-125	
2,4-D	0.0500	0.0436	87.2	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*71.0*	*14.0-158*	

L1513691-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1513691-01 07/20/22 18:10 • (MS) R3817546-3 07/20/22 18:25 • (MSD) R3817546-4 07/20/22 18:40

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	0.0344	0.0370	68.8	74.0	1	50.0-125			7.28	20
2,4-D	0.0500	ND	0.0448	0.0502	89.6	100	1	50.0-120		E	11.4	20
(S) 2,4-Dichlorophenyl Acetic Acid					*86.8*	*96.2*		*14.0-158*				

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).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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.

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	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
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.

Received by OCD: 12/20/2022 11:27:42 AM

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: 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					

H087

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2207304-001F	CTB to City POTW	1LAMGU	Aqueous	7/7/2022 9:45:00 AM	1	8151TCLP *RUSH 7 DAY TAT*
2	2207304-001H	CTB to City POTW	500HDPE	Aqueous	7/7/2022 9:45:00 AM	3	RCI, ORP *RUSH 7 DAY TAT*

USI3691 -01
1 -02

Fedex TRK: 5755 8089 4215

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: 7/8/2022	Time: 9:02 AM	Received By: Zac Parra	Date: 7-12-22	Time: 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 0.1 +0 = 0.1 °C Attempt to Cool ? _____

Comments: _____

Released to Imaging: 12/20/2022 11:31:23 AM

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**

02-Aug-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: **R89353**	RunNo: **89353**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178441** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89353**	RunNo: **89353**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178442** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	93.2	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	97.4	90	110			
Bromide	2.5	0.10	2.500	0	98.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	94.8	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89489**	RunNo: **89489**
Prep Date:	Analysis Date: **7/14/2022**	SeqNo: **3186155** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89489**	RunNo: **89489**
Prep Date:	Analysis Date: **7/14/2022**	SeqNo: **3186156** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	10	0.50	10.00	0	101	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 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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68941**	SampType: **MBLK**	TestCode: **EPA Method 6020A: Total Metals**
Client ID: **PBW**	Batch ID: **68941**	RunNo: **89902**
Prep Date: **7/20/2022**	Analysis Date: **7/29/2022**	SeqNo: **3202579** 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: **MSLCS-68941**	SampType: **LCS**	TestCode: **EPA Method 6020A: Total Metals**
Client ID: **LCSW**	Batch ID: **68941**	RunNo: **89902**
Prep Date: **7/20/2022**	Analysis Date: **7/29/2022**	SeqNo: **3202580** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.048	0.0010	0.05000	0	96.4	80	120			
Lead	0.047	0.0010	0.05000	0	94.8	80	120			
Selenium	0.049	0.0010	0.05000	0	98.8	80	120			

Sample ID: **MSLLLCS-68941**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: Total Metals**
Client ID: **BatchQC**	Batch ID: **68941**	RunNo: **89902**
Prep Date: **7/20/2022**	Analysis Date: **7/29/2022**	SeqNo: **3202581** 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	87.4	70	130			J
Lead	0.00095	0.0010	0.001000	0	94.5	70	130			J
Selenium	0.00093	0.0010	0.001000	0	93.3	70	130			J

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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68767**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191034** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	89.8	56.3	126			
gamma-BHC (Lindane)	0.00032	0.00010	0.0005000	0	64.4	45.8	103			
Heptachlor	0.00027	0.00010	0.0005000	0	54.3	33.7	104			
Heptachlor epoxide	0.00039	0.00010	0.0005000	0	77.9	50.1	116			
Methoxychlor	0.00054	0.00010	0.0005000	0	107	15	203			
Surr: Decachlorobiphenyl	0.0021		0.002500		83.1	48.4	132			
Surr: Tetrachloro-m-xylene	0.0012		0.002500		48.9	29.4	106			

Sample ID: **LCS-68767**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191035** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	87.3	56.3	126			
gamma-BHC (Lindane)	0.00033	0.00010	0.0005000	0	66.0	45.8	103			
Heptachlor	0.00028	0.00010	0.0005000	0	55.3	33.7	104			
Heptachlor epoxide	0.00038	0.00010	0.0005000	0	76.8	50.1	116			
Methoxychlor	0.00051	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0020		0.002500		79.6	48.4	132			
Surr: Tetrachloro-m-xylene	0.0012		0.002500		49.5	29.4	106			

Sample ID: **LCSD-68767**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191036** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	86.7	56.3	126	3.43	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.2	45.8	103	7.16	20	
Heptachlor	0.00030	0.00010	0.0005000	0	60.0	33.7	104	9.89	20	
Heptachlor epoxide	0.00040	0.00010	0.0005000	0	79.0	50.1	116	1.49	20	
Methoxychlor	0.00051	0.00010	0.0005000	0	102	15	203	5.16	20	
Surr: Decachlorobiphenyl	0.0021		0.002500		82.4	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		57.0	29.4	106	0	0	

Sample ID: **LCSD-68767**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191037** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	85.8	56.3	126	1.80	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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCSD-68767**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191037** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	70.1	45.8	103	5.97	20	
Heptachlor	0.00030	0.00010	0.0005000	0	60.3	33.7	104	8.55	20	
Heptachlor epoxide	0.00039	0.00010	0.0005000	0	77.2	50.1	116	0.549	20	
Methoxychlor	0.00047	0.00010	0.0005000	0	94.8	15	203	6.41	20	
Surr: Decachlorobiphenyl	0.0020		0.002500		79.3	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.8	29.4	106	0	0	

Sample ID: **MB-68767**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191038** 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	0.0020		0.002500		80.4	48.4	132			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		71.8	29.4	106			

Sample ID: **MB-68767**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **68767**	RunNo: **89586**
Prep Date: **7/14/2022**	Analysis Date: **7/18/2022**	SeqNo: **3191043** 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	0.0019		0.002500		76.8	48.4	132			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		70.7	29.4	106			

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#: **2207304**

02-Aug-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: **T89365**	RunNo: **89365**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178937** 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	99.6	70	130			J
Trichloroethene (TCE)	0.021	0.50	0.02000	0	107	70	130			J
Chlorobenzene	0.020	100	0.02000	0	100	70	130			J
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		101	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		109	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		102	70	130			
Surr: Toluene-d8	0.0097		0.01000		96.7	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **T89365**	RunNo: **89365**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178945** 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	0.011		0.01000		106	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		104	70	130			
Surr: Toluene-d8	0.0098		0.01000		98.5	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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68749**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **68749**	RunNo: **89585**
Prep Date: **7/13/2022**	Analysis Date: **7/18/2022**	SeqNo: **3190692** 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	0.078		0.2000		39.2	18.1	88.9			
Surr: Phenol-d5	0.059		0.2000		29.3	17	61.5			
Surr: 2,4,6-Tribromophenol	0.083		0.2000		41.7	29.8	104			
Surr: Nitrobenzene-d5	0.049		0.1000		48.6	22.2	111			
Surr: 2-Fluorobiphenyl	0.044		0.1000		44.5	24.6	96.3			
Surr: 4-Terphenyl-d14	0.060		0.1000		59.6	53.4	124			

Sample ID: **LCS-68749**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **68749**	RunNo: **89585**
Prep Date: **7/13/2022**	Analysis Date: **7/18/2022**	SeqNo: **3190693** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.057	0.00010	0.1000	0	56.7	19	106			
3+4-Methylphenol	0.12	0.00010	0.2000	0	57.7	16.3	112			
2,4-Dinitrotoluene	0.040	0.00010	0.1000	0	40.2	15	99.6			
Hexachlorobenzene	0.048	0.00010	0.1000	0	47.7	41.8	111			
Hexachlorobutadiene	0.040	0.00010	0.1000	0	39.7	15	91.5			
Hexachloroethane	0.052	0.00010	0.1000	0	51.8	15	87.5			
Nitrobenzene	0.052	0.00010	0.1000	0	52.0	19.3	114			
Pentachlorophenol	0.041	0.00010	0.1000	0	41.2	29	103			
Pyridine	0.020	0.00010	0.1000	0	19.9	15	92.6			
2,4,5-Trichlorophenol	0.051	0.00010	0.1000	0	51.4	25.2	114			
2,4,6-Trichlorophenol	0.052	0.00010	0.1000	0	52.1	25.7	112			
Cresols, Total	0.17	0.00010	0.3000	0	57.3	15	145			
Surr: 2-Fluorophenol	0.094		0.2000		46.8	18.1	88.9			
Surr: Phenol-d5	0.069		0.2000		34.4	17	61.5			
Surr: 2,4,6-Tribromophenol	0.096		0.2000		48.1	29.8	104			

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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68749**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **68749**	RunNo: **89585**
Prep Date: **7/13/2022**	Analysis Date: **7/18/2022**	SeqNo: **3190693** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.058		0.1000		58.0	22.2	111			
Surr: 2-Fluorobiphenyl	0.053		0.1000		52.9	24.6	96.3			
Surr: 4-Terphenyl-d14	0.059		0.1000		59.3	53.4	124			

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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID:	**lcs-1 99.6uS eC**	SampType:	**lcs**			TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R89444**			RunNo:	**89444**				
Prep Date:		Analysis Date:	**7/11/2022**			SeqNo:	**3182163**	Units:	**µmhos/cm**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity		100	10	99.60	0	103	85	115			

Sample ID:	**2207304-001C dup**	SampType:	**dup**			TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**CTB to City POTW**	Batch ID:	**R89444**			RunNo:	**89444**				
Prep Date:		Analysis Date:	**7/11/2022**			SeqNo:	**3182172**	Units:	**µmhos/cm**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity		2300	10						0.0175	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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68642**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **68642**	RunNo: **89336**
Prep Date: **7/8/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177845** Units: **mg/L**

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

Sample ID: **LCSLL-68642**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **68642**	RunNo: **89336**
Prep Date: **7/8/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177846** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000098	0.00020	0.0001500	0	65.1	50	150			J

Sample ID: **LCS-68642**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **68642**	RunNo: **89336**
Prep Date: **7/8/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177847** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	85.1	85	115			

Sample ID: **2207304-001EMS**	SampType: **MS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **CTB to City POTW**	Batch ID: **68642**	RunNo: **89336**
Prep Date: **7/8/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177849** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0042	0.020	0.005000	0	84.1	75	125			J

Sample ID: **2207304-001EMSD**	SampType: **MSD**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **CTB to City POTW**	Batch ID: **68642**	RunNo: **89336**
Prep Date: **7/8/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177852** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0042	0.020	0.005000	0	84.4	75	125	0.349	20	J

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#: **2207304**

02-Aug-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: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179049** 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: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.6	80	120			
Magnesium	49	1.0	50.00	0	97.7	80	120			
Potassium	48	1.0	50.00	0	97.0	80	120			
Sodium	49	1.0	50.00	0	98.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68941**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **68941**	RunNo: **89807**
Prep Date: **7/20/2022**	Analysis Date: **7/25/2022**	SeqNo: **3197955** 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-68941**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **68941**	RunNo: **89807**
Prep Date: **7/20/2022**	Analysis Date: **7/25/2022**	SeqNo: **3197957** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.41	0.0020	0.5000	0	81.4	80	120			
Cadmium	0.41	0.0020	0.5000	0	82.0	80	120			
Silver	0.082	0.0050	0.1000	0	81.9	80	120			

Sample ID: **MB-68941**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **68941**	RunNo: **89895**
Prep Date: **7/20/2022**	Analysis Date: **7/28/2022**	SeqNo: **3202278** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	ND	0.0060								

Sample ID: **LCS-68941**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **68941**	RunNo: **89895**
Prep Date: **7/20/2022**	Analysis Date: **7/28/2022**	SeqNo: **3202280** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.47	0.0060	0.5000	0	93.4	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 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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2207304-001C dup**	SampType: **dup**			TestCode: **SM4500-H+B / 9040C: pH**						
Client ID: **CTB to City POTW**	Batch ID: **R89444**			RunNo: **89444**						
Prep Date:	Analysis Date: **7/11/2022**			SeqNo: **3182215**		Units: **pH units**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.04									H

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#: **2207304**

02-Aug-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: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182112**	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: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182113**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.00	20.00	80.00	0	97.5	90	110			

Sample ID: **2207304-001C dup**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **CTB to City POTW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182120**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	110.8	20.00						0.0722	20	

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182135**	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: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182136**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.68	20.00	80.00	0	94.6	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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68680**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **68680**	RunNo: **89415**
Prep Date: **7/11/2022**	Analysis Date: **7/12/2022**	SeqNo: **3180827** 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-68680**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **68680**	RunNo: **89415**
Prep Date: **7/11/2022**	Analysis Date: **7/12/2022**	SeqNo: **3180828** 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.	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#: **2207304**

02-Aug-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68755**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **68755**	RunNo: **89509**							
Prep Date: **7/13/2022**	Analysis Date: **7/14/2022**	SeqNo: **3185593**	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-68755**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **68755**	RunNo: **89509**							
Prep Date: **7/13/2022**	Analysis Date: **7/14/2022**	SeqNo: **3185594**	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.
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

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: 2207304 RcptNo: 1

Received By: Juan Rojas 7/8/2022 6:50:00 AM

Completed By: Sean Livingston 7/8/2022 8:58:48 AM

Reviewed By: KPG 7.8.22

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 preserved 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: 3 3 (<2 or >12 unless noted)

Adjusted? NO

Checked by: JR 7/8/22

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:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.4	Good				

Released to Imaging: 12/20/2022 11:37:23 AM

Received by OCD: 12/20/2022 11:27:42 AM

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: 2.5-0.1=2.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2207304	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
7/7/22	9:45	Liquid	CTB to City POTW	**	**	001	X						
7/7/22	9:45	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
7/7/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none				X				
7/7/22	9:45	Liquid	CTB to City POTW	***	***					X			
7/7/22	9:45	Liquid	CTB to City POTW	1-250ml P	HNO3						X		
7/7/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none							X	
7/7/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none								X

Date:	Time:	Relinquished by:	Received by:	Date	Time
7-7-22	11:09	Brady Hubbard		7/7/22	1109
7/7/22	1900			7/8/22	6:50

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.

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 168894

COMMENTS

Operator: NAVAJO REFINING COMPANY, L.L.C. P.O. Box 159 Artesia, NM 88211	OGRID: 15694
	Action Number: 168894
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

COMMENTS

Created By	Comment	Comment Date
cchavez	Quarterly Report FY22 Q4 Submittal	12/20/2022

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CONDITIONS

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CONDITIONS

Created By	Condition	Condition Date
cchavez	• Conditions of approval are: 1. Please QA/QC all uploaded reports in advance of submittal to the OCD; 2. Include all surface injection pressure figures in summary of reports. 3. Include the continuous monitoring device surface pressure data readings as an appendix in each quarterly report.	12/20/2022