UICI - 8 - 4

WDW-4
FOT

2019

HOLLYFRONTIER.

March 31, 2020

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt

7018 0040 0000 9065 6664

RE: 2019 Annual Class I Non-Hazardous Waste Injection Wells (WDW-1, WDW-2, WDW-3, WDW-4) Report from HollyFrontier Navajo Refining LLC

Dear Mr. Chavez,

Enclosed, please find the annual injection well report for fluids that HollyFrontier Navajo Refining LLC (permittee) injected into wells WDW-1, WDW-2, WDW-3 and WDW-4 during 2019 as required under permits UICI-008-1, UICI-008-2, UICI-008-3 and UICI-008-4, Permit Condition 20.6.2.3107 NMAC Annual Report, for all four wells. The API numbers for the wells are: (WDW-1) 30-015-27592, (WDW-2) 30-015-20894, (WDW-3) 30-015-26575, (WDW-4) 30-015-44677

This report is signed and certified in accordance with 20.6.2.3107 NMAC. If there are any questions, please contact me at Scott.Denton@hollyfrontier.com or 575-748-5487 or Randy.Dade@hollyfrontier.com.

Respectfully,

Scott M. Denton
Environmental Manager
HollyFrontier Navajo Refining LLC

HollyFrontier Navajo Refining LLC
UIC Annual Report

Summary of WDW-1, WDW-2, WDW-3 and WDW-4 Operations for 2019

The wells themselves did not have any remedial or major work performed during 2019. The wells did have Pressure Fall Off Tests in 2019. WDW-1 (30-015-27592) FOT was done in June 2019, WDW-2 (30-015-20894) FOT was done in July 2019. WDW-3 (30-015-26575) FOT was done in August 2019 and WDW-4 did not have a FOT in 2019 as per approval of the OCD due to the well being new. FOT results will be uploaded to the OCD website. No MIT's were done due to WAM's being in place and casing being cemented to surface.
No Deviations from Normal Operations: No Leaks or Spills in 2019

Water Sales: No Water Sales made in 2019

Monthly Injection/Disposal Volume with Cumulative Totals

Flows, pressures and volume reports have been submitted to OCD as monthly C-115's and also Quarterly Injection Reports are submitted. These are resubmitted as Attachment A.

Maximum and Average Injection Pressures

Maximum and average injection pressures are resubmitted as Attachment B.

Copies of Fall Off Tests

Fall Off Tests were performed on three wells in 2019. All FOT results with pressure charts and AOC's of area wells will be mailed to the OCD in April 2020 when finalized and approved and will be uploaded to the OCD website. .

An Area of Review (AOR) Annual Update Summary

Area of Review data was noted in the 2019 Fall Off Tests and that information will be uploaded to the OCD in April 2020. Wells with in One Mile Area of Review are resubmitted as Attachment B. There are no new wells in the AOR.

Summary of all major facility activities or events which occurred in 2019

There were 3 major facility events in 2019. In Attachment B
3/26/2019: Tank 106 release; Copy of C-141 Attached
5/28/2019: Cooling Tower Blowdown Line to City Sample Point; Copy of C-141 Attached
9/3/2019: Cooling Tower Blowdown Line to City Sample Point; Copy of C-141 Attached

Quarterly Chemical Analyses with QA/QC Data Summary Tables

Quarterly chemical analyses, including QA/QC and summary tables for 2019 are Attachment C. The four wells share a common transmission pipe from the Refinery wastewater treatment facility to the wellhead areas. The single sample point for all four wells is taken off the main pipeline.

ATTACHMENT A

Monthly Injection Volume with Cumulative Totals

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	1/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

7 POOL NO. AND NAME / Property No. and Name / Well No. & U-L-S-T-R / API No.	8 CODE 1	INJECTION 9 Volume	INJECTION 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	PRODUCTION 13 Barrels of water produced	PRODUCTION 14 MCF Gas Produced	PRODUCTION 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	263,589	1,272	W												
30-015-20894 WDW - 2	D	75,463	1,262	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	92,469	1,177	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	202560	58	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	L. R. DADE, ENVIR. SPEC. (Printed Name & Title)	Lewis.Dade@hollyfrontier.com (E-Mail Address)	0 (Date)	575-746-5281 (Phone Number)

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	2/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	INJECTION 9 Volume	 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	 13 Barrels of water produced	 14 MCF Gas Produced	 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	 18 Gas BTU or Oil API Gravity	 19 Oil on hand at beginning of month	 20 Volume (Bbls/mcf)	 21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	188,160	1,270	W												
30-015-20894 WDW - 2	D	61,440	1,252	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	66,240	1,116	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	228480	50	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	3/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION					DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	132,857	1,184	W												
30-015-20894 WDW - 2	D	53,143	1,157	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	59,520	1,064	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	279531	80	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	4/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	138,857	1,240	W												
30-015-20894 WDW - 2	D	48,343	1,140	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	52,457	1,047	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	240686	70	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	5/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	148,800	1,283	W												
30-015-20894 WDW - 2	D	62,709	1,215	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	64,834	1,064	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	223200	75	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	6/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	134,743	1,223	W												
30-015-20894 WDW - 2	D	62,743	1,247	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	55,543	1,031	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	274629	98	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	7/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	139,234	1,219	W												
30-015-20894 WDW - 2	D	60,583	1,224	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	73,337	1,045	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	272091	163	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	8/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	INJECTION 9 Volume	INJECTION 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	PRODUCTION 13 Barrels of water produced	PRODUCTION 14 MCF Gas Produced	PRODUCTION 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	129,669	1,099	W												
30-015-20894 WDW - 2	D	54,206	1,160	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	81,840	1,062	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	312480	115	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	9/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	126,514	1,133	W												
30-015-20894 WDW - 2	D	48,343	1,137	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	51,429	993	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	246857	101	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	10/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	INJECTION 9 Volume	 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	 13 Barrels of water produced	 14 MCF Gas Produced	 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	 18 Gas BTU or Oil API Gravity	 19 Oil on hand at beginning of month	 20 Volume (Bbls/mcf)	 21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	125,417	1,117	W												
30-015-20894 WDW - 2	D	46,766	1,142	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	69,086	1,033	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	247,646	100	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ **Amended Report**

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	11/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

7 POOL NO. AND NAME / Property No. and Name / Well No. & U-L-S-T-R / API No.	8 CODE 1	INJECTION 9 Volume	INJECTION 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	PRODUCTION 13 Barrels of water produced	PRODUCTION 14 MCF Gas Produced	PRODUCTION 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	134,743	1,246	W												
30-015-20894 WDW - 2	D	45,257	1,227	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	49,371	1,052	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	231,429	100	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	12/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	INJECTION 9 Volume	INJECTION 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	PRODUCTION 13 Barrels of water produced	PRODUCTION 14 MCF Gas Produced	PRODUCTION 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	123,291	1,117	W												
30-015-20894 WDW - 2	D	38,263	1,207	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	53,143	1,097	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	268,903	109	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

ATTACHMENT B

Maximum and Average Injection Pressures

2019 FIRST 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											**Previous Quar**	43,261,695
Jan-19	1,272	248	301	80	576	734	219	263,589	319,920	85,029	**263,589**	43,525,284
Feb-19	1,270	196	293	97	364	576	170	188,160	281,280	103,097	**188,160**	43,713,444
Mar-19	1,184	125	150	106	456	701	323	132,857	159,429	112,663	**132,857**	43,846,301
Monthly Avg	1,242	190								**TOTAL**	584,606	
30-015-20894 WDW-2											**Previous Quar**	27,836,942
Jan-19	1,262	71	94	8	390	543	230	75,463	99,909	8,503	**75,463**	27,912,405
Feb-19	1,252	64	81	29	410	588	284	61,440	77,760	27,840	**61,440**	27,973,845
Mar-19	1,157	50	77	26	432	659	304	53,143	81,840	27,634	**53,143**	28,026,988
Monthly Avg	1,224	62								**TOTAL**	190,046	
30-015-26575 WDW-3											**Previous Quar**	19,438,780
Jan-19	1,177	87	144	0	741	938	598	92,469	153,051	0	**92,469**	19,531,249
Feb-19	1,116	69	109	0	700	930	561	66,240	104,640	0	**66,240**	19,597,489
Mar-19	1,064	56	86	25	659	839	592	59,520	91,406	26,571	**59,520**	19,657,009
Monthly Avg	1,119	71								**TOTAL**	218,229	
30-015-44677 WDW-4											**Previous Quar**	0
Jan-19	58	422	683	178	152	227	107	202,560	327,840	72,960	**202,560**	202,560
Feb-19	50	238	729	82	159	226	111	228,480	699,840	78,720	**228,480**	431,040
Mar-19	80	263	351	192	167	253	96	279,531	373,063	204,069	**279,531**	710,571
Monthly Avg	63	308								**TOTAL**	710,571	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	584,606	43,261,695	43,846,301
WDW2	190,046	27,836,942	28,026,988
WDW3	218,229	19,438,780	19,657,009
WDW4	710,571	0	710,571
	1,703,452	90,537,417	92,240,869

	Q1 Disposal bbls	Max Flow gpm
WDW-1	584,606	301
WDW-2	190,046	94
WDW-3	218,229	144
WDW-4	710,571	729

2019 SECOND 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											**Previous Quar**	43,846,301
Apr-19	1,240	135	148	107	540	726	404	138,857	152,229	110,057	**138,857**	43,985,158
May-19	1,283	140	149	123	587	729	459	148,800	158,366	130,731	**148,800**	44,133,958
Jun-19	1,223	131	146	100	397	518	193	134,743	150,171	102,857	**134,743**	44,268,701
Monthly Avg	1,249	135								**TOTAL**	422,400	
30-015-20894 WDW-2											**Previous Quar**	28,026,988
Apr-19	1,141	47	76	0	510	661	282	48,343	78,171	0	**48,343**	28,075,331
May-19	1,215	59	78	34	463	629	309	62,709	82,903	36,137	**62,709**	28,138,040
Jun-19	1,247	61	78	40	372	418	300	62,743	80,229	41,143	**62,743**	28,200,783
Monthly Avg	1,201	56								**TOTAL**	173,795	
30-015-26575 WDW-3											**Previous Quar**	19,657,009
Apr-19	1,047	51	117	9	653	750	549	52,457	120,343	9,257	**52,457**	19,709,466
May-19	1,064	61	111	10	541	652	387	64,834	117,977	10,629	**64,834**	19,774,300
Jun-19	1,031	54	111	1	397	515	300	55,543	114,171	1,029	**55,543**	19,829,843
Monthly Avg	1,047	55								**TOTAL**	172,834	
30-015-44677 WDW-4											**Previous Quar**	710,571
Apr-19	70	234	309	146	184	243	126	240,686	317,829	150,171	**240,686**	951,257
May-19	75	210	317	154	167	239	101	223,200	336,926	163,680	**223,200**	1,174,457
Jun-19	98	267	296	190	172	254	100	274,629	304,457	195,429	**274,629**	1,449,086
Monthly Avg	81	237								**TOTAL**	738,515	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	422,400	43,846,301	44,268,701
WDW2	173,795	28,026,988	28,200,783
WDW3	172,834	19,657,009	19,829,843
WDW4	738,515	710,571	1,449,086
	1,507,544	92,240,869	

	Q2 Disposal bbls	Max Flow gpm
WDW-1	422,400	148
WDW-2	173,795	77
WDW-3	172,834	113
WDW-4	738,515	307

2019 THIRD 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											**Previous Quar**	44,268,701
Jul-19	1,219	131	147	113	438	606	271	139,234	156,240	120,103	**139,234**	44,407,935
Aug-19	1,099	122	151	95	273	487	104	129,669	160,491	100,971	**129,669**	44,537,604
Sep-19	1,133	123	144	105	397	518	193	126,514	148,114	108,000	**126,514**	44,664,118
Monthly Avg	1,150	125								**TOTAL**	395,417	
30-015-20894 WDW-2											**Previous Quar**	28,200,783
Jul-19	1,224	57	69	0	397	501	325	60,583	73,337	0	**60,583**	28,261,366
Aug-19	1,160	51	77	23	631	1,040	360	54,206	81,840	24,446	**54,206**	28,315,572
Sep-19	1,137	47	63	32	372	418	300	48,343	64,800	32,914	**48,343**	28,363,915
Monthly Avg	1,174	52								**TOTAL**	163,132	
30-015-26575 WDW-3											**Previous Quar**	19,829,843
Jul-19	1,045	69	106	40	383	555	250	73,337	112,663	42,514	**73,337**	19,903,180
Aug-19	1,062	77	109	0	394	593	218	81,840	115,851	0	**81,840**	19,985,020
Sep-19	993	50	112	5	397	515	300	51,429	115,200	5,143	**51,429**	20,036,449
Monthly Avg	1,033	65								**TOTAL**	206,606	
30-015-44677 WDW-4											**Previous Quar**	1,449,086
Jul-19	102	256	317	109	163	237	90	272,091	336,926	115,851	**272,091**	1,721,177
Aug-19	115	294	344	164	178	248	102	312,480	365,623	174,309	**312,480**	2,033,657
Sep-19	101	240	326	177	172	254	100	246,857	335,314	182,057	**246,857**	2,280,514
Monthly Avg	106	263								**TOTAL**	831,428	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	395,417	44,268,701	44,664,118
WDW2	163,132	28,200,783	28,363,915
WDW3	206,606	19,829,843	20,036,449
WDW4	831,428	1,449,086	2,280,514
	1,596,583	93,748,413	

	Q3 Disposal bbls	Max Flow gpm
WDW-1	395,417	147
WDW-2	163,132	70
WDW-3	206,606	109
WDW-4	831,428	329

2019 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											**Previous Quar**	44,664,118
Oct-19	1,117	118	135	109	472	638	342	125,417	143,486	115,851	**125,417**	44,789,535
Nov-19	1,246	131	147	118	538	700	352	134,743	151,200	121,371	**134,743**	44,924,278
Dec-19	1,117	116	146	102	535	794	338	123,291	155,177	108,411	**123,291**	45,047,569
Monthly Avg	1,160	122								**TOTAL**	383,451	
30-015-20894 WDW-2											**Previous Quar**	28,363,915
Oct-19	1,142	44	78	24	510	766	342	46,766	82,903	25,509	**46,766**	28,410,681
Nov-19	1,227	44	83	4	581	805	380	45,257	85,371	4,114	**45,257**	28,455,938
Dec-19	1,207	36	48	23	511	693	388	38,263	51,017	24,446	**38,263**	28,494,201
Monthly Avg	1,192	41								**TOTAL**	130,286	
30-015-26575 WDW-3											**Previous Quar**	20,036,449
Oct-19	1,033	64	97	6	356	615	210	69,086	103,097	6,377	**69,086**	20,105,535
Nov-19	1,052	48	118	2	530	693	416	49,371	121,371	2,057	**49,371**	20,154,906
Dec-19	1,097	50	92	9	570	713	416	53,143	97,783	9,566	**53,143**	20,208,049
Monthly Avg	1,061	54								**TOTAL**	171,600	
30-015-44677 WDW-4											**Previous Quar**	2,280,514
Oct-19	100	233	318	100	126	177	92	247,646	337,989	106,286	**247,646**	2,528,160
Nov-19	100	225	294	135	177	248	119	231,429	302,400	138,857	**231,429**	2,759,589
Dec-19	109	253	323	182	162	246	105	268,903	343,303	193,440	**268,903**	3,028,492
Monthly Avg	103	237								**TOTAL**	747,978	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	383,451	44,664,118	45,047,569
WDW2	130,286	28,363,915	28,494,201
WDW3	171,600	20,036,449	20,208,049
WDW4	747,978	2,280,514	3,028,492

	Q4 Disposal bbls	Max Flow gpm
WDW-1	383,451	143
WDW-2	130,286	70
WDW-3	171,600	102
WDW-4	747,978	312

C-141's

03/26/2019

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: HollyFrontier Navajo Refining LLC	OGRID: 15694
Contact Name: Randy Dade	Contact Telephone: 575-746-5281
Contact email: Lewis.Dade@hollyfrontier.com	Incident # *(assigned by OCD)*
Contact mailing address: 501 E Main Street, Artesia, NM 88210	

Location of Release Source

Latitude: 32.50'38.92" Longitude: 104.23'32.79"
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Tank 106	Site Type: Bermed Storage Tank Area
Date Release Discovered: 03/26/2019	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
	9	17S	26E	EDDY

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name: HollyFrontier Corp*_____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ SOUR WATER/OIL	Volume Released (bbls): < 50 bblS	Volume Recovered (bbls): > 40 bblS
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Release was caused due to local guage and transmitter malfunction. When release was discovered, level in tank was started to be brought down, vacuum truck picked up free liquid. Impacted soil was picked up and put in Hard Top RollOffs.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Release was more than 25 barrels
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Notice was given by Randy Dade. Carl Chaves was notified by phone on 3/26/2019 at 1:00 pm.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Lewis R Dade Title: Environmental Specialist

Signature: Lewis R Dade Date: 3/27/2019

email: Lewis.Dade@hollyfrontier.com Telephone: 575-746-5281

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Lewis.Dade_ Title: Environmental Specialist___

Signature: Lewis R Dade Date: 3/27/2019

email: Lewis.Dade@hollyfrontier.com Telephone: 575-746-5281

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

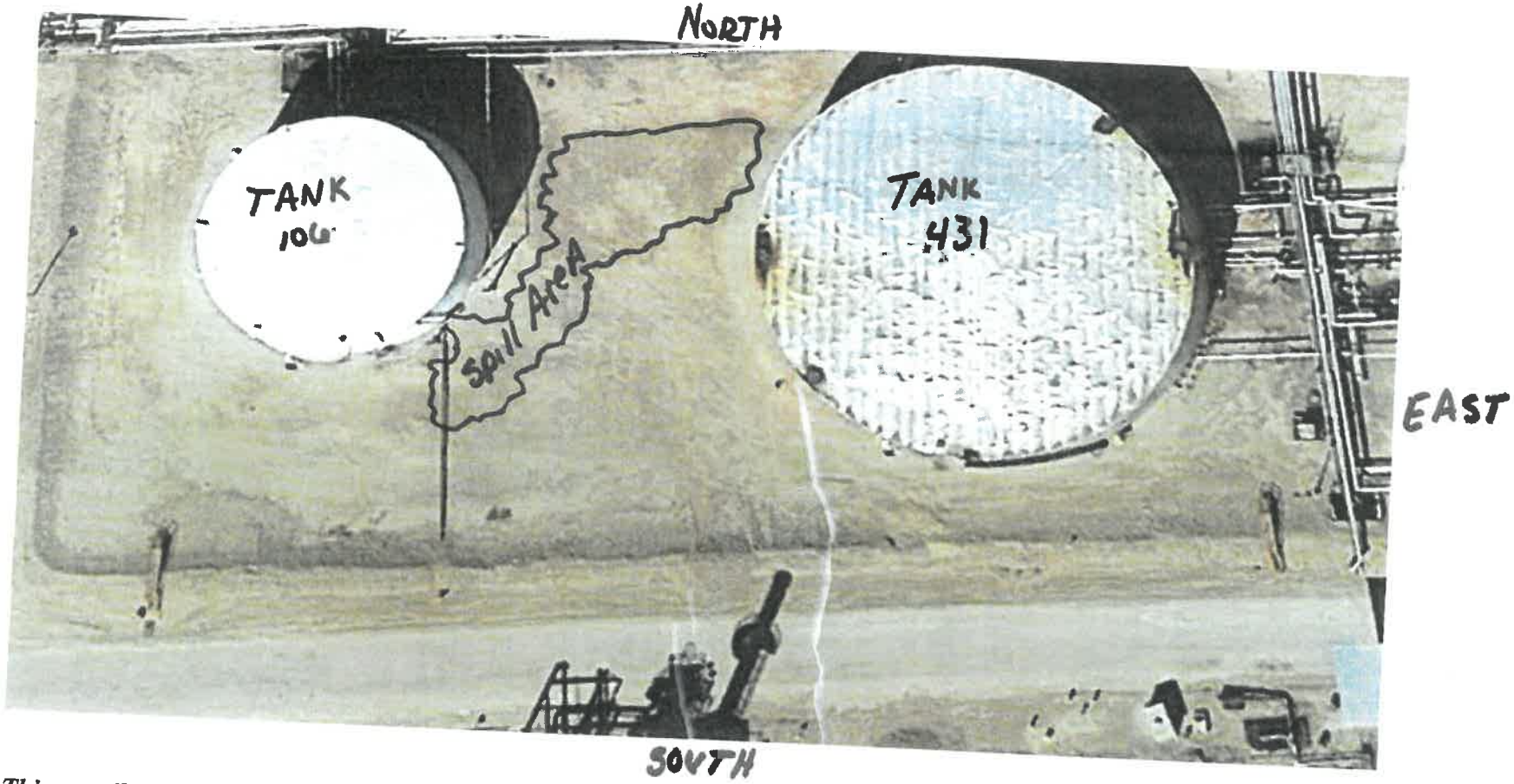
Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

Dade, Lewis (Randy)

From: Dade, Lewis (Randy)
Sent: Thursday, March 28, 2019 9:17 AM
To: Dade, Lewis (Randy)
Subject: Tank 106 Release 3/26/2019



This e-mail may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately and delete this email. Unless expressly stated, this message is not a digital or electronic signature or a commitment to a binding agreement.

05/28/2019

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: HollyFrontier Navajo Refining LLC	OGRID: 15694
Contact Name: Randy Dade	Contact Telephone: 575-746-5281
Contact email: Lewis.Dade@hollyfrontier.com	Incident # *(assigned by OCD)*
Contact mailing address: 501 E. Main St. Artesia, NM 88210	

Location of Release Source

Latitude 32.8520059 N_____ Longitude 104.39487032W_____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Navajo Refinery	Site Type: Petroleum Refinery
Date Release Discovered: 5/28/2019	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
	9	17S	28E	EDDY

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name: HollyFrontier Navajo Refining LLC*_____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☒ Other (describe): Non-hazardous cooling tower blowdown to city POTW	Volume/Weight Released (provide units): Greater than 25 bbls	Volume/Weight Recovered (provide units): None

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Cause of Release: Plastic Tubing line to sample station broke releasing water on ground. Water was shut off and tubing line repaired.

Was this a major release as defined by 19.15.29.7(A) NMAC?	If YES, for what reason(s) does the responsible party consider this a major release?
☒ Yes ☐ No	Release volume is estimated to be greater than 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Notice was made by Randy Dade to OCD Santa Fe, Carl Chavez at 3:40 pm by phone.

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why: Released material was in an area inside of plant but out of normal traffic area. Soil is compacted dirt and caliche with no chance of impacting any waterways or community entities. There was no chance to recover any free liquids.

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Lewis R. Dade Title: Environmental Specialist

Signature: Lewis R Dade Date: 5/30/2019

email: Lewis.Dade@hollyfrontier.com Telephone: 575-746-5281

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Lewis R. Dade Title: Environmental Specialist

Signature: Date: 5/30/2019

email: Lewis.Dade@hollyfrontier.com Telephone: 575-746-5281

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _Lewis R. Dade_____ Title: Environmental Specialist_____

Signature: _____ Date: 5/30/2019_____

email: Lewis.Dade@hollyfrontier.com _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

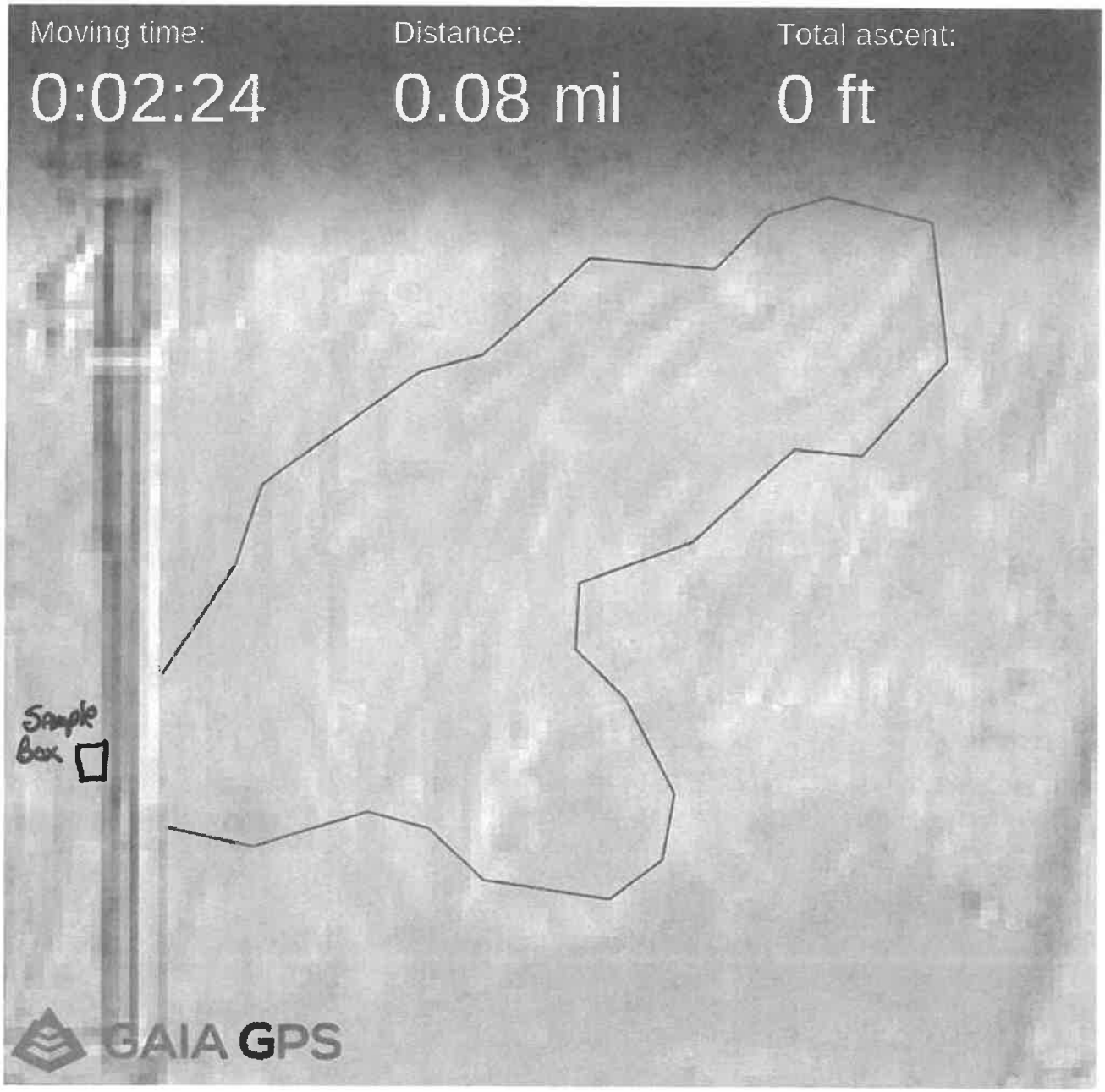
OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____


Moving time:
0:02:24
Distance:
0.08 mi
Total ascent:
0 ft
Sample Box
GAIA GPS


Untitled Map
Write a description for your map.
Legend
Feature 1
Google Earth
©2018 Google
N
100 ft

09/03/2019

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: HollyFrontier Navajo Refining LLC	OGRID: 15694
Contact Name: Randy Dade	Contact Telephone: 575-746-5281
Contact email: Lewis.Dade@hollyfrontier.com	Incident # *(assigned by OCD)*
Contact mailing address: 501 E. Main St. Artesia, NM 88210	

Location of Release Source

Latitude 32,51'7.21" N_____ Longitude 104,23'41.39"W_____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: HollyFrontier Navajo Refining LLC	Site Type: Refinery
Date Release Discovered: 09/03/2019	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
	9	17S	28E	EDDY

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name: HollyFrontier Navajo Refining LLC*)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls):	Volume Recovered (bbls):
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☒ Other (describe) Non-Hazardous Cooling Tower blowdown to city POTW	Volume/Weight Released (provide units) Greater than 25 BBLs	Volume/Weight Recovered (provide units) No recovered fluid

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Cause of Release: Tubing line (½ inch) on Sample Station from Cooling Tower Blowdown line to City failed. Fluid sprayed to the East onto the ground. Water was shut off and tubing line repaired.

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Release volume is estimated to be greater than 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Notice was made by Randy Dade to OCD Santa Fe, Carl Chavez at 8:30 am, 9/4/2019 pm by phone.

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment. Release was entirely contained in a secured and active operating facility

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Lewis Dade Title: Environmental Specialist

Signature: Lewis R Dade Date: 9/4/2019

email: Lewis.Dade@hollyfrontier.com Telephone: 575-746-5281

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

OCD Only

Received by: _____ Date: _____

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)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
30-015-27592 WDW-1													**Previous Quarter**	43,261,695
Jan-19	1,272	1,400	897	248	301	80	576	734	219	263,589	319,920	85,029	**263,589**	43,525,284
Feb-19	1,270	1,400	885	196	293	97	384	576	170	188,160	281,280	103,097	**188,160**	43,713,444
Mar-19	1,184	1,356	1,100	125	150	108	456	701	323	132,857	159,429	112,663	**132,857**	43,846,301
Monthly Avg	1,242			190								**TOTAL**	584,606	
30-015-20884 WDW-2													**Previous Quarter**	27,836,942
Jan-19	1,262	1,400	932	71	94	8	390	543	230	75,463	99,909	8,503	**75,463**	27,912,405
Feb-19	1,252	1,381	1,057	64	81	29	410	588	284	61,440	77,760	27,840	**61,440**	27,973,845
Mar-19	1,157	1,300	1,044	50	77	26	432	659	304	53,143	81,840	27,634	**53,143**	28,026,988
Monthly Avg	1,224			62								**TOTAL**	190,046	
30-015-28575 WDW-3													**Previous Quarter**	19,438,760
Jan-19	1,177	1,400	906	67	144	0	741	938	598	92,469	153,051	0	**92,469**	19,531,249
Feb-19	1,116	1,258	899	69	109	0	700	930	561	66,240	104,640	0	**66,240**	19,597,489
Mar-19	1,064	1,151	999	56	86	25	659	839	592	59,520	91,406	26,571	**59,520**	19,657,009
Monthly Avg	1,119			71								**TOTAL**	218,229	
30-015-44677 WDW-4													**Previous Quarter**	0
Jan-19	58	89	37	422	683	178	152	227	107	202,560	327,840	72,960	**202,560**	202,560
Feb-19	50	98	36	238	729	82	159	226	111	228,480	699,840	78,720	**228,480**	431,040
Mar-19	80	337	51	263	351	192	167	253	96	279,531	373,083	204,069	**279,531**	710,571
Monthly Avg	63			308								**TOTAL**	710,571	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	584,606	43,261,695	43,846,301
WDW2	190,046	27,836,942	28,026,988
WDW3	218,229	19,438,760	19,657,009
WDW4	710,571	0	710,571
	1,703,452	90,537,417	92,240,869

2019 SECOND 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											**Previous Quar**	43,846,301
Apr-19	1,240	135	148	107	540	726	404	138,857	152,229	110,057	**138,857**	43,985,158
May-19	1,283	140	149	123	587	729	459	148,800	158,366	130,731	**148,800**	44,133,958
Jun-19	1,223	131	146	100	397	618	193	134,743	150,171	102,857	**134,743**	44,268,701
Monthly Avg	1,249	135								**TOTAL**	422,400	
30-015-20894 WDW-2											**Previous Quar**	28,026,988
Apr-19	1,141	47	76	0	510	661	282	48,343	78,171	0	**48,343**	28,075,331
May-19	1,215	59	78	34	463	629	309	62,709	82,903	36,137	**62,709**	28,138,040
Jun-19	1,247	61	78	40	372	418	300	62,743	80,229	41,143	**62,743**	28,200,783
Monthly Avg	1,201	58								**TOTAL**	173,795	
30-015-26575 WDW-3											**Previous Quar**	19,657,009
Apr-19	1,047	51	117	9	653	750	549	52,457	120,343	9,257	**52,457**	19,709,466
May-19	1,064	61	111	10	541	652	387	64,834	117,977	10,629	**64,834**	19,774,300
Jun-19	1,031	54	111	1	397	515	300	55,543	114,171	1,029	**55,543**	19,829,843
Monthly Avg	1,047	55								**TOTAL**	172,834	
30-015-44877 WDW-4											**Previous Quar**	710,571
Apr-19	70	234	309	146	184	243	126	240,686	317,829	150,171	**240,686**	951,257
May-19	75	210	317	154	167	239	101	223,200	336,926	163,680	**223,200**	1,174,457
Jun-19	98	267	296	190	172	254	100	274,629	304,457	195,429	**274,629**	1,449,086
Monthly Avg	81	237								**TOTAL**	738,515	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	422,400	43,846,301	44,268,701
WDW2	173,795	28,026,988	28,200,783
WDW3	172,834	19,657,009	19,829,843
WDW4	738,515	710,571	1,449,086
	1,507,544	92,240,869	

	Q2 Disposal bbls	Max Flow gpm
WDW-1	422,400	148
WDW-2	173,795	77
WDW-3	172,834	113
WDW-4	738,515	307

2019 THIRD 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											**Previous Quar**	44,268,701
Jul-19	1,219	131	147	113	438	606	271	139,234	156,240	120,103	139,234	44,407,935
Aug-19	1,099	122	151	95	273	487	104	129,669	160,491	100,971	129,669	44,537,604
Sep-19	1,133	123	144	105	397	618	193	126,514	148,114	108,000	126,514	44,664,118
Monthly Avg	1,150	125								TOTAL	395,417	
30-015-20894 WDW-2											**Previous Quar**	28,200,783
Jul-19	1,224	57	69	0	397	501	325	60,583	73,337	0	60,583	28,261,366
Aug-19	1,160	51	77	23	631	1,040	360	54,206	81,840	24,446	54,206	28,315,572
Sep-19	1,137	47	63	32	372	418	300	48,343	64,800	32,914	48,343	28,363,915
Monthly Avg	1,174	52								TOTAL	163,132	
30-015-28575 WDW-3											**Previous Quar**	19,829,843
Jul-19	1,045	69	106	40	383	556	250	73,337	112,663	42,514	73,337	19,903,180
Aug-19	1,062	77	109	0	394	593	218	81,840	115,851	0	81,840	19,985,020
Sep-19	993	50	112	5	397	515	300	51,429	115,200	5,143	51,429	20,036,449
Monthly Avg	1,033	65								TOTAL	206,606	
30-015-44877 WDW-4											**Previous Quar**	1,449,086
Jul-19	102	256	317	109	163	237	90	272,091	336,926	115,851	272,091	1,721,177
Aug-19	115	294	344	164	178	248	102	312,480	365,623	174,309	312,480	2,033,657
Sep-19	101	240	326	177	172	254	100	246,857	335,314	182,057	246,857	2,280,514
Monthly Avg	106	263								TOTAL	831,428	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	395,417	44,268,701	44,664,118
WDW2	163,132	28,200,783	28,363,915
WDW3	206,606	19,829,843	20,036,449
WDW4	831,428	1,449,086	2,280,514
	1,596,583	93,748,413	

	Q3 Disposal bbls	Max Flow gpm
WDW-1	395,417	147
WDW-2	163,132	70
WDW-3	206,606	109
WDW-4	831,428	329

2019 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											**Previous Quar**	44,664,118
Oct-19	1,117	118	135	109	472	636	342	125,417	143,486	115,851	**125,417**	44,789,535
Nov-19	1,246	131	147	118	538	700	352	134,743	151,200	121,371	**134,743**	44,924,276
Dec-19	1,117	116	146	102	535	794	338	123,291	155,177	108,411	**123,291**	45,047,569
Monthly Avg	1,160	122								**TOTAL**	383,451	
30-016-20894 WDW-2											**Previous Quar**	28,383,915
Oct-19	1,142	44	78	24	510	766	342	46,766	82,903	25,509	**46,766**	28,410,681
Nov-19	1,227	44	83	4	581	805	360	45,257	85,371	4,114	**45,257**	28,455,938
Dec-19	1,207	36	48	23	511	693	388	38,263	51,017	24,446	**38,263**	28,494,201
Monthly Avg	1,192	41								**TOTAL**	130,286	
30-016-26575 WDW-3											**Previous Quar**	20,036,449
Oct-19	1,033	64	97	6	356	615	210	69,086	103,097	6,377	**69,086**	20,105,535
Nov-19	1,052	48	118	2	530	693	416	49,371	121,371	2,057	**49,371**	20,154,906
Dec-19	1,097	50	92	9	570	713	416	53,143	97,783	9,566	**53,143**	20,208,049
Monthly Avg	1,061	54								**TOTAL**	171,600	
30-015-44677 WDW-4											**Previous Quar**	2,280,514
Oct-19	100	233	318	100	126	177	92	247,646	337,989	106,286	**247,646**	2,528,160
Nov-19	100	225	294	135	177	248	119	231,429	302,400	138,857	**231,429**	2,759,589
Dec-19	109	253	323	182	162	246	105	268,903	343,303	193,440	**268,903**	3,028,492
Monthly Avg	103	237								**TOTAL**	747,978	

	Total BBLS	Beginning Volume	Ending Volume
WDW1	383,451	44,664,118	45,047,569
WDW2	130,286	28,383,915	28,494,201
WDW3	171,600	20,036,449	20,208,049
WDW4	747,978	2,280,514	3,028,492

	Q4 Disposal bbls	Max Flow gpm
WDW-1	383,451	143
WDW-2	130,286	70
WDW-3	171,600	102
WDW-4	747,978	312

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 87410

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO. | 3 OGRID: 15694 | 1/2019

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 | 6 Page 1 of 4

			INJECTION			PRODUCTION					DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	263,589	1,272	W												
30-015-20894 WDW - 2	D	75,463	1,262	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	92,469	1,177	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	202560	58	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 87410

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO. | 3 OGRID: 15694 | 2/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 | 6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	188,160	1,270	W												
30-015-20894 WDW - 2	D	61,440	1,252	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	66,240	1,116	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	228480	50	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO. | 3 OGRID: 15694 | 3/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 | 6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	132,857	1,184	W												
30-015-20894 WDW - 2	D	53,143	1,157	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	59,520	1,064	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	279531	80	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	4/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	138,857	1,240	W												
30-015-20894 WDW - 2	D	48,343	1,140	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	52,457	1,047	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	240686	70	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	5/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	148,800	1,283	W												
30-015-20894 WDW - 2	D	62,709	1,215	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	64,834	1,064	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	223200	75	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	6/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/conden-sate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Prod-uced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	134,743	1,223	W												
30-015-20894 WDW - 2	D	62,743	1,247	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	55,543	1,031	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	274629	98	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	7/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	139,234	1,219	W												
30-015-20894 WDW - 2	D	60,583	1,224	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	73,337	1,045	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	272091	163	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	8/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	129,669	1,099	W												
30-015-20894 WDW - 2	D	54,206	1,160	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	81,840	1,062	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	312480	115	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	9/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	126,514	1,133	W												
30-015-20894 WDW - 2	D	48,343	1,137	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	51,429	993	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	246857	101	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	L. R. DADE Printed Name & Title	ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com E-Mail Address	0 Date	575-746-5281 Phone Number

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	10/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	125,417	1,117	W												
30-015-20894 WDW - 2	D	46,766	1,142	W												
78690 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	69,086	1,033	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	247,646	100	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator NAVAJO REFINERY CO.	3 OGRID: 15694	11/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	134,743	1,246	W												
30-015-20894 WDW - 2	D	45,257	1,227	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	49,371	1,052	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	231,429	100	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	L. R. DADE Printed Name & Title	ENVIR. SPEC. E-Mail Address	Lewis.Dade@hollyfrontier.com	0 Date	575-746-5281 Phone Number

2 Operator	3 OGRID	4 Month/Year	6 Page 2 of 4

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South Saint Francis Drive
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ Amended Report

2 Operator: NAVAJO REFINERY CO.	3 OGRID: 15694	12/2019
5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210		6 Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	123,291	1,117	W												
30-015-20894 WDW - 2	D	38,263	1,207	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	53,143	1,097	W												
96101 SWD-DEVONIAN																
30-015-44677 WDW-4	D	268,903	109	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	0	575-746-5281

2 Operator	3 OGRID	4 Month/Year	5 Page 2 of 4

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

April 18, 2019

Robert Combs

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

RE: Quarterly WDW 1 2 3 Inj Well OrderNo.: 1903D14

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/27/2019 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW 1 2 3 Inj Well
Collection Date: 3/26/2019 8:15:00 AM
Lab ID: 1903D14-001 **Matrix:** AQUEOUS **Received Date:** 3/27/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8081: PESTICIDES TCLP						Analyst: **JME**	
Chlordane	ND	0.030		mg/L	1	4/16/2019 12:06:41 PM	43999
Surr: Decachlorobiphenyl	26.3	29.4-99.8	S	%Rec	1	4/16/2019 12:06:41 PM	43999
Surr: Tetrachloro-m-xylene	25.0	20.7-100		%Rec	1	4/16/2019 12:06:41 PM	43999
EPA METHOD 8270C TCLP						Analyst: **JDC**	
2-Methylphenol	ND	200		mg/L	1	4/13/2019 10:55:55 PM	44003
3+4-Methylphenol	ND	200		mg/L	1	4/13/2019 10:55:55 PM	44003
2,4-Dinitrotoluene	ND	0.13		mg/L	1	4/13/2019 10:55:55 PM	44003
Hexachlorobenzene	ND	0.13		mg/L	1	4/13/2019 10:55:55 PM	44003
Hexachlorobutadiene	ND	0.50		mg/L	1	4/13/2019 10:55:55 PM	44003
Hexachloroethane	ND	3.0		mg/L	1	4/13/2019 10:55:55 PM	44003
Nitrobenzene	ND	2.0		mg/L	1	4/13/2019 10:55:55 PM	44003
Pentachlorophenol	ND	100		mg/L	1	4/13/2019 10:55:55 PM	44003
Pyridine	ND	5.0		mg/L	1	4/13/2019 10:55:55 PM	44003
2,4,5-Trichlorophenol	ND	400		mg/L	1	4/13/2019 10:55:55 PM	44003
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	4/13/2019 10:55:55 PM	44003
Cresols, Total	ND	200		mg/L	1	4/13/2019 10:55:55 PM	44003
Surr: 2-Fluorophenol	45.0	15-82.5		%Rec	1	4/13/2019 10:55:55 PM	44003
Surr: Phenol-d5	35.3	15-74.2		%Rec	1	4/13/2019 10:55:55 PM	44003
Surr: 2,4,6-Tribromophenol	73.2	18.6-118		%Rec	1	4/13/2019 10:55:55 PM	44003
Surr: Nitrobenzene-d5	67.3	30.4-106		%Rec	1	4/13/2019 10:55:55 PM	44003
Surr: 2-Fluorobiphenyl	48.9	15-104		%Rec	1	4/13/2019 10:55:55 PM	44003
Surr: 4-Terphenyl-d14	51.6	15-133		%Rec	1	4/13/2019 10:55:55 PM	44003
SPECIFIC GRAVITY						Analyst: **JRR**	
Specific Gravity	1.001	0			1	4/3/2019 10:28:00 AM	R58847
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Fluoride	9.6	0.50	*	mg/L	5	4/1/2019 10:44:34 PM	R58816
Chloride	420	25	*	mg/L	50	4/8/2019 2:18:56 PM	R58998
Bromide	0.94	0.50		mg/L	5	4/1/2019 10:44:34 PM	R58816
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	4/1/2019 10:44:34 PM	R58816
Sulfate	1500	25	*	mg/L	50	4/8/2019 2:18:56 PM	R58998
Nitrate+Nitrite as N	ND	1.0		mg/L	5	4/1/2019 11:09:23 PM	R58816
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	4100	5.0		µmhos/c	1	4/3/2019 1:19:58 PM	R58867
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	488.6	20.00		mg/L Ca	1	4/3/2019 1:19:58 PM	R58867
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	4/3/2019 1:19:58 PM	R58867
Total Alkalinity (as CaCO3)	488.6	20.00		mg/L Ca	1	4/3/2019 1:19:58 PM	R58867

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW 1 2 3 Inj Well
Collection Date: 3/26/2019 8:15:00 AM
Lab ID: 1903D14-001 **Matrix:** AQUEOUS **Received Date:** 3/27/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **CJS**	
Total Dissolved Solids	3130	100	*D	mg/L	1	4/3/2019 5:30:00 PM	44042
EPA METHOD 7470: MERCURY						Analyst: **pmf**	
Mercury	ND	0.00020		mg/L	1	4/5/2019 12:09:40 PM	44137
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Calcium	330	5.0		mg/L	5	4/3/2019 10:55:32 AM	A58849
Magnesium	100	5.0		mg/L	5	4/3/2019 10:55:32 AM	A58849
Potassium	64	5.0		mg/L	5	4/3/2019 10:55:32 AM	A58849
Sodium	360	5.0		mg/L	5	4/3/2019 10:55:32 AM	A58849
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/3/2019 9:09:22 AM	44006
Barium	0.045	0.020		mg/L	1	4/3/2019 9:09:22 AM	44006
Cadmium	ND	0.0020		mg/L	1	4/3/2019 9:09:22 AM	44006
Chromium	ND	0.0060		mg/L	1	4/3/2019 9:09:22 AM	44006
Lead	ND	0.0050		mg/L	1	4/5/2019 10:10:57 AM	44006
Selenium	ND	0.050		mg/L	1	4/3/2019 9:09:22 AM	44006
Silver	ND	0.0050		mg/L	1	4/3/2019 9:09:22 AM	44006
TCLP VOLATILES BY 8260B						Analyst: **RAA**	
Benzene	ND	0.50		mg/L	200	4/3/2019 12:15:00 AM	R58834
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	200	4/3/2019 12:15:00 AM	R58834
2-Butanone	ND	200		mg/L	200	4/3/2019 12:15:00 AM	R58834
Carbon Tetrachloride	ND	0.50		mg/L	200	4/3/2019 12:15:00 AM	R58834
Chloroform	ND	6.0		mg/L	200	4/3/2019 12:15:00 AM	R58834
1,4-Dichlorobenzene	ND	7.5		mg/L	200	4/3/2019 12:15:00 AM	R58834
1,1-Dichloroethene	ND	0.70		mg/L	200	4/3/2019 12:15:00 AM	R58834
Tetrachloroethene (PCE)	ND	0.70		mg/L	200	4/3/2019 12:15:00 AM	R58834
Trichloroethene (TCE)	ND	0.50		mg/L	200	4/3/2019 12:15:00 AM	R58834
Vinyl chloride	ND	0.20		mg/L	200	4/3/2019 12:15:00 AM	R58834
Chlorobenzene	ND	100		mg/L	200	4/3/2019 12:15:00 AM	R58834
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	200	4/3/2019 12:15:00 AM	R58834
Surr: 4-Bromofluorobenzene	99.5	70-130		%Rec	200	4/3/2019 12:15:00 AM	R58834
Surr: Dibromofluoromethane	101	70-130		%Rec	200	4/3/2019 12:15:00 AM	R58834
Surr: Toluene-d8	96.7	70-130		%Rec	200	4/3/2019 12:15:00 AM	R58834

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW 1 2 3 Inj Well
Collection Date:
Lab ID: 1903D14-002
Matrix: TRIP BLANK
Received Date: 3/27/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
TCLP VOLATILES BY 8260B						Analyst: **RAA**	
Benzene	ND	0.50		mg/L	1	4/3/2019 1:27:00 AM	R58834
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	4/3/2019 1:27:00 AM	R58834
2-Butanone	ND	200		mg/L	1	4/3/2019 1:27:00 AM	R58834
Carbon Tetrachloride	ND	0.50		mg/L	1	4/3/2019 1:27:00 AM	R58834
Chloroform	ND	6.0		mg/L	1	4/3/2019 1:27:00 AM	R58834
1,4-Dichlorobenzene	ND	7.5		mg/L	1	4/3/2019 1:27:00 AM	R58834
1,1-Dichloroethene	ND	0.70		mg/L	1	4/3/2019 1:27:00 AM	R58834
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	4/3/2019 1:27:00 AM	R58834
Trichloroethene (TCE)	ND	0.50		mg/L	1	4/3/2019 1:27:00 AM	R58834
Vinyl chloride	ND	0.20		mg/L	1	4/3/2019 1:27:00 AM	R58834
Chlorobenzene	ND	100		mg/L	1	4/3/2019 1:27:00 AM	R58834
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	4/3/2019 1:27:00 AM	R58834
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	4/3/2019 1:27:00 AM	R58834
Surr: Dibromofluoromethane	97.9	70-130		%Rec	1	4/3/2019 1:27:00 AM	R58834
Surr: Toluene-d8	97.5	70-130		%Rec	1	4/3/2019 1:27:00 AM	R58834

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	0.0141		0.00500	1	04/06/2019 17:13	WG1261158

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.56	T8	1	04/02/2019 17:45	WG1259617

Sample Narrative:

L1084745-01 WG1259617: 7.56 at 14.8C

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	0.123		0.0500	1	04/02/2019 18:35	WG1259688

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	04/05/2019 22:16	WG1261310

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

Method Blank (MB)

(MB) R3399162-1 04/06/19 16:41

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

L1084328-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1084328-06 04/06/19 16:48 • (DUP) R3399162-3 04/06/19 16:49

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

L1084328-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1084328-14 04/06/19 17:07 • (DUP) R3399162-8 04/06/19 17:08

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

Laboratory Control Sample (LCS)

(LCS) R3399162-2 04/06/19 16:42

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Cyanide	0.100	0.0978	97.8	85.0-115	

L1084328-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1084328-07 04/06/19 16:50 • (MS) R3399162-4 04/06/19 16:54 • (MSD) R3399162-5 04/06/19 16:55

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.0790	0.0859	79.0	85.9	1	75.0-125			8.37	20

L1084328-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1084328-13 04/06/19 17:02 • (MS) R3399162-6 04/06/19 17:05 • (MSD) R3399162-7 04/06/19 17:06

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.0801	0.0703	80.1	70.3	1	75.0-125		J6	13.0	20

Laboratory Control Sample (LCS)

(LCS) R3397714-1 04/02/19 17:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 17.6C

Method Blank (MB)

(MB) R3397727-1 04/02/19 18:18

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Reactive Sulfide	U		0.00650	0.0500

Laboratory Control Sample (LCS)

(LCS) R3397727-2 04/02/19 18:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Sulfide	0.500	0.476	95.2	85.0-115	

L1084808-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1084808-02 04/05/19 22:16 • (DUP) R3399058-2 04/05/19 22:16

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

L1085800-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1085800-01 04/05/19 22:16 • (DUP) R3399058-3 04/05/19 22:16

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

Laboratory Control Sample (LCS)

(LCS) R3399058-1 04/05/19 22:16

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	deg F	deg F	%	%	
Flashpoint	82.0	81.6	99.5	96.0-104	

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.

Abbreviations and Definitions

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

Qualifier	Description
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.

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	192	T8	1	04/06/2019 11:25	WG1261694

L1084668-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1084668-01 04/06/19 11:25 • (DUP) R3399096-2 04/06/19 11:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mV	mV		%		%
ORP	192	191	1	0.522		20

Laboratory Control Sample (LCS)

(LCS) R3399096-1 04/06/19 11:25

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mV	mV	%	%	
ORP	228	228	100	95.7-104	

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.

Abbreviations and Definitions

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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
T8	Sample(s) received past/too close to holding time expiration.

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R58816**	RunNo: **58816**
Prep Date:	Analysis Date: **4/1/2019**	SeqNo: **1976714** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R58816**	RunNo: **58816**
Prep Date:	Analysis Date: **4/1/2019**	SeqNo: **1976715** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	101	90	110			
Bromide	2.4	0.10	2.500	0	95.1	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.6	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.1	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R58998**	RunNo: **58998**
Prep Date:	Analysis Date: **4/8/2019**	SeqNo: **1985185** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R58998**	RunNo: **58998**
Prep Date:	Analysis Date: **4/8/2019**	SeqNo: **1985187** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	98.9	90	110			
Sulfate	10	0.50	10.00	0	100	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**

18-Apr-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **1903D14-001BMS** SampType: **MS** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **43999** RunNo: **59212**

Prep Date: **4/1/2019** Analysis Date: **4/16/2019** SeqNo: **1993657** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.00088		0.002500		35.2	29.4	99.8			
Surr: Tetrachloro-m-xylene	0.00076		0.002500		30.6	20.7	100			

Sample ID: **1903D14-001BMSD** SampType: **MSD** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **43999** RunNo: **59212**

Prep Date: **4/1/2019** Analysis Date: **4/16/2019** SeqNo: **1993658** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		66.0	29.4	99.8	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.0	20.7	100	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **R58834** RunNo: **58834**
Prep Date: Analysis Date: **4/2/2019** SeqNo: **1978496** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0.02000	0	100	70	130			
1,1-Dichloroethene	ND	0.70	0.02000	0	95.1	70	130			
Trichloroethene (TCE)	ND	0.50	0.02000	0	90.3	70	130			
Chlorobenzene	ND	100	0.02000	0	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.011		0.01000		109	70	130			
Surr: 4-Bromofluorobenzene	0.0099		0.01000		99.2	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		103	70	130			
Surr: Toluene-d8	0.0097		0.01000		97.3	70	130			

Sample ID: **rb2** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **R58834** RunNo: **58834**
Prep Date: Analysis Date: **4/2/2019** SeqNo: **1978497** 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	0.010		0.01000		104	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		99.5	70	130			
Surr: Toluene-d8	0.0099		0.01000		98.6	70	130			

Sample ID: **1903d14-001ams** SampType: **MS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R58834** RunNo: **58834**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978503** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	4.1	0.00017	4.000	0.02440	102	70	130			
1,1-Dichloroethene	4.1	0.00021	4.000	0	102	67.6	130			
Trichloroethene (TCE)	3.9	0.00017	4.000	0	97.2	70	130			
Chlorobenzene	4.2	0.00019	4.000	0.03160	105	70	130			
Surr: 1,2-Dichloroethane-d4	2.1		2.000		104	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **1903d14-001ams** SampType: **MS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R58834** RunNo: **58834**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978503** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.9		2.000		96.7	70	130			
Surr: Dibromofluoromethane	1.9		2.000		96.5	70	130			
Surr: Toluene-d8	2.0		2.000		97.7	70	130			

Sample ID: **1903d14-001amsd** SampType: **MSD** TestCode: **TCLP Volatiles by 8260B**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R58834** RunNo: **58834**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978504** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	4.1	0.00017	4.000	0.02440	101	70	130	1.10	20	
1,1-Dichloroethene	4.0	0.00021	4.000	0	99.0	67.6	130	3.29	20	
Trichloroethene (TCE)	3.8	0.00017	4.000	0	95.6	70	130	1.68	20	
Chlorobenzene	4.0	0.00019	4.000	0.03160	99.7	70	130	5.04	20	
Surr: 1,2-Dichloroethane-d4	2.1		2.000		106	70	130	0	0	
Surr: 4-Bromofluorobenzene	2.0		2.000		102	70	130	0	0	
Surr: Dibromofluoromethane	2.0		2.000		100	70	130	0	0	
Surr: Toluene-d8	2.0		2.000		98.2	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**

18-Apr-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **1903D14-001Bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44003** RunNo: **59132**

Prep Date: **4/1/2019** Analysis Date: **4/13/2019** SeqNo: **1990636** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.056	0.0063	0.1000	0	56.5	23.9	129			
3+4-Methylphenol	0.10	0.0054	0.2000	0	51.9	15	167			
2,4-Dinitrotoluene	0.064	0.0058	0.1000	0	64.4	15	147			
Hexachlorobenzene	0.073	0.0062	0.1000	0	73.0	41.4	136			
Hexachlorobutadiene	0.023	0.0064	0.1000	0	23.4	16.2	134			
Hexachloroethane	0.024	0.0060	0.1000	0	23.9	20.6	124			
Nitrobenzene	0.059	0.0060	0.1000	0	59.0	39.5	134			
Pentachlorophenol	0.033	0.0053	0.1000	0	33.5	15	137			
Pyridine	0.016	0.0060	0.1000	0	16.0	15	129			
2,4,5-Trichlorophenol	0.070	0.0054	0.1000	0	70.4	15	158			
2,4,6-Trichlorophenol	0.069	0.0058	0.1000	0	68.7	15	153			
Cresols, Total	0.16	0.012	0.3000	0	53.4	10.6	179			
Surr: 2-Fluorophenol	0.085		0.2000		42.3	15	82.5			
Surr: Phenol-d5	0.067		0.2000		33.3	15	74.2			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		72.0	18.6	118			
Surr: Nitrobenzene-d5	0.068		0.1000		67.8	30.4	106			
Surr: 2-Fluorobiphenyl	0.046		0.1000		46.3	15	104			
Surr: 4-Terphenyl-d14	0.058		0.1000		57.7	15	133			

Sample ID: **1903D14-001Bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44003** RunNo: **59132**

Prep Date: **4/1/2019** Analysis Date: **4/13/2019** SeqNo: **1990637** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.049	0.0063	0.1000	0	48.9	23.9	129	14.3	20	
3+4-Methylphenol	0.094	0.0054	0.2000	0	47.0	15	167	9.96	20	
2,4-Dinitrotoluene	0.055	0.0058	0.1000	0	54.9	15	147	16.0	23.2	
Hexachlorobenzene	0.063	0.0062	0.1000	0	62.5	41.4	136	15.5	20	
Hexachlorobutadiene	0.023	0.0064	0.1000	0	23.1	16.2	134	1.38	20	
Hexachloroethane	0.022	0.0060	0.1000	0	21.7	20.6	124	9.57	31.3	
Nitrobenzene	0.054	0.0060	0.1000	0	54.2	39.5	134	8.44	26.6	
Pentachlorophenol	0.028	0.0053	0.1000	0	28.2	15	137	16.9	27.9	
Pyridine	0.021	0.0060	0.1000	0	21.0	15	129	26.8	47.4	
2,4,5-Trichlorophenol	0.058	0.0054	0.1000	0	57.7	15	158	19.7	36.9	
2,4,6-Trichlorophenol	0.062	0.0058	0.1000	0	61.9	15	153	10.4	37.2	
Cresols, Total	0.14	0.012	0.3000	0	47.6	10.6	179	11.5	27.4	
Surr: 2-Fluorophenol	0.072		0.2000		36.0	15	82.5	0	0	
Surr: Phenol-d5	0.057		0.2000		28.6	15	74.2	0	0	
Surr: 2,4,6-Tribromophenol	0.13		0.2000		63.4	18.6	118	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **1903D14-001Bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44003** RunNo: **59132**
Prep Date: **4/1/2019** Analysis Date: **4/13/2019** SeqNo: **1990637** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.062		0.1000		61.7	30.4	106	0	0	
Surr: 2-Fluorobiphenyl	0.041		0.1000		40.8	15	104	0	0	
Surr: 4-Terphenyl-d14	0.049		0.1000		49.1	15	133	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **lcs-1 99.0uS eC** SampType: **LCS** TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW** Batch ID: **R58867** RunNo: **58867**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978677** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	5.0	99.00	0	100	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**

18-Apr-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **MB-44137**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **44137**	RunNo: **58933**
Prep Date: **4/4/2019**	Analysis Date: **4/5/2019**	SeqNo: **1981797** Units: **mg/L**

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

Sample ID: **LCS-44137**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **44137**	RunNo: **58933**
Prep Date: **4/4/2019**	Analysis Date: **4/5/2019**	SeqNo: **1981798** 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	85.5	80	120			

Sample ID: **LCSD-44137**	SampType: **LCSD**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSS02**	Batch ID: **44137**	RunNo: **58933**
Prep Date: **4/4/2019**	Analysis Date: **4/5/2019**	SeqNo: **1981844** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	80	120	15.3	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **MB-A** SampType: **MBLK** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW** Batch ID: **A58849** RunNo: **58849**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978089** Units: **mg/L**

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

Sample ID: **LCS-A** SampType: **LCS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A58849** RunNo: **58849**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978091** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.2	80	120			
Magnesium	50	1.0	50.00	0	99.5	80	120			
Potassium	49	1.0	50.00	0	98.4	80	120			
Sodium	48	1.0	50.00	0	96.3	80	120			

Sample ID: **LCSD-A** SampType: **LCSD** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSS02** Batch ID: **A58849** RunNo: **58849**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978092** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	100	80	120	1.07	20	
Magnesium	50	1.0	50.00	0	101	80	120	1.09	20	
Potassium	50	1.0	50.00	0	99.4	80	120	1.05	20	
Sodium	49	1.0	50.00	0	98.6	80	120	2.32	20	

Sample ID: **1903D14-001DMS** SampType: **MS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **A58849** RunNo: **58849**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978153** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	350	5.0	250.0	100.9	101	75	125			
Potassium	310	5.0	250.0	63.59	100	75	125			

Sample ID: **1903D14-001DMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **A58849** RunNo: **58849**
Prep Date: Analysis Date: **4/3/2019** SeqNo: **1978154** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	360	5.0	250.0	100.9	102	75	125	0.849	20	
Potassium	320	5.0	250.0	63.59	101	75	125	0.298	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **MB-44006** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **44006** RunNo: **58849**
Prep Date: **4/1/2019** Analysis Date: **4/3/2019** SeqNo: **1978079** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-44006** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **44006** RunNo: **58849**
Prep Date: **4/1/2019** Analysis Date: **4/3/2019** SeqNo: **1978084** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.0	80	120			
Barium	0.48	0.020	0.5000	0	96.7	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.3	80	120			
Chromium	0.48	0.0060	0.5000	0	96.7	80	120			
Selenium	0.50	0.050	0.5000	0	99.3	80	120			
Silver	0.10	0.0050	0.1000	0	100	80	120			

Sample ID: **1903D14-001EMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44006** RunNo: **58849**
Prep Date: **4/1/2019** Analysis Date: **4/3/2019** SeqNo: **1978105** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0.01859	93.7	75	125			
Barium	0.50	0.020	0.5000	0.04539	90.9	75	125			
Cadmium	0.48	0.0020	0.5000	0	95.6	75	125			
Chromium	0.46	0.0060	0.5000	0	91.6	75	125			
Selenium	0.52	0.050	0.5000	0.04001	95.3	75	125			
Silver	0.11	0.0050	0.1000	0.003795	101	75	125			

Sample ID: **1903D14-001EMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44006** RunNo: **58849**
Prep Date: **4/1/2019** Analysis Date: **4/3/2019** SeqNo: **1978106** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0.01859	94.3	75	125	0.602	20	
Barium	0.50	0.020	0.5000	0.04539	91.6	75	125	0.717	20	
Cadmium	0.48	0.0020	0.5000	0	95.7	75	125	0.0812	20	
Chromium	0.46	0.0060	0.5000	0	91.2	75	125	0.359	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**
18-Apr-19

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

Sample ID: **1903D14-001EMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44006** RunNo: **58849**
Prep Date: **4/1/2019** Analysis Date: **4/3/2019** SeqNo: **1978106** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.53	0.050	0.5000	0.04001	97.3	75	125	1.89	20	
Silver	0.11	0.0050	0.1000	0.003795	103	75	125	1.41	20	

Sample ID: **MB-44006** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **44006** RunNo: **58923**
Prep Date: **4/1/2019** Analysis Date: **4/5/2019** SeqNo: **1981494** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID: **LCS-44006** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **44006** RunNo: **58923**
Prep Date: **4/1/2019** Analysis Date: **4/5/2019** SeqNo: **1981495** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	101	80	120			

Sample ID: **1903D14-001EMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44006** RunNo: **58923**
Prep Date: **4/1/2019** Analysis Date: **4/5/2019** SeqNo: **1981515** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.48	0.0050	0.5000	0	95.7	75	125			

Sample ID: **1903D14-001EMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **44006** RunNo: **58923**
Prep Date: **4/1/2019** Analysis Date: **4/5/2019** SeqNo: **1981516** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.48	0.0050	0.5000	0	96.9	75	125	1.26	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**

18-Apr-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **mb-1 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R58867**	RunNo: **58867**
Prep Date:	Analysis Date: **4/3/2019**	SeqNo: **1978652** 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: **R58867**	RunNo: **58867**
Prep Date:	Analysis Date: **4/3/2019**	SeqNo: **1978653** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.56	20.00	80.00	0	95.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903D14**

18-Apr-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **MB-44042**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **44042**	RunNo: **58866**
Prep Date: **4/2/2019**	Analysis Date: **4/3/2019**	SeqNo: **1978621** 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-44042**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **44042**	RunNo: **58866**
Prep Date: **4/2/2019**	Analysis Date: **4/3/2019**	SeqNo: **1978622** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **NAVAJO REFINING CO** Work Order Number: **1903D14** RcptNo: **1**

Received By: **Yazmine Garduno** **3/27/2019 8:40:00 AM** Yazmine Garduno

Completed By: **Leah Baca** **3/27/2019 1:57:18 PM** Leah SBaca

Reviewed By: ENH 3/29/19

Labeled by YG 3/29/19

Chain of Custody

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

Log In

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

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

Adjusted? NO

Checked by: YG 3/29/19

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	0.1	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: X Standard ☐ Rush
	Project Name: Quarterly WDW-1, 2, & 3 Inj Well
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #: P.O. # 251841
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Robert Combs / Scott Denton / Randy Dade
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: On Ice: ☐ Yes ☐ No Sample Temperature: 0.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1903D14	Specific Gravity, HCO3, CO3, Cl, SO4, TDS, pH, cond., Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311	Chlordane 8081 A
3/26/19	8:15	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X	
3/26/19	8:15	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	~~-002~~					X	X		
3/26/19	8:15	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	~~-003~~		X						
3/26/19	8:15	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X					
3/26/19	8:15	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X				

Date	Time	Relinquished by	Received by	Date	Time
3.26.19	1:00	Brady Hubbard	courier		8:40
		Brady Hubbard	Jazmine Hernandez	3/27	11:19

Remarks: Send results to Scott Denton, Mike Holder, Robert Combs and Randy Dade. 7.32 pH, 31.0°C

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 17, 2019

Robert Combs

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

RE: Quarterly WDW 1 2 3 Inj Well OrderNo.: 1907003

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/28/2019 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1, 2 & 3 Effluent
Project: Quarterly WDW 1 2 3 Inj Well
Collection Date: 6/26/2019 2:30:00 PM
Lab ID: 1907003-001 **Matrix:** AQUEOUS **Received Date:** 6/28/2019 10:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C TCLP						Analyst: **DAM**	
2-Methylphenol	ND	200		mg/L	1	7/5/2019 2:00:31 PM	45933
3+4-Methylphenol	ND	200		mg/L	1	7/5/2019 2:00:31 PM	45933
2,4-Dinitrotoluene	ND	0.13		mg/L	1	7/5/2019 2:00:31 PM	45933
Hexachlorobenzene	ND	0.13		mg/L	1	7/5/2019 2:00:31 PM	45933
Hexachlorobutadiene	ND	0.50		mg/L	1	7/5/2019 2:00:31 PM	45933
Hexachloroethane	ND	3.0		mg/L	1	7/5/2019 2:00:31 PM	45933
Nitrobenzene	ND	2.0		mg/L	1	7/5/2019 2:00:31 PM	45933
Pentachlorophenol	ND	100		mg/L	1	7/5/2019 2:00:31 PM	45933
Pyridine	ND	5.0		mg/L	1	7/5/2019 2:00:31 PM	45933
2,4,5-Trichlorophenol	ND	400		mg/L	1	7/5/2019 2:00:31 PM	45933
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	7/5/2019 2:00:31 PM	45933
Cresols, Total	ND	200		mg/L	1	7/5/2019 2:00:31 PM	45933
Surr: 2-Fluorophenol	63.5	15-82.5		%Rec	1	7/5/2019 2:00:31 PM	45933
Surr: Phenol-d5	46.8	15-74.2		%Rec	1	7/5/2019 2:00:31 PM	45933
Surr: 2,4,6-Tribromophenol	83.3	18.6-118		%Rec	1	7/5/2019 2:00:31 PM	45933
Surr: Nitrobenzene-d5	87.2	30.4-106		%Rec	1	7/5/2019 2:00:31 PM	45933
Surr: 2-Fluorobiphenyl	77.3	15-104		%Rec	1	7/5/2019 2:00:31 PM	45933
Surr: 4-Terphenyl-d14	78.0	15-133		%Rec	1	7/5/2019 2:00:31 PM	45933
SPECIFIC GRAVITY						Analyst: **JRR**	
Specific Gravity	1.002	0			1	7/2/2019 10:32:00 AM	R61110
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Fluoride	23	2.0	*	mg/L	20	7/1/2019 3:42:01 PM	R61084
Chloride	570	50	*	mg/L	100	7/10/2019 2:28:41 PM	R61309
Bromide	0.59	0.50		mg/L	5	7/1/2019 3:29:36 PM	R61084
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	7/1/2019 3:29:36 PM	R61084
Sulfate	2300	50	*	mg/L	100	7/10/2019 2:28:41 PM	R61309
Nitrate+Nitrite as N	1.2	1.0		mg/L	5	7/1/2019 3:54:26 PM	R61084
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	6100	5.0		µmhos/c	1	7/1/2019 10:22:40 PM	R61065
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	537.6	20.00		mg/L Ca	1	7/1/2019 10:22:40 PM	R61065
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	7/1/2019 10:22:40 PM	R61065
Total Alkalinity (as CaCO3)	537.6	20.00		mg/L Ca	1	7/1/2019 10:22:40 PM	R61065
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **CJS**	
Total Dissolved Solids	4570	40.0	*D	mg/L	1	7/9/2019 2:54:00 PM	45992
SM4500-H+B / 9040C: PH						Analyst: **JRR**	

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1, 2 & 3 Effluent
Project: Quarterly WDW 1 2 3 Inj Well
Collection Date: 6/26/2019 2:30:00 PM
Lab ID: 1907003-001 **Matrix:** AQUEOUS **Received Date:** 6/28/2019 10:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM4500-H+B / 9040C: PH						Analyst: **JRR**	
pH	7.80		H	pH units	1	7/1/2019 10:22:40 PM	R61065
EPA METHOD 7470: MERCURY						Analyst: **rde**	
Mercury	ND	0.00020		mg/L	1	7/11/2019 4:43:47 PM	46125
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **bcv**	
Calcium	470	5.0		mg/L	5	7/3/2019 11:45:32 AM	A61162
Magnesium	140	5.0		mg/L	5	7/3/2019 11:45:32 AM	A61162
Potassium	69	5.0		mg/L	5	7/3/2019 11:45:32 AM	A61162
Sodium	640	10		mg/L	10	7/3/2019 12:00:27 PM	A61162
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **bcv**	
Arsenic	ND	0.020		mg/L	1	7/5/2019 10:53:46 AM	46005
Barium	0.048	0.020		mg/L	1	7/5/2019 10:03:23 AM	46005
Cadmium	ND	0.0020		mg/L	1	7/5/2019 10:03:23 AM	46005
Chromium	ND	0.0060		mg/L	1	7/5/2019 10:03:23 AM	46005
Lead	ND	0.0050		mg/L	1	7/5/2019 10:03:23 AM	46005
Selenium	ND	0.050		mg/L	1	7/5/2019 10:03:23 AM	46005
Silver	0.0053	0.0050		mg/L	1	7/5/2019 10:03:23 AM	46005
TCLP VOLATILES BY 8260B						Analyst: **RAA**	
Benzene	ND	0.50		mg/L	200	7/9/2019 4:50:00 AM	T61220
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	200	7/9/2019 4:50:00 AM	T61220
2-Butanone	ND	200		mg/L	200	7/9/2019 4:50:00 AM	T61220
Carbon Tetrachloride	ND	0.50		mg/L	200	7/9/2019 4:50:00 AM	T61220
Chloroform	ND	6.0		mg/L	200	7/9/2019 4:50:00 AM	T61220
1,4-Dichlorobenzene	ND	7.5		mg/L	200	7/9/2019 4:50:00 AM	T61220
1,1-Dichloroethene	ND	0.70		mg/L	200	7/9/2019 4:50:00 AM	T61220
Tetrachloroethene (PCE)	ND	0.70		mg/L	200	7/9/2019 4:50:00 AM	T61220
Trichloroethene (TCE)	ND	0.50		mg/L	200	7/9/2019 4:50:00 AM	T61220
Vinyl chloride	ND	0.20		mg/L	200	7/9/2019 4:50:00 AM	T61220
Chlorobenzene	ND	100		mg/L	200	7/9/2019 4:50:00 AM	T61220
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	200	7/9/2019 4:50:00 AM	T61220
Surr: 4-Bromofluorobenzene	97.3	70-130		%Rec	200	7/9/2019 4:50:00 AM	T61220
Surr: Dibromofluoromethane	104	70-130		%Rec	200	7/9/2019 4:50:00 AM	T61220
Surr: Toluene-d8	93.6	70-130		%Rec	200	7/9/2019 4:50:00 AM	T61220

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW 1 2 3 Inj Well
Collection Date:
Lab ID: 1907003-002
Matrix: TRIP BLANK
Received Date: 6/28/2019 10:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
TCLP VOLATILES BY 8260B						Analyst: **RAA**	
Benzene	ND	0.50		mg/L	1	7/9/2019 5:14:00 AM	T61220
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/9/2019 5:14:00 AM	T61220
2-Butanone	ND	200		mg/L	1	7/9/2019 5:14:00 AM	T61220
Carbon Tetrachloride	ND	0.50		mg/L	1	7/9/2019 5:14:00 AM	T61220
Chloroform	ND	6.0		mg/L	1	7/9/2019 5:14:00 AM	T61220
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/9/2019 5:14:00 AM	T61220
1,1-Dichloroethene	ND	0.70		mg/L	1	7/9/2019 5:14:00 AM	T61220
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/9/2019 5:14:00 AM	T61220
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/9/2019 5:14:00 AM	T61220
Vinyl chloride	ND	0.20		mg/L	1	7/9/2019 5:14:00 AM	T61220
Chlorobenzene	ND	100		mg/L	1	7/9/2019 5:14:00 AM	T61220
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	7/9/2019 5:14:00 AM	T61220
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	7/9/2019 5:14:00 AM	T61220
Surr: Dibromofluoromethane	105	70-130		%Rec	1	7/9/2019 5:14:00 AM	T61220
Surr: Toluene-d8	94.0	70-130		%Rec	1	7/9/2019 5:14:00 AM	T61220

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

Qualifiers:

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

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.0269		0.00500	1	07/09/2019 20:24	WG1308181

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.47	T8	1	07/06/2019 11:52	WG1306715

Sample Narrative:

L1114999-01 WG1306715: 7.47 at 20.8C

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	07/03/2019 19:54	WG1305508

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	07/09/2019 12:16	WG1308093

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	50.0	T8	1	07/13/2019 10:12	WG1310279

L1114999-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1114999-02 07/13/19 10:12 • (DUP) R3430311-2 07/13/19 10:12

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mV	mV		%		%
ORP	50.0	54.0	1	7.69		20

Laboratory Control Sample (LCS)

(LCS) R3430311-1 07/13/19 10:12

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mV	mV	%	%	
ORP	228	228	100	95.7-104	

Method Blank (MB)

(MB) R3429064-1 07/09/19 19:47

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

L1111966-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1111966-04 07/09/19 19:53 • (DUP) R3429064-3 07/09/19 19:54

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

L1112351-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1112351-03 07/09/19 20:06 • (DUP) R3429064-6 07/09/19 20:07

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

Laboratory Control Sample (LCS)

(LCS) R3429064-9 07/09/19 20:18

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Reactive Cyanide	0.100	0.110	110	85.0-115	

L1112351-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1112351-02 07/09/19 20:03 • (MS) R3429064-4 07/09/19 20:04 • (MSD) R3429064-5 07/09/19 20:05

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.107	0.0924	107	92.4	1	75.0-125			14.6	20

L1113239-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1113239-01 07/09/19 20:15 • (MS) R3429064-7 07/09/19 20:16 • (MSD) R3429064-8 07/09/19 20:17

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Cyanide	0.100	ND	0.105	0.0832	105	83.2	1	75.0-125		J3	23.2	20

Laboratory Control Sample (LCS)

(LCS) R3428109-1 07/06/19 11:52

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.95	99.5	99.0-101	

Sample Narrative:

LCS: 9.95 at 22.8C

Method Blank (MB)

(MB) R3427441-1 07/03/19 19:48

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Reactive Sulfide	U		0.00650	0.0500

Laboratory Control Sample (LCS)

(LCS) R3427441-2 07/03/19 19:48

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Reactive Sulfide	0.500	0.543	109	85.0-115	

L1114999-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1114999-01 07/03/19 19:54 • (MS) R3427441-5 07/03/19 19:54 • (MSD) R3427441-6 07/03/19 19:55

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Reactive Sulfide	1.00	ND	0.927	0.942	92.7	94.2	1	80.0-120			1.61	20

L1114968-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1114968-01 07/09/19 12:16 • (DUP) R3428833-2 07/09/19 12:16

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

Laboratory Control Sample (LCS)

(LCS) R3428833-1 07/09/19 12:16

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	deg F	deg F	%	%	
Flashpoint	82.0	83.8	102	96.0-104	

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.

Abbreviations and Definitions

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

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**

17-Jul-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R61084**	RunNo: **61084**
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2069013** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R61084**	RunNo: **61084**
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2069014** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	99.4	90	110			
Bromide	2.4	0.10	2.500	0	95.6	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.9	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	96.8	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R61309**	RunNo: **61309**
Prep Date:	Analysis Date: **7/10/2019**	SeqNo: **2078288** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R61309**	RunNo: **61309**
Prep Date:	Analysis Date: **7/10/2019**	SeqNo: **2078289** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.9	90	110			
Sulfate	9.8	0.50	10.00	0	98.2	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**
17-Jul-19

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

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T61220** RunNo: **61220**
Prep Date: Analysis Date: **7/9/2019** SeqNo: **2075609** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.022	0.00017	0.02000	0	109	70	130			
1,1-Dichloroethene	0.020	0.00021	0.02000	0	98.0	70	130			
Trichloroethene (TCE)	0.020	0.00017	0.02000	0	102	70	130			
Chlorobenzene	0.020	0.00019	0.02000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.012		0.01000		117	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		102	70	130			
Surr: Dibromofluoromethane	0.011		0.01000		111	70	130			
Surr: Toluene-d8	0.0095		0.01000		94.9	70	130			

Sample ID: **rb2** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T61220** RunNo: **61220**
Prep Date: Analysis Date: **7/9/2019** SeqNo: **2075612** 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		114	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		99.7	70	130			
Surr: Dibromofluoromethane	0.011		0.01000		107	70	130			
Surr: Toluene-d8	0.0093		0.01000		93.2	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**
17-Jul-19

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

Sample ID: **lcs-1 99.8uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R61065**	RunNo: **61065**
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2068823** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	5.0	99.80	0	99.6	85	115			

Sample ID: **lcs-2 99.8uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R61065**	RunNo: **61065**
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2068863** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.80	0	102	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**

17-Jul-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **MB-46125**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **46125**	RunNo: **61319**
Prep Date: **7/11/2019**	Analysis Date: **7/11/2019**	SeqNo: **2078629** Units: **mg/L**

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

Sample ID: **LCS-46125**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **46125**	RunNo: **61319**
Prep Date: **7/11/2019**	Analysis Date: **7/11/2019**	SeqNo: **2078630** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.6	80	120			

Sample ID: **1907003-001EMS**	SampType: **MS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **WDW-1, 2 & 3 Efflue**	Batch ID: **46125**	RunNo: **61319**
Prep Date: **7/11/2019**	Analysis Date: **7/11/2019**	SeqNo: **2078632** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	.00005580	94.2	75	125			

Sample ID: **1907003-001EMSD**	SampType: **MSD**	TestCode: **EPA Method 7470: Mercury**
Client ID: **WDW-1, 2 & 3 Efflue**	Batch ID: **46125**	RunNo: **61319**
Prep Date: **7/11/2019**	Analysis Date: **7/11/2019**	SeqNo: **2078633** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	.00005580	89.7	75	125	4.84	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**
17-Jul-19

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

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A61162**	RunNo: **61162**
Prep Date:	Analysis Date: **7/3/2019**	SeqNo: **2072741** Units: **mg/L**

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

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A61162**	RunNo: **61162**
Prep Date:	Analysis Date: **7/3/2019**	SeqNo: **2072742** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.5	80	120			
Magnesium	49	1.0	50.00	0	97.1	80	120			
Potassium	48	1.0	50.00	0	96.8	80	120			
Sodium	49	1.0	50.00	0	98.5	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**

17-Jul-19

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 Inj Well

Sample ID: **MB-46005**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **46005**	RunNo: **61169**
Prep Date: **7/3/2019**	Analysis Date: **7/5/2019**	SeqNo: **2073329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-46005**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **46005**	RunNo: **61169**
Prep Date: **7/3/2019**	Analysis Date: **7/5/2019**	SeqNo: **2073330** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.020	0.5000	0	95.9	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.49	0.0060	0.5000	0	99.0	80	120			
Lead	0.49	0.0050	0.5000	0	97.9	80	120			
Selenium	0.48	0.050	0.5000	0	95.9	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			

Sample ID: **MB-46005**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **46005**	RunNo: **61169**
Prep Date: **7/3/2019**	Analysis Date: **7/5/2019**	SeqNo: **2073365** Units: **mg/L**

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

Sample ID: **LCS-46005**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **46005**	RunNo: **61169**
Prep Date: **7/3/2019**	Analysis Date: **7/5/2019**	SeqNo: **2073366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	102	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**
17-Jul-19

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

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R61065**	RunNo: **61065**							
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2068770**	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: **R61065**	RunNo: **61065**							
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2068771**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.24	20.00	80.00	0	94.1	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R61065**	RunNo: **61065**							
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2068793**	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: **R61065**	RunNo: **61065**							
Prep Date:	Analysis Date: **7/1/2019**	SeqNo: **2068794**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.60	20.00	80.00	0	97.0	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1907003**
17-Jul-19

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

Sample ID: **MB-45992**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **45992**	RunNo: **61248**
Prep Date: **7/3/2019**	Analysis Date: **7/9/2019**	SeqNo: **2076089** 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-45992**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **45992**	RunNo: **61248**
Prep Date: **7/3/2019**	Analysis Date: **7/9/2019**	SeqNo: **2076090** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	988	20.0	1000	0	98.8	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **NAVAJO REFINING CO** Work Order Number: **1907003** RcptNo: **1**

Received By: **Jevon Campisi** **6/28/2019 10:40:00 AM** Jevon Campisi

Completed By: **Leah Baca** **7/1/2019 6:52:49 AM** Leah S Baca

Reviewed By: JC 7/1/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
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 1 1 >9 (<2 or >12 unless noted)
Adjusted? NO
Checked by: LB 7/1/19

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	0.2	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush

Project Name:

Quarterly WDW-1, 2, & 3 Inj Well

Project #: P.O. # 251841

Project Manager:

Robert Combs / Scott Denton / Randy Dade

Sampler:

On Ice: ☑ Yes ☐ No

Sample Temperature: -0.2°C + 0.0CF = 0.2°C (not frozen)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1907003	Analysis Request: Specific Gravity, HCO3, CO3, Cl, SO4, TDS, pH, cond., Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311	Chlordane 8081 A
6/26/19	2:30	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X	
6/26/19	2:30	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X		
6/26/19	2:30	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X						
6/26/19	2:30	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X					
6/26/19	2:30	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
6-27-19	10:00	Brad Hibbard	Courier	6-28-19	10:40
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Send results to Scott Denton, Mike Holder, Robert Combs and Randy Dade. Field details: 7.24 pH, 41.3°C 89°F, 20% humidity Wind: SSW 15 mph

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.

The written notice shall be signed by both the Permittee and transferee, include an acknowledgment by the transferee that they will be responsible for compliance with the permit upon taking possession of the facility; set a specific date for transfer of the permit and include information related to the transferee's financial responsibility as required by 20.6.2.5210B(17) NMAC.

1.I. Compliance and Enforcement. If the Permittee violates any condition of this permit, OCD may issue a compliance order requiring compliance immediately or within a specified time period, and/or assess a civil penalty, or both (74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a permit or in violation of a condition of a permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a discharge permit issued pursuant to a state or federal law or regulation (74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS

2.A. Quarterly Monitoring Requirements. The Permittee shall properly conduct operations at its facility by injecting only RCRA exempt and RCRA non-hazardous, non-exempt oil field waste fluids. Injected waste fluids shall not exhibit the toxicity characteristics of ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-1 based upon environmental analytical laboratory testing and/or monitoring data results. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristics. OCD shall be notified via a C-141 Form release report if waste fluids test positive for the above.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH as determined by Method 9040
- Eh
- Specific conductance
- Specific gravity
- Temperature
- Concentrations of major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3
- RCRA Characteristics for ignitability (ASTM Methods), corrosivity (SW-846), and reactivity (determined through Permittee's application of knowledge or generating process)

The Permittee shall also analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List below to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

QUARTERLY MONITORING LIST			
EPA Hazardous Waste No.	**Contaminant**	**SW-846 Method**	**Regulatory Level (mg/l)**
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03

D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0
D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol concentration is used.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.
If dissolved metals, EPA Method 1311 TCLP is required with the exception of total mercury.

2.B. Groundwater Monitoring Wells. At least one groundwater monitoring well shall be installed in proximity of and hydrogeologically downgradient from WDW-1. The monitoring well(s) shall be screened into the uppermost water-bearing unit using 15 feet of well screen with the top of the screened interval positioned 5 feet above the water table. The Permittee shall propose a monitoring frequency with analytic and monitoring parameters to detect potential groundwater contamination.

Shallow ~ 200 - 250 ft bgs

Need All

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 01, 2019

Robert Combs

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

RE: Quarterly WDW-1, 2, & 3 Inj Well OrderNo.: 1910144

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/2/2019 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: **1910144**
Date: **11/1/2019**

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Analytical Notes Regarding EPA Method 8270:
The recovery of pyridine in the LCS was low when compared to our SOP limits.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date: 9/30/2019 4:05:00 PM
Lab ID: 1910144-001
Matrix: AQUEOUS
Received Date: 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Fluoride	31	2.0	*	mg/L	20	10/3/2019 11:52:11 PM
Chloride	430	25	*	mg/L	50	10/14/2019 2:16:22 PM
Bromide	ND	0.50		mg/L	5	10/3/2019 11:39:50 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	10/3/2019 11:39:50 PM
Sulfate	1700	25	*	mg/L	50	10/14/2019 2:16:22 PM
Nitrate+Nitrite as N	1.2	1.0		mg/L	5	10/4/2019 12:16:52 AM
EPA METHOD 7470: MERCURY						Analyst: **rde**
Mercury	ND	0.020		mg/L	1	10/4/2019 3:15:56 PM
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **rde**
Calcium	340	10		mg/L	10	10/30/2019 1:32:00 PM
Magnesium	110	10		mg/L	10	10/30/2019 1:32:00 PM
Potassium	100	10		mg/L	10	10/30/2019 1:32:00 PM
Sodium	570	10		mg/L	10	10/30/2019 1:32:00 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **bcv**
Arsenic	ND	5.0		mg/L	5	10/21/2019 2:24:21 PM
Barium	ND	100		mg/L	5	10/14/2019 11:43:53 AM
Cadmium	ND	1.0		mg/L	5	10/14/2019 11:43:53 AM
Chromium	ND	5.0		mg/L	5	10/14/2019 11:43:53 AM
Lead	ND	5.0		mg/L	5	10/21/2019 2:24:21 PM
Selenium	ND	1.0		mg/L	5	10/14/2019 11:43:53 AM
Silver	ND	5.0		mg/L	5	10/14/2019 11:43:53 AM
EPA METHOD 8270C TCLP						Analyst: **DAM**
2-Methylphenol	ND	200		mg/L	1	10/14/2019 6:38:07 PM
3+4-Methylphenol	ND	200		mg/L	1	10/14/2019 6:38:07 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	10/14/2019 6:38:07 PM
Hexachlorobenzene	ND	0.13		mg/L	1	10/14/2019 6:38:07 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	10/14/2019 6:38:07 PM
Hexachloroethane	ND	3.0		mg/L	1	10/14/2019 6:38:07 PM
Nitrobenzene	ND	2.0		mg/L	1	10/14/2019 6:38:07 PM
Pentachlorophenol	ND	100		mg/L	1	10/14/2019 6:38:07 PM
Pyridine	ND	5.0		mg/L	1	10/14/2019 6:38:07 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	10/14/2019 6:38:07 PM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	10/14/2019 6:38:07 PM
Cresols, Total	ND	200		mg/L	1	10/14/2019 6:38:07 PM
Surr: 2-Fluorophenol	42.6	15-82.5		%Rec	1	10/14/2019 6:38:07 PM
Surr: Phenol-d5	34.0	15-74.2		%Rec	1	10/14/2019 6:38:07 PM
Surr: 2,4,6-Tribromophenol	51.3	18.6-118		%Rec	1	10/14/2019 6:38:07 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date: 9/30/2019 4:05:00 PM
Lab ID: 1910144-001
Matrix: AQUEOUS
Received Date: 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C TCLP						Analyst: **DAM**
Surr: Nitrobenzene-d5	64.8	30.4-106		%Rec	1	10/14/2019 6:38:07 PM
Surr: 2-Fluorobiphenyl	53.0	15-104		%Rec	1	10/14/2019 6:38:07 PM
Surr: 4-Terphenyl-d14	61.1	15-133		%Rec	1	10/14/2019 6:38:07 PM
NOTES:						
* See the case narrative for notes.						
TCLP VOLATILES BY 8260B						Analyst: **JMR**
Benzene	ND	0.50		mg/L	1	10/4/2019 4:16:04 AM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	10/4/2019 4:16:04 AM
2-Butanone	ND	200		mg/L	1	10/4/2019 4:16:04 AM
Carbon Tetrachloride	ND	0.50		mg/L	1	10/4/2019 4:16:04 AM
Chloroform	ND	6.0		mg/L	1	10/4/2019 4:16:04 AM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	10/4/2019 4:16:04 AM
1,1-Dichloroethene	ND	0.70		mg/L	1	10/4/2019 4:16:04 AM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	10/4/2019 4:16:04 AM
Trichloroethene (TCE)	ND	0.50		mg/L	1	10/4/2019 4:16:04 AM
Vinyl chloride	ND	0.20		mg/L	1	10/4/2019 4:16:04 AM
Chlorobenzene	ND	100		mg/L	1	10/4/2019 4:16:04 AM
Surr: 1,2-Dichloroethane-d4	88.0	70-130		%Rec	1	10/4/2019 4:16:04 AM
Surr: 4-Bromofluorobenzene	93.4	70-130		%Rec	1	10/4/2019 4:16:04 AM
Surr: Dibromofluoromethane	98.6	70-130		%Rec	1	10/4/2019 4:16:04 AM
Surr: Toluene-d8	104	70-130		%Rec	1	10/4/2019 4:16:04 AM
CORROSIVITY						Analyst: **PAC**
pH	7.69			su	1	10/6/2019
IGNITABILITY METHOD 1010						Analyst: **PAC**
Ignitability	>170			°F	1	10/14/2019
OXIDATION REDUCTION POTENTIAL						Analyst: **PAC**
Oxidation-Reduction Potential	190			mV	1	10/6/2019
CYANIDE, REACTIVE						Analyst: **PAC**
Cyanide, Reactive	0.0927	0.00500		mg/L	1	10/15/2019
SULFIDE, REACTIVE						Analyst: **PAC**
Reactive Sulfide	ND	0.050		mg/L	1	10/7/2019
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**
Conductivity	5100	5.0		µmhos/c	1	10/7/2019 11:56:48 AM
SM2320B: ALKALINITY						Analyst: **JRR**
Bicarbonate (As CaCO3)	408.2	20.00		mg/L Ca	1	10/3/2019 5:57:44 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date: 9/30/2019 4:05:00 PM
Lab ID: 1910144-001
Matrix: AQUEOUS
Received Date: 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM2320B: ALKALINITY						Analyst: **JRR**
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/3/2019 5:57:44 PM
Total Alkalinity (as CaCO3)	408.2	20.00		mg/L Ca	1	10/3/2019 5:57:44 PM
SPECIFIC GRAVITY						Analyst: **JRR**
Specific Gravity	1.000	0			1	10/10/2019 12:45:00 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3520	40.0	*D	mg/L	1	10/7/2019 2:22:00 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date:
Lab ID: 1910144-002
Matrix: TRIP BLANK
Received Date: 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TCLP VOLATILES BY 8260B						Analyst: **JMR**
Benzene	ND	0.50		mg/L	1	10/4/2019 5:42:29 AM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	10/4/2019 5:42:29 AM
2-Butanone	ND	200		mg/L	1	10/4/2019 5:42:29 AM
Carbon Tetrachloride	ND	0.50		mg/L	1	10/4/2019 5:42:29 AM
Chloroform	ND	6.0		mg/L	1	10/4/2019 5:42:29 AM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	10/4/2019 5:42:29 AM
1,1-Dichloroethene	ND	0.70		mg/L	1	10/4/2019 5:42:29 AM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	10/4/2019 5:42:29 AM
Trichloroethene (TCE)	ND	0.50		mg/L	1	10/4/2019 5:42:29 AM
Vinyl chloride	ND	0.20		mg/L	1	10/4/2019 5:42:29 AM
Chlorobenzene	ND	100		mg/L	1	10/4/2019 5:42:29 AM
Surr: 1,2-Dichloroethane-d4	91.6	70-130		%Rec	1	10/4/2019 5:42:29 AM
Surr: 4-Bromofluorobenzene	93.8	70-130		%Rec	1	10/4/2019 5:42:29 AM
Surr: Dibromofluoromethane	100	70-130		%Rec	1	10/4/2019 5:42:29 AM
Surr: Toluene-d8	101	70-130		%Rec	1	10/4/2019 5:42:29 AM

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R63431**	RunNo: **63431**
Prep Date:	Analysis Date: **10/3/2019**	SeqNo: **2166069** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R63431**	RunNo: **63431**
Prep Date:	Analysis Date: **10/3/2019**	SeqNo: **2166070** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			
Bromide	2.5	0.10	2.500	0	98.5	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.8	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	99.8	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R63681**	RunNo: **63681**
Prep Date:	Analysis Date: **10/14/2019**	SeqNo: **2176160** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R63681**	RunNo: **63681**
Prep Date:	Analysis Date: **10/14/2019**	SeqNo: **2176161** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	99.4	90	110			
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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**

01-Nov-19

Client: Navajo Refining Company

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

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**

Client ID: **LCSW** Batch ID: **T63413** RunNo: **63413**

Prep Date: Analysis Date: **10/4/2019** SeqNo: **2165302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	4.0	0.30	4.000	0	99.0	70	130			
1,1-Dichloroethene	3.7	0.30	4.000	0	91.8	70	130			
Trichloroethene (TCE)	3.7	0.30	4.000	0	91.3	70	130			
Chlorobenzene	4.2	0.30	4.000	0	106	70	130			
Surr: 1,2-Dichloroethane-d4	1.8		2.000		89.9	70	130			
Surr: 4-Bromofluorobenzene	1.9		2.000		96.3	70	130			
Surr: Dibromofluoromethane	2.0		2.000		97.7	70	130			
Surr: Toluene-d8	2.1		2.000		103	70	130			

Sample ID: **1910144-001a ms** SampType: **MS** TestCode: **TCLP Volatiles by 8260B**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **T63413** RunNo: **63413**

Prep Date: Analysis Date: **10/4/2019** SeqNo: **2165304** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	4.0	0.30	4.000	0.1900	95.7	70	130			
1,1-Dichloroethene	3.7	0.30	4.000	0	92.9	70	130			
Trichloroethene (TCE)	3.5	0.30	4.000	0	87.0	70	130			
Chlorobenzene	4.1	0.30	4.000	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	1.8		2.000		91.0	70	130			
Surr: 4-Bromofluorobenzene	1.8		2.000		88.4	70	130			
Surr: Dibromofluoromethane	2.0		2.000		99.4	70	130			
Surr: Toluene-d8	2.1		2.000		106	70	130			

Sample ID: **1910144-001a msd** SampType: **MSD** TestCode: **TCLP Volatiles by 8260B**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **T63413** RunNo: **63413**

Prep Date: Analysis Date: **10/4/2019** SeqNo: **2165305** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.9	0.30	4.000	0.1900	93.1	70	130	2.64	20	
1,1-Dichloroethene	3.6	0.30	4.000	0	89.0	70	130	4.24	20	
Trichloroethene (TCE)	3.4	0.30	4.000	0	85.3	70	130	2.00	20	
Chlorobenzene	4.0	0.30	4.000	0	100	70	130	1.70	20	
Surr: 1,2-Dichloroethane-d4	1.8		2.000		90.5	70	130	0	0	
Surr: 4-Bromofluorobenzene	1.8		2.000		91.4	70	130	0	0	
Surr: Dibromofluoromethane	2.0		2.000		99.6	70	130	0	0	
Surr: Toluene-d8	2.1		2.000		103	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **rb2**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **T63413**	RunNo: **63413**
Prep Date:	Analysis Date: **10/4/2019**	SeqNo: **2165310** 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	1.9		2.000		95.2	70	130			
Surr: 4-Bromofluorobenzene	1.9		2.000		93.5	70	130			
Surr: Dibromofluoromethane	2.0		2.000		99.0	70	130			
Surr: Toluene-d8	2.0		2.000		101	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**

01-Nov-19

Client: Navajo Refining Company

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

Sample ID: **1910144-001bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **47936** RunNo: **63667**

Prep Date: **10/4/2019** Analysis Date: **10/14/2019** SeqNo: **2175826** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.14	0.0010	0.1000	0	135	30.5	98.2			S
3+4-Methylphenol	0.30	0.0010	0.2000	0	149	27.4	98.6			S
2,4-Dinitrotoluene	0.14	0.0010	0.1000	0	140	34.3	87.4			S
Hexachlorobenzene	0.15	0.0010	0.1000	0	146	36.5	100			S
Hexachlorobutadiene	0.12	0.0010	0.1000	0	124	15	108			S
Hexachloroethane	0.11	0.0010	0.1000	0	113	15	90.7			S
Nitrobenzene	0.14	0.0010	0.1000	0	144	39	100			S
Pentachlorophenol	0.12	0.0010	0.1000	0	124	15	97.5			S
Pyridine	0.022	0.0010	0.1000	0	22.5	15	65.8			
2,4,5-Trichlorophenol	0.14	0.0010	0.1000	0	137	36.1	109			S
2,4,6-Trichlorophenol	0.14	0.0010	0.1000	0	138	37.8	104			S
Cresols, Total	0.43	0.0010	0.3000	0	145	27.1	99.8			S
Surr: 2-Fluorophenol	0.096		0.2000		48.0	15	82.5			
Surr: Phenol-d5	0.076		0.2000		37.9	15	74.2			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		67.6	18.6	118			
Surr: Nitrobenzene-d5	0.080		0.1000		79.9	30.4	106			
Surr: 2-Fluorobiphenyl	0.066		0.1000		66.3	15	104			
Surr: 4-Terphenyl-d14	0.071		0.1000		70.6	15	133			

Sample ID: **1910144-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **47936** RunNo: **63667**

Prep Date: **10/4/2019** Analysis Date: **10/14/2019** SeqNo: **2175827** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.065	0.0010	0.1000	0	65.2	30.5	98.2	69.7	44.3	R
3+4-Methylphenol	0.13	0.0010	0.2000	0	63.1	27.4	98.6	81.2	50	R
2,4-Dinitrotoluene	0.068	0.0010	0.1000	0	67.6	34.3	87.4	69.9	45.1	R
Hexachlorobenzene	0.067	0.0010	0.1000	0	67.3	36.5	100	73.8	47.2	R
Hexachlorobutadiene	0.059	0.0010	0.1000	0	58.9	15	108	71.4	43.4	R
Hexachloroethane	0.055	0.0010	0.1000	0	54.9	15	90.7	69.6	39.2	R
Nitrobenzene	0.071	0.0010	0.1000	0	71.2	39	100	67.6	42.1	R
Pentachlorophenol	0.057	0.0010	0.1000	0	57.0	15	97.5	74.4	50	R
Pyridine	0.0028	0.0010	0.1000	0	2.80	15	65.8	156	50	RS
2,4,5-Trichlorophenol	0.070	0.0010	0.1000	0	70.0	36.1	109	65.0	49.7	R
2,4,6-Trichlorophenol	0.069	0.0010	0.1000	0	69.3	37.8	104	66.6	47	R
Cresols, Total	0.19	0.0010	0.3000	0	63.8	27.1	99.8	77.5	27.4	R
Surr: 2-Fluorophenol	0.046		0.2000		23.2	15	82.5	0	0	
Surr: Phenol-d5	0.038		0.2000		18.9	15	74.2	0	0	
Surr: 2,4,6-Tribromophenol	0.061		0.2000		30.6	18.6	118	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **1910144-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **47936** RunNo: **63667**
Prep Date: **10/4/2019** Analysis Date: **10/14/2019** SeqNo: **2175827** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.036		0.1000		36.4	30.4	106	0	0	
Surr: 2-Fluorobiphenyl	0.034		0.1000		33.9	15	104	0	0	
Surr: 4-Terphenyl-d14	0.031		0.1000		31.1	15	133	0	0	

Sample ID: **lcs-47936** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **47936** RunNo: **63667**
Prep Date: **10/4/2019** Analysis Date: **10/14/2019** SeqNo: **2175828** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.14	0.0010	0.1000	0	139	33.8	121			S
3+4-Methylphenol	0.33	0.0010	0.2000	0	163	33.6	109			S
2,4-Dinitrotoluene	0.14	0.0010	0.1000	0	144	50.4	124			S
Hexachlorobenzene	0.15	0.0010	0.1000	0	152	50.1	120			S
Hexachlorobutadiene	0.12	0.0010	0.1000	0	116	16.1	103			S
Hexachloroethane	0.11	0.0010	0.1000	0	112	15	94.2			S
Nitrobenzene	0.15	0.0010	0.1000	0	150	32.4	125			S
Pentachlorophenol	0.12	0.0010	0.1000	0	124	44.6	114			S
Pyridine	0.0031	0.0010	0.1000	0	3.08	15	67			S
2,4,5-Trichlorophenol	0.15	0.0010	0.1000	0	147	49.4	118			S
2,4,6-Trichlorophenol	0.16	0.0010	0.1000	0	160	50.3	116			S
Cresols, Total	0.46	0.0010	0.3000	0	155	33.8	109			S
Surr: 2-Fluorophenol	0.10		0.2000		50.0	15	82.5			
Surr: Phenol-d5	0.083		0.2000		41.6	15	74.2			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		67.6	18.6	118			
Surr: Nitrobenzene-d5	0.081		0.1000		81.2	30.4	106			
Surr: 2-Fluorobiphenyl	0.073		0.1000		73.2	15	104			
Surr: 4-Terphenyl-d14	0.075		0.1000		74.8	15	133			

Sample ID: **mb-47936** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **47936** RunNo: **63667**
Prep Date: **10/4/2019** Analysis Date: **10/14/2019** SeqNo: **2175829** 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								

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **mb-47936** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **47936** RunNo: **63667**
Prep Date: **10/4/2019** Analysis Date: **10/14/2019** SeqNo: **2175829** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		53.1	15	82.5			
Surr: Phenol-d5	0.086		0.2000		42.9	15	74.2			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.7	18.6	118			
Surr: Nitrobenzene-d5	0.076		0.1000		75.6	30.4	106			
Surr: 2-Fluorobiphenyl	0.071		0.1000		70.9	15	104			
Surr: 4-Terphenyl-d14	0.080		0.1000		80.0	15	133			

NOTES:
*See the case narrative for notes.

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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **lcs-1 99.8uS eC** SampType: **lcs** TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW** Batch ID: **R63466** RunNo: **63466**
Prep Date: Analysis Date: **10/7/2019** SeqNo: **2168649** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	98	5.0	99.80	0	98.7	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-47939**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **47939**	RunNo: **63437**							
Prep Date: **10/4/2019**	Analysis Date: **10/4/2019**	SeqNo: **2166383**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCS-47939**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **47939**	RunNo: **63437**							
Prep Date: **10/4/2019**	Analysis Date: **10/4/2019**	SeqNo: **2166384**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.0	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A64097**	RunNo: **64097**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2192808** Units: **mg/L**

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

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A64097**	RunNo: **64097**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2192809** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	52	1.0	50.00	0	104	80	120			
Magnesium	52	1.0	50.00	0	104	80	120			
Potassium	52	1.0	50.00	0	103	80	120			
Sodium	50	1.0	50.00	0	101	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-47925**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **47925**	RunNo: **63528**
Prep Date: **10/3/2019**	Analysis Date: **10/8/2019**	SeqNo: **2170148** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-47925**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **47925**	RunNo: **63528**
Prep Date: **10/3/2019**	Analysis Date: **10/8/2019**	SeqNo: **2170150** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.020	0.5000	0	92.6	80	120			
Cadmium	0.48	0.0020	0.5000	0	95.6	80	120			
Chromium	0.47	0.0060	0.5000	0	94.4	80	120			
Lead	0.48	0.0050	0.5000	0	95.5	80	120			
Selenium	0.48	0.050	0.5000	0	96.3	80	120			
Silver	0.092	0.0050	0.1000	0	92.2	80	120			

Sample ID: **MB-47925**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **47925**	RunNo: **63528**
Prep Date: **10/3/2019**	Analysis Date: **10/8/2019**	SeqNo: **2170241** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-47925**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **47925**	RunNo: **63528**
Prep Date: **10/3/2019**	Analysis Date: **10/8/2019**	SeqNo: **2170243** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.020	0.5000	0	94.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.4	80	120			
Chromium	0.48	0.0060	0.5000	0	95.2	80	120			
Selenium	0.47	0.050	0.5000	0	93.5	80	120			
Silver	0.093	0.0050	0.1000	0	93.2	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-47925**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **47925**	RunNo: **63528**
Prep Date: **10/3/2019**	Analysis Date: **10/8/2019**	SeqNo: **2170263** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-47925**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **47925**	RunNo: **63528**
Prep Date: **10/3/2019**	Analysis Date: **10/8/2019**	SeqNo: **2170265** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.020	0.5000	0	94.7	80	120			
Cadmium	0.49	0.0020	0.5000	0	97.6	80	120			
Chromium	0.48	0.0060	0.5000	0	96.4	80	120			
Lead	0.48	0.0050	0.5000	0	96.6	80	120			
Selenium	0.47	0.050	0.5000	0	93.4	80	120			
Silver	0.094	0.0050	0.1000	0	93.9	80	120			

Sample ID: **MB-47925**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **47925**	RunNo: **63599**
Prep Date: **10/3/2019**	Analysis Date: **10/10/2019**	SeqNo: **2172999** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-47925**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **47925**	RunNo: **63599**
Prep Date: **10/3/2019**	Analysis Date: **10/10/2019**	SeqNo: **2173001** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0	89.4	80	120			
Barium	0.45	0.020	0.5000	0	90.1	80	120			
Cadmium	0.44	0.0020	0.5000	0	88.6	80	120			
Chromium	0.44	0.0060	0.5000	0	88.1	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **LCS-47925** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **47925** RunNo: **63599**
Prep Date: **10/3/2019** Analysis Date: **10/10/2019** SeqNo: **2173001** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.46	0.050	0.5000	0	92.1	80	120			
Silver	0.088	0.0050	0.1000	0	88.1	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-R63747**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R63747**	RunNo: **63747**							
Prep Date:	Analysis Date: **10/15/2019**	SeqNo: **2179127**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	0.00500								

Sample ID: **LCS-R63747**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R63747**	RunNo: **63747**							
Prep Date:	Analysis Date: **10/15/2019**	SeqNo: **2179128**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.101		0.1000	0	101	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-R63747**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R63747**	RunNo: **63747**							
Prep Date:	Analysis Date: **10/7/2019**	SeqNo: **2179130**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	0.050								

Sample ID: **LCS-R63747**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R63747**	RunNo: **63747**							
Prep Date:	Analysis Date: **10/7/2019**	SeqNo: **2179131**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.47		0.5000	0	93.6	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R63435**	RunNo: **63435**							
Prep Date:	Analysis Date: **10/3/2019**	SeqNo: **2166170**	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: **R63435**	RunNo: **63435**							
Prep Date:	Analysis Date: **10/3/2019**	SeqNo: **2166171**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79.64	20.00	80.00	0	99.6	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R63435**	RunNo: **63435**							
Prep Date:	Analysis Date: **10/3/2019**	SeqNo: **2166193**	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: **R63435**	RunNo: **63435**							
Prep Date:	Analysis Date: **10/3/2019**	SeqNo: **2166194**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.84	20.00	80.00	0	98.5	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **1910144-001CDUP** SampType: **DUP** TestCode: **Specific Gravity**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R63579** RunNo: **63579**
Prep Date: Analysis Date: **10/10/2019** SeqNo: **2172149** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9995	0						0.0600	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910144**
01-Nov-19

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-47951**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **47951**	RunNo: **63462**
Prep Date: **10/4/2019**	Analysis Date: **10/7/2019**	SeqNo: **2167775** 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-47951**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **47951**	RunNo: **63462**
Prep Date: **10/4/2019**	Analysis Date: **10/7/2019**	SeqNo: **2167776** Units: **mg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
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 CO** Work Order Number: **1910144** RcptNo: **1**

Received By: Juan Rojas **10/2/2019 9:30:00 AM**
Completed By: **Leah Baca** **10/2/2019 1:17:37 PM** Leah Baca
Reviewed By: LB 10/3/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: 3 :2
(<2 or >12 unless noted)
Adjusted? NO
Checked by: DAD 10/3/19

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	0.8	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

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

Phone #: 575-748-3311

email or Fax#: 575-746-5451

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

Turn-Around Time:
X Standard ☐ Rush

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

Project #: P.O. # 251841

Project Manager:
Robert Combs / Scott Denton / Randy Dade

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

Sample Temperature: -6-2=-8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910144	Specific Gravity, HCO3, CO3, Cl, SO4, TDS, pH, cond., Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311	Chlordane 8081 A
9/30/19	16:05	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X	
9/30/19	16:05	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X		
9/30/19	16:05	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X						
9/30/19	16:05	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X					
9/30/19	16:05	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X				

Date	Time	Relinquished by	Received by	Date	Time
10-1-19	11:45	Brady Hubbard	carrier	10/2/19	9:30

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

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

January 23, 2020

Robert Combs

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

RE: Quarterly WDW-1, 2, & 3 Inj Well OrderNo.: 2001084

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/3/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: **2001084**
Date: **1/23/2020**

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Analytical Notes for EPA Method 8270:
The laboratory control spike (LCS) recovery for pentachlorophenol was slightly low.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date: 12/30/2019 1:35:00 PM
Lab ID: 2001084-001 **Matrix:** AQUEOUS **Received Date:** 1/3/2020 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8081: PESTICIDES TCLP						Analyst: **JME**
Chlordane	ND	0.030		mg/L	1	1/14/2020 12:21:38 PM
Surr: Decachlorobiphenyl	77.0	29.4-99.8		%Rec	1	1/14/2020 12:21:38 PM
Surr: Tetrachloro-m-xylene	70.3	20.7-100		%Rec	1	1/14/2020 12:21:38 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Fluoride	10	0.50	*	mg/L	5	1/3/2020 6:22:56 PM
Chloride	620	25	*	mg/L	50	1/8/2020 6:53:02 PM
Bromide	0.88	0.50		mg/L	5	1/3/2020 6:22:56 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	1/3/2020 6:22:56 PM
Sulfate	2200	25	*	mg/L	50	1/8/2020 6:53:02 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	1/8/2020 7:05:55 PM
EPA METHOD 7470: MERCURY						Analyst: **pmf**
Mercury	ND	0.020		mg/L	1	1/7/2020 4:56:36 PM
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**
Calcium	420	5.0		mg/L	5	1/9/2020 11:44:43 AM
Magnesium	130	5.0		mg/L	5	1/9/2020 11:44:43 AM
Potassium	52	5.0		mg/L	5	1/9/2020 11:44:43 AM
Sodium	650	10		mg/L	10	1/13/2020 9:07:35 AM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**
Arsenic	ND	5.0		mg/L	1	1/9/2020 8:33:50 AM
Barium	ND	100		mg/L	1	1/9/2020 8:33:50 AM
Cadmium	ND	1.0		mg/L	1	1/9/2020 8:33:50 AM
Chromium	ND	5.0		mg/L	1	1/9/2020 8:33:50 AM
Lead	ND	5.0		mg/L	1	1/9/2020 8:33:50 AM
Selenium	ND	1.0		mg/L	1	1/9/2020 8:33:50 AM
Silver	ND	5.0		mg/L	1	1/9/2020 8:33:50 AM
EPA METHOD 8270C TCLP						Analyst: **JDC**
2-Methylphenol	ND	200		mg/L	1	1/7/2020 1:06:40 PM
3+4-Methylphenol	ND	200		mg/L	1	1/7/2020 1:06:40 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	1/7/2020 1:06:40 PM
Hexachlorobenzene	ND	0.13		mg/L	1	1/7/2020 1:06:40 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	1/7/2020 1:06:40 PM
Hexachloroethane	ND	3.0		mg/L	1	1/7/2020 1:06:40 PM
Nitrobenzene	ND	2.0		mg/L	1	1/7/2020 1:06:40 PM
Pentachlorophenol	ND	100		mg/L	1	1/7/2020 1:06:40 PM
Pyridine	ND	5.0		mg/L	1	1/7/2020 1:06:40 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	1/7/2020 1:06:40 PM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	1/7/2020 1:06:40 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date: 12/30/2019 1:35:00 PM
Lab ID: 2001084-001
Matrix: AQUEOUS
Received Date: 1/3/2020 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C TCLP						Analyst: **JDC**
Cresols, Total	ND	200		mg/L	1	1/7/2020 1:06:40 PM
Surr: 2-Fluorophenol	41.0	15-82.5		%Rec	1	1/7/2020 1:06:40 PM
Surr: Phenol-d5	38.0	15-74.2		%Rec	1	1/7/2020 1:06:40 PM
Surr: 2,4,6-Tribromophenol	58.6	18.6-118		%Rec	1	1/7/2020 1:06:40 PM
Surr: Nitrobenzene-d5	75.7	30.4-106		%Rec	1	1/7/2020 1:06:40 PM
Surr: 2-Fluorobiphenyl	61.1	15-104		%Rec	1	1/7/2020 1:06:40 PM
Surr: 4-Terphenyl-d14	54.8	15-133		%Rec	1	1/7/2020 1:06:40 PM
NOTES:						
* See the case narrative for notes.						
TCLP VOLATILES BY 8260B						Analyst: **DJF**
Benzene	ND	0.50		mg/L	1	1/6/2020 5:25:38 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	1/6/2020 5:25:38 PM
2-Butanone	ND	200		mg/L	1	1/6/2020 5:25:38 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	1/6/2020 5:25:38 PM
Chloroform	ND	6.0		mg/L	1	1/6/2020 5:25:38 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	1/6/2020 5:25:38 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	1/6/2020 5:25:38 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	1/6/2020 5:25:38 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	1/6/2020 5:25:38 PM
Vinyl chloride	ND	0.20		mg/L	1	1/6/2020 5:25:38 PM
Chlorobenzene	ND	100		mg/L	1	1/6/2020 5:25:38 PM
Surr: 1,2-Dichloroethane-d4	91.5	70-130		%Rec	1	1/6/2020 5:25:38 PM
Surr: 4-Bromofluorobenzene	92.6	70-130		%Rec	1	1/6/2020 5:25:38 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	1/6/2020 5:25:38 PM
Surr: Toluene-d8	96.9	70-130		%Rec	1	1/6/2020 5:25:38 PM
CORROSIVITY						Analyst: **PAC**
pH	7.39			su	1	1/13/2020
IGNITABILITY METHOD 1010						Analyst: **PAC**
Ignitability	>170			°F	1	1/10/2020
OXIDATION REDUCTION POTENTIAL						Analyst: **PAC**
Oxidation-Reduction Potential	80			mV	1	1/8/2020
CYANIDE, REACTIVE						Analyst: **PAC**
Cyanide, Reactive	0.00549	0.00500		mg/L	1	1/9/2020
SULFIDE, REACTIVE						Analyst: **PAC**
Reactive Sulfide	0.050	0.050		mg/L	1	1/8/2020
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**

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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date: 12/30/2019 1:35:00 PM
Lab ID: 2001084-001 **Matrix:** AQUEOUS **Received Date:** 1/3/2020 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**
Conductivity	6400	5.0		µmhos/c	1	1/7/2020 3:14:21 PM
SM2320B: ALKALINITY						Analyst: **JRR**
Bicarbonate (As CaCO3)	460.7	20.00		mg/L Ca	1	1/7/2020 3:14:21 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	1/7/2020 3:14:21 PM
Total Alkalinity (as CaCO3)	460.7	20.00		mg/L Ca	1	1/7/2020 3:14:21 PM
SPECIFIC GRAVITY						Analyst: **JRR**
Specific Gravity	1.010	0			1	1/16/2020 1:10:00 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **JMT**
Total Dissolved Solids	4480	20.0	*	mg/L	1	1/7/2020 1:59:00 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW-1, 2, & 3 Inj Well
Collection Date:
Lab ID: 2001084-002
Matrix: TRIP BLANK
Received Date: 1/3/2020 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TCLP VOLATILES BY 8260B						Analyst: **DJF**
Benzene	ND	0.50		mg/L	1	1/6/2020 5:55:01 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	1/6/2020 5:55:01 PM
2-Butanone	ND	200		mg/L	1	1/6/2020 5:55:01 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	1/6/2020 5:55:01 PM
Chloroform	ND	6.0		mg/L	1	1/6/2020 5:55:01 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	1/6/2020 5:55:01 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	1/6/2020 5:55:01 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	1/6/2020 5:55:01 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	1/6/2020 5:55:01 PM
Vinyl chloride	ND	0.20		mg/L	1	1/6/2020 5:55:01 PM
Chlorobenzene	ND	100		mg/L	1	1/6/2020 5:55:01 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	1/6/2020 5:55:01 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	1/6/2020 5:55:01 PM
Surr: Dibromofluoromethane	115	70-130		%Rec	1	1/6/2020 5:55:01 PM
Surr: Toluene-d8	97.8	70-130		%Rec	1	1/6/2020 5:55:01 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**

23-Jan-20

Client: Navajo Refining Company

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

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R65559**	RunNo: **65559**
Prep Date:	Analysis Date: **1/3/2020**	SeqNo: **2252044** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	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: **R65559**	RunNo: **65559**
Prep Date:	Analysis Date: **1/3/2020**	SeqNo: **2252045** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	98.6	90	110			
Bromide	2.4	0.10	2.500	0	97.6	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.8	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R65656**	RunNo: **65656**
Prep Date:	Analysis Date: **1/8/2020**	SeqNo: **2255102** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R65656**	RunNo: **65656**
Prep Date:	Analysis Date: **1/8/2020**	SeqNo: **2255103** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.9	90	110			
Sulfate	9.6	0.50	10.00	0	95.5	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.0	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**

23-Jan-20

Client: Navajo Refining Company

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

Sample ID: **RB**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **T65591**	RunNo: **65591**
Prep Date:	Analysis Date: **1/6/2020**	SeqNo: **2252856** 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	0.0092		0.01000		91.8	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		99.7	70	130			
Surr: Dibromofluoromethane	0.011		0.01000		105	70	130			
Surr: Toluene-d8	0.0096		0.01000		96.2	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW**	Batch ID: **T65591**	RunNo: **65591**
Prep Date:	Analysis Date: **1/6/2020**	SeqNo: **2252859** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0.02000	0	93.3	70	130			
1,1-Dichloroethene	ND	0.70	0.02000	0	94.9	70	130			
Trichloroethene (TCE)	ND	0.50	0.02000	0	89.2	70	130			
Chlorobenzene	ND	100	0.02000	0	88.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.0093		0.01000		92.5	70	130			
Surr: 4-Bromofluorobenzene	0.0096		0.01000		95.9	70	130			
Surr: Dibromofluoromethane	0.0096		0.01000		96.1	70	130			
Surr: Toluene-d8	0.0099		0.01000		99.3	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **mb-49628** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **49628** RunNo: **65621**
Prep Date: **1/6/2020** Analysis Date: **1/7/2020** SeqNo: **2254214** 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	0.091		0.2000		45.4	15	82.5			
Surr: Phenol-d5	0.080		0.2000		40.2	15	74.2			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		69.7	18.6	118			
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	30.4	106			
Surr: 2-Fluorobiphenyl	0.076		0.1000		75.8	15	104			
Surr: 4-Terphenyl-d14	0.077		0.1000		77.2	15	133			

Sample ID: **lcs-49628** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **49628** RunNo: **65621**
Prep Date: **1/6/2020** Analysis Date: **1/7/2020** SeqNo: **2254215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.069	0.010	0.1000	0	69.0	33.8	121			
3+4-Methylphenol	0.13	0.010	0.2000	0	64.5	33.6	109			
2,4-Dinitrotoluene	0.064	0.010	0.1000	0	63.8	50.4	124			
Hexachlorobenzene	0.069	0.010	0.1000	0	69.5	50.1	120			
Hexachlorobutadiene	0.066	0.010	0.1000	0	66.2	16.1	103			
Hexachloroethane	0.056	0.010	0.1000	0	56.0	15	94.2			
Nitrobenzene	0.071	0.010	0.1000	0	70.8	32.4	125			
Pentachlorophenol	0.043	0.010	0.1000	0	43.2	44.6	114			S
Pyridine	0.067	0.010	0.1000	0	66.6	15	67			
2,4,5-Trichlorophenol	0.069	0.010	0.1000	0	68.8	49.4	118			
2,4,6-Trichlorophenol	0.061	0.010	0.1000	0	61.1	50.3	116			
Cresols, Total	0.20	0.010	0.3000	0	66.0	33.8	109			
Surr: 2-Fluorophenol	0.096		0.2000		48.2	15	82.5			
Surr: Phenol-d5	0.085		0.2000		42.3	15	74.2			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		60.4	18.6	118			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **lcs-49628** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **49628** RunNo: **65621**
Prep Date: **1/6/2020** Analysis Date: **1/7/2020** SeqNo: **2254215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.077		0.1000		77.2	30.4	106			
Surr: 2-Fluorobiphenyl	0.071		0.1000		71.0	15	104			
Surr: 4-Terphenyl-d14	0.073		0.1000		72.8	15	133			

NOTES:
* See the case narrative for analytical notes

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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **lcs-1 99.9uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R65634**	RunNo: **65634**
Prep Date:	Analysis Date: **1/7/2020**	SeqNo: **2254575** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.90	0	100	85	115			

Sample ID: **lcs-2 99.9uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R65634**	RunNo: **65634**
Prep Date:	Analysis Date: **1/7/2020**	SeqNo: **2254601** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.90	0	101	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-49667**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **49667**	RunNo: **65616**							
Prep Date: **1/7/2020**	Analysis Date: **1/7/2020**	SeqNo: **2253871**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-49667**	SampType: **LCSLL**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **BatchQC**	Batch ID: **49667**	RunNo: **65616**							
Prep Date: **1/7/2020**	Analysis Date: **1/7/2020**	SeqNo: **2253872**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020	0.0001500	0	76.7	50	150			

Sample ID: **LCS-49667**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **49667**	RunNo: **65616**							
Prep Date: **1/7/2020**	Analysis Date: **1/7/2020**	SeqNo: **2253873**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.5	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**

23-Jan-20

Client: Navajo Refining Company

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

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A65667**	RunNo: **65667**
Prep Date:	Analysis Date: **1/9/2020**	SeqNo: **2255583** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A65667**	RunNo: **65667**
Prep Date:	Analysis Date: **1/9/2020**	SeqNo: **2255584** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	51	1.0	50.00	0	101	80	120			
Potassium	50	1.0	50.00	0	100	80	120			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A65725**	RunNo: **65725**
Prep Date:	Analysis Date: **1/13/2020**	SeqNo: **2257503** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A65725**	RunNo: **65725**
Prep Date:	Analysis Date: **1/13/2020**	SeqNo: **2257505** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	100	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-49636** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **49636** RunNo: **65667**
Prep Date: **1/6/2020** Analysis Date: **1/9/2020** SeqNo: **2255552** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-49636** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **49636** RunNo: **65667**
Prep Date: **1/6/2020** Analysis Date: **1/9/2020** SeqNo: **2255556** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	92.3	80	120			
Barium	0.47	0.020	0.5000	0	94.6	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.2	80	120			
Chromium	0.46	0.0060	0.5000	0	92.8	80	120			
Lead	0.48	0.0050	0.5000	0	95.6	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	97.6	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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-R66014**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R66014**	RunNo: **66014**							
Prep Date:	Analysis Date: **1/9/2020**	SeqNo: **2267180**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	0.00500								

Sample ID: **LCS-R66014**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R66014**	RunNo: **66014**							
Prep Date:	Analysis Date: **1/9/2020**	SeqNo: **2267181**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.103		0.1000	0	103	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **MB-R66014**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R66014**	RunNo: **66014**							
Prep Date:	Analysis Date: **1/8/2020**	SeqNo: **2267183**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	0.0050								

Sample ID: **LCS-R66014**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R66014**	RunNo: **66014**							
Prep Date:	Analysis Date: **1/8/2020**	SeqNo: **2267184**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.53		0.5000	0	106	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**
23-Jan-20

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R65634**	RunNo: **65634**							
Prep Date:	Analysis Date: **1/7/2020**	SeqNo: **2254554**	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: **R65634**	RunNo: **65634**							
Prep Date:	Analysis Date: **1/7/2020**	SeqNo: **2254555**	Units: **mg/L CaCO3**						

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.80	20.00	80.00	0	94.7	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001084**

23-Jan-20

Client: Navajo Refining Company

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

Sample ID: **MB-49644**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **49644**	RunNo: **65609**
Prep Date: **1/6/2020**	Analysis Date: **1/7/2020**	SeqNo: **2253491** 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-49644**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **49644**	RunNo: **65609**
Prep Date: **1/6/2020**	Analysis Date: **1/7/2020**	SeqNo: **2253492** Units: **mg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
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 CO** Work Order Number: **2001084** RcptNo: 1

Received By: **Yazmine Garduno** **1/3/2020 9:00:00 AM**

Completed By: **Yazmine Garduno** **1/3/2020 3:20:50 PM**

Reviewed By: DAD 1/3/20

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)

Adjusted? NO

Checked by: JR 1/3/20

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	0.5	Good				

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

X Standar ☐ Rush

Project Name:

Quarterly WDW-1, 2, & 3 Inj Well

Project #: P.O. # 251841

Project Manager:

Robert Combs / Scott Denton / Randy Dade

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.6-01:05

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. 2001084	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311	Chlordane 8081 A
12/30/19	13:35	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X	
12/30/19	13:35	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X		
12/30/19	13:35	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X						
12/30/19	13:35	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X					
12/30/19	13:35	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X				X

Date:	Time:	Relinquished by:	Received by:	Date	Time
1.2.20	16:25	Brady Hubbard			
Date:	Time:	Relinquished by:	Received by:	Date	Time
			FED EX	1/3/20	0900

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

Field Details: 7.50 pH, 33.3°C

Outside Temp: 43°F, 30% Humidity, Wind: SW 6mph, Conditions: Clear

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.

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

April 02, 2019

ROBERT COMBS

HOLLYFRONTIER NAVAJO REFINING

501 EAST MAIN STREET

ARTESIA, NM 88210

RE: WW MONITORING

Enclosed are the results of analyses for samples received by the laboratory on 03/13/19 14:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WW EFFLUENT TO WDW - 1	H900996-01	Wastewater	12-Mar-19 10:00	13-Mar-19 14:30

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

WW EFFLUENT TO WDW - 1

H900996-01 (Wastewater)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Ammonia	**52.2**		1.25	mg/L	25	9031909	AC	19-Mar-19	350.1	
Biochemical Oxygen Demand	**68.0**			mg/L	1	9032907	CK	19-Mar-19	SM 5210B	SUB-AA
Chloride*	**790**		4.00	mg/L	1	9031501	AC	18-Mar-19	4500-Cl-B	
General Heterotrophic Bacteria	<3.00		3.00	MPN/mL	1	9012315	CK	01-Apr-19	GHB	SUB_LS
Sulfate*	**1770**		250	mg/L	25	9031908	AC	19-Mar-19	375.4	
TDS*	**3640**		5.00	mg/L	1	9031208	AC	18-Mar-19	160.1	
Alkalinity, Total*	**344**		4.00	mg/L	1	9031804	AC	18-Mar-19	310.1	
TSS*	**78.0**		2.00	mg/L	1	9031502	AC	18-Mar-19	160.2	
Volatile Organic Compounds by EPA Method 8260B										
Benzene*	**0.002**	0.001	0.005	mg/L	10	9030810	ms	14-Mar-19	8260B	J
Toluene*	**0.002**	0.001	0.005	mg/L	10	9030810	ms	14-Mar-19	8260B	J
Ethylbenzene*	<0.0007	0.0007	0.005	mg/L	10	9030810	ms	14-Mar-19	8260B	
Total Xylenes*	**0.025**	0.003	0.015	mg/L	10	9030810	ms	14-Mar-19	8260B	
Total BTEX	**0.030**	0.004	0.030	mg/L	10	9030810	ms	14-Mar-19	8260B	
Surrogate: Dibromofluoromethane			*99.2 %*	*86.5-122*		*9030810*	ms	*14-Mar-19*	*8260B*	
Surrogate: Toluene-d8			*101 %*	*85.7-112*		*9030810*	ms	*14-Mar-19*	*8260B*	
Surrogate: 4-Bromofluorobenzene			*99.9 %*	*86.3-117*		*9030810*	ms	*14-Mar-19*	*8260B*	
Green Analytical Laboratories										
General Chemistry										
Cyanide, Total*	**0.0127**		0.0100	mg/L	1	B903139	LLG	15-Mar-19	EPA335.4	M5
Fluoride*	**9.70**		0.500	mg/L	5	B903202	JDA	22-Mar-19	4500-F- C	
Nitrate/Nitrite as N*	**0.537**		0.200	mg/L	10	B903159	LLG	19-Mar-19	EPA353.2	
Total Kjeldahl Nitrogen*	**59.7**		0.500	mg/L	1	B903162	LLG	22-Mar-19	EPA351.2	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

WW EFFLUENT TO WDW - 1

H900996-01 (Wastewater)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Boron	<0.300		0.300	mg/L	1	B903150	AES	19-Mar-19	EPA200.7	
Calcium*	**538**		0.500	mg/L	5	B903150	AES	19-Mar-19	EPA200.7	
Iron*	**3.57**		0.050	mg/L	1	B903150	AES	19-Mar-19	EPA200.7	
Magnesium*	**164**		0.500	mg/L	5	B903150	AES	19-Mar-19	EPA200.7	
Potassium*	**44.2**		1.00	mg/L	1	B903150	AES	19-Mar-19	EPA200.7	
Sodium*	**548**		5.00	mg/L	5	B903150	AES	19-Mar-19	EPA200.7	
Strontium*	**6.92**		0.100	mg/L	1	B903150	AES	19-Mar-19	EPA200.7	
Total Recoverable Metals by ICPMS (E200.8)										
Barium*	**0.0523**		0.0005	mg/L	1	B903152	AES	22-Mar-19	EPA200.8	
Selenium*	**0.0278**		0.0010	mg/L	1	B903152	AES	22-Mar-19	EPA200.8	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031208 - Filtration										
Blank (9031208-BLK1)				Prepared: 12-Mar-19 Analyzed: 14-Mar-19						
TDS	5.00	5.00	mg/L							
LCS (9031208-BS1)				Prepared: 12-Mar-19 Analyzed: 14-Mar-19						
TDS	514		mg/L	527		97.5	80-120			
Duplicate (9031208-DUP1)		**Source: H900963-01**		Prepared: 12-Mar-19 Analyzed: 14-Mar-19						
TDS	1130	5.00	mg/L		1160			2.27	20	
Batch 9031501 - General Prep - Wet Chem										
Blank (9031501-BLK1)				Prepared: 15-Mar-19 Analyzed: 18-Mar-19						
Chloride	ND	4.00	mg/L							
LCS (9031501-BS1)				Prepared: 15-Mar-19 Analyzed: 18-Mar-19						
Chloride	100	4.00	mg/L	100		100	80-120			
LCS Dup (9031501-BSD1)				Prepared: 15-Mar-19 Analyzed: 18-Mar-19						
Chloride	100	4.00	mg/L	100		100	80-120	0.00	20	
Duplicate (9031501-DUP1)		**Source: H900961-01**		Prepared: 15-Mar-19 Analyzed: 18-Mar-19						
Chloride	160	4.00	mg/L		160			0.00	20	
Matrix Spike (9031501-MS1)		**Source: H900961-01**		Prepared: 15-Mar-19 Analyzed: 18-Mar-19						
Chloride	260	4.00	mg/L	100	160	100	80-120			
Batch 9031502 - Filtration										
Blank (9031502-BLK1)				Prepared: 15-Mar-19 Analyzed: 19-Mar-19						
TSS	ND	2.00	mg/L							

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031502 - Filtration										
Duplicate (9031502-DUP1)		**Source: H900979-01**		Prepared: 15-Mar-19 Analyzed: 19-Mar-19						
TSS	115	2.00	mg/L		69.0			50.0	52.7	
Batch 9031804 - General Prep - Wet Chem										
Blank (9031804-BLK1)				Prepared & Analyzed: 18-Mar-19						
Alkalinity, Total	4.00	4.00	mg/L							
LCS (9031804-BS1)				Prepared & Analyzed: 18-Mar-19						
Alkalinity, Total	260	10.0	mg/L	250		104	80-120			
LCS Dup (9031804-BSD1)				Prepared & Analyzed: 18-Mar-19						
Alkalinity, Total	240	10.0	mg/L	250		96.0	80-120	8.00	20	
Duplicate (9031804-DUP1)		**Source: H900983-01**		Prepared & Analyzed: 18-Mar-19						
Alkalinity, Total	596	4.00	mg/L		600			0.669	20	
Matrix Spike (9031804-MS1)		**Source: H900983-01**		Prepared & Analyzed: 18-Mar-19						
Alkalinity, Total	820	10.0	mg/L	250	600	88.0	70-130			
Batch 9031908 - General Prep - Wet Chem										
Blank (9031908-BLK1)				Prepared & Analyzed: 19-Mar-19						
Sulfate	ND	10.0	mg/L							
LCS (9031908-BS1)				Prepared & Analyzed: 19-Mar-19						
Sulfate	22.7	10.0	mg/L	20.0		113	80-120			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031908 - General Prep - Wet Chem										
LCS Dup (9031908-BSD1)				Prepared & Analyzed: 19-Mar-19						
Sulfate	23.0	10.0	mg/L	20.0		115	80-120	1.31	20	
Duplicate (9031908-DUP1)		**Source: H900994-01**		Prepared & Analyzed: 19-Mar-19						
Sulfate	514	10.0	mg/L		519			0.871	20	
Matrix Spike (9031908-MS1)		**Source: H900994-01**		Prepared & Analyzed: 19-Mar-19						
Sulfate	737	125	mg/L	250	519	87.3	70-130			
Batch 9031909 - General Prep - Wet Chem										
Blank (9031909-BLK1)				Prepared & Analyzed: 19-Mar-19						
Ammonia	ND	0.0500	mg/L							
LCS (9031909-BS1)				Prepared & Analyzed: 19-Mar-19						
Ammonia	1.71	0.0500	mg/L	2.00		85.5	80-120			
Duplicate (9031909-DUP1)		**Source: H900996-01**		Prepared & Analyzed: 19-Mar-19						
Ammonia	54.5	0.0500	mg/L		52.2			4.22	20	
Matrix Spike (9031909-MS1)		**Source: H900996-01**		Prepared & Analyzed: 19-Mar-19						
Ammonia	198	4.17	mg/L	167	52.2	87.6	70-130			
Batch 9032907 - General Prep										
Blank (9032907-BLK1)				Prepared: 14-Mar-19 Analyzed: 19-Mar-19						
Biochemical Oxygen Demand	0.0400		mg/L							

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9032907 - General Prep										
LCS (9032907-BS1)				Prepared: 14-Mar-19 Analyzed: 19-Mar-19						
Biochemical Oxygen Demand	216		mg/L	198		109	85-115			
LCS Dup (9032907-BSD1)				Prepared: 14-Mar-19 Analyzed: 19-Mar-19						
Biochemical Oxygen Demand	208		mg/L	198		105	85-115	4.08	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9030810 - Volatiles										
Blank (9030810-BLK1)				Prepared: 08-Mar-19 Analyzed: 13-Mar-19						
Benzene	ND	0.0005	mg/L							
Toluene	ND	0.0005	mg/L							
Ethylbenzene	ND	0.0005	mg/L							
Total Xylenes	ND	0.002	mg/L							
Total BTEX	ND	0.003	mg/L							
Surrogate: Dibromofluoromethane	*0.0240*		mg/L	*0.0250*		*96.0*	*86.5-122*			
Surrogate: Toluene-d8	*0.0251*		mg/L	*0.0250*		*101*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0249*		mg/L	*0.0250*		*99.5*	*86.3-117*			
LCS (9030810-BS1)				Prepared: 08-Mar-19 Analyzed: 13-Mar-19						
Benzene	0.020	0.0005	mg/L	0.0200		102	84.9-121			
Toluene	0.021	0.0005	mg/L	0.0200		103	76.1-122			
Ethylbenzene	0.021	0.0005	mg/L	0.0200		103	78.5-126			
m+p - Xylene	0.041	0.001	mg/L	0.0400		103	81.1-129			
Total Xylenes	0.062	0.002	mg/L	0.0600		103	80.2-130			
o-Xylene	0.020	0.0005	mg/L	0.0200		102	77.5-134			
Surrogate: Dibromofluoromethane	*0.0252*		mg/L	*0.0250*		*101*	*86.5-122*			
Surrogate: Toluene-d8	*0.0250*		mg/L	*0.0250*		*99.9*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0246*		mg/L	*0.0250*		*98.6*	*86.3-117*			
LCS Dup (9030810-BSD1)				Prepared: 08-Mar-19 Analyzed: 13-Mar-19						
Benzene	0.021	0.0005	mg/L	0.0200		103	84.9-121	1.07	7.79	
Toluene	0.020	0.0005	mg/L	0.0200		102	76.1-122	0.293	9.78	
Ethylbenzene	0.020	0.0005	mg/L	0.0200		102	78.5-126	1.31	8.74	
m+p - Xylene	0.041	0.001	mg/L	0.0400		102	81.1-129	0.850	8.94	
Total Xylenes	0.061	0.002	mg/L	0.0600		102	80.2-130	0.961	9.04	
o-Xylene	0.020	0.0005	mg/L	0.0200		101	77.5-134	1.19	11.4	
Surrogate: Dibromofluoromethane	*0.0251*		mg/L	*0.0250*		*100*	*86.5-122*			
Surrogate: Toluene-d8	*0.0248*		mg/L	*0.0250*		*99.1*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0250*		mg/L	*0.0250*		*99.9*	*86.3-117*			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9030810 - Volatiles										
Matrix Spike (9030810-MS1)		**Source: H900905-01**		Prepared: 08-Mar-19 Analyzed: 14-Mar-19						
Benzene	0.845	0.025	mg/L	1.00	0.869	NR	47.6-148			QM-07
Toluene	1.61	0.025	mg/L	1.00	1.79	NR	41.4-144			QM-07
Ethylbenzene	0.416	0.025	mg/L	1.00	0.600	NR	40.6-151			QM-07
m+p - Xylene	0.694	0.050	mg/L	2.00	1.04	NR	42-155			QM-07
Total Xylenes	1.00	0.075	mg/L	3.00	1.48	NR	42.4-153			QM-07
o-Xylene	0.310	0.025	mg/L	1.00	0.440	NR	42.6-152			QM-07
Surrogate: Dibromofluoromethane	*1.24*		mg/L	*1.25*		*99.0*	*86.5-122*			
Surrogate: Toluene-d8	*1.26*		mg/L	*1.25*		*101*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*1.27*		mg/L	*1.25*		*101*	*86.3-117*			
Matrix Spike Dup (9030810-MSD1)		**Source: H900905-01**		Prepared: 08-Mar-19 Analyzed: 14-Mar-19						
Benzene	0.850	0.025	mg/L	1.00	0.869	NR	47.6-148	0.561	12.5	QM-07
Toluene	1.59	0.025	mg/L	1.00	1.79	NR	41.4-144	1.33	11.5	QM-07
Ethylbenzene	0.424	0.025	mg/L	1.00	0.600	NR	40.6-151	1.97	17.6	QM-07
m+p - Xylene	0.700	0.050	mg/L	2.00	1.04	NR	42-155	0.842	18.6	QM-07
o-Xylene	0.307	0.025	mg/L	1.00	0.440	NR	42.6-152	0.971	18.1	QM-07
Total Xylenes	1.01	0.075	mg/L	3.00	1.48	NR	42.4-153	0.286	18.3	QM-07
Surrogate: Dibromofluoromethane	*1.25*		mg/L	*1.25*		*99.7*	*86.5-122*			
Surrogate: Toluene-d8	*1.25*		mg/L	*1.25*		*99.9*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*1.25*		mg/L	*1.25*		*100*	*86.3-117*			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

General Chemistry - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B903139 - General Prep - Wet Chem										
Blank (B903139-BLK1)				Prepared: 14-Mar-19 Analyzed: 15-Mar-19						
Cyanide, Total	ND	0.0100	mg/L							
LCS (B903139-BS1)				Prepared: 14-Mar-19 Analyzed: 15-Mar-19						
Cyanide, Total	0.0958	0.0100	mg/L	0.100		95.8	90-110			
LCS Dup (B903139-BSD1)				Prepared: 14-Mar-19 Analyzed: 15-Mar-19						
Cyanide, Total	0.105	0.0100	mg/L	0.100		105	90-110	8.69	20	
Batch B903159 - General Prep - Wet Chem										
Blank (B903159-BLK1)				Prepared: 18-Mar-19 Analyzed: 19-Mar-19						
Nitrate/Nitrite as N	ND	0.020	mg/L							
LCS (B903159-BS1)				Prepared: 18-Mar-19 Analyzed: 19-Mar-19						
Nitrate/Nitrite as N	1.06	0.020	mg/L	1.00		106	90-110			
LCS Dup (B903159-BSD1)				Prepared: 18-Mar-19 Analyzed: 19-Mar-19						
Nitrate/Nitrite as N	1.04	0.020	mg/L	1.00		104	90-110	1.54	20	
Batch B903162 - General Prep - Wet Chem										
Blank (B903162-BLK1)				Prepared: 18-Mar-19 Analyzed: 22-Mar-19						
Total Kjeldahl Nitrogen	ND	0.500	mg/L							
LCS (B903162-BS1)				Prepared: 18-Mar-19 Analyzed: 22-Mar-19						
Total Kjeldahl Nitrogen	10.6	0.500	mg/L	10.0		106	90-110			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

General Chemistry - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B903162 - General Prep - Wet Chem										
LCS Dup (B903162-BSD1)				Prepared: 18-Mar-19 Analyzed: 22-Mar-19						
Total Kjeldahl Nitrogen	9.87	0.500	mg/L	10.0		98.7	90-110	6.84	20	
Batch B903202 - General Prep - Wet Chem										
Blank (B903202-BLK1)				Prepared & Analyzed: 22-Mar-19						
Fluoride	ND	0.100	mg/L							
LCS (B903202-BS1)				Prepared & Analyzed: 22-Mar-19						
Fluoride	1.05	0.100	mg/L	1.00		105	85-115			
LCS Dup (B903202-BSD1)				Prepared & Analyzed: 22-Mar-19						
Fluoride	1.05	0.100	mg/L	1.00		105	85-115	0.476	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Total Recoverable Metals by ICP (E200.7) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B903150 - Total Rec. 200.7/200.8/200.2										
Blank (B903150-BLK1)				Prepared: 18-Mar-19 Analyzed: 19-Mar-19						
Boron	ND	0.300	mg/L							
Iron	ND	0.050	mg/L							
Calcium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Magnesium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							
Strontium	ND	0.100	mg/L							
LCS (B903150-BS1)				Prepared: 18-Mar-19 Analyzed: 19-Mar-19						
Potassium	8.14	1.00	mg/L	8.00		102	85-115			
Strontium	3.98	0.100	mg/L	4.00		99.6	85-115			
Magnesium	19.8	0.100	mg/L	20.0		98.8	85-115			
Sodium	3.18	1.00	mg/L	3.24		98.0	85-115			
Calcium	4.25	0.100	mg/L	4.00		106	85-115			
Iron	3.89	0.050	mg/L	4.00		97.3	85-115			
Boron	3.95	0.300	mg/L	4.00		98.8	85-115			
LCS Dup (B903150-BSD1)				Prepared: 18-Mar-19 Analyzed: 19-Mar-19						
Boron	3.93	0.300	mg/L	4.00		98.2	85-115	0.621	20	
Magnesium	19.6	0.100	mg/L	20.0		98.2	85-115	0.633	20	
Strontium	3.95	0.100	mg/L	4.00		98.8	85-115	0.758	20	
Sodium	3.12	1.00	mg/L	3.24		96.4	85-115	1.64	20	
Calcium	4.09	0.100	mg/L	4.00		102	85-115	3.80	20	
Potassium	8.07	1.00	mg/L	8.00		101	85-115	0.860	20	
Iron	3.88	0.050	mg/L	4.00		97.0	85-115	0.334	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 02-Apr-19 15:17

Total Recoverable Metals by ICPMS (E200.8) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B903152 - Total Rec. 200.7/200.8/200.2										
Blank (B903152-BLK1)				Prepared: 18-Mar-19 Analyzed: 22-Mar-19						
Barium	ND	0.0005	mg/L							
Selenium	ND	0.0010	mg/L							
LCS (B903152-BS1)				Prepared: 18-Mar-19 Analyzed: 22-Mar-19						
Selenium	0.236	0.0010	mg/L	0.250		94.5	85-115			
Barium	0.0477	0.0005	mg/L	0.0500		95.5	85-115			
LCS Dup (B903152-BSD1)				Prepared: 18-Mar-19 Analyzed: 22-Mar-19						
Barium	0.0444	0.0005	mg/L	0.0500		88.8	85-115	7.27	20	
Selenium	0.231	0.0010	mg/L	0.250		92.5	85-115	2.10	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

SUB-AA	Analysis subcontracted to Advanced Analysis, Inc.
SUB_LS	Analysis subcontracted to Laboratory Services, Inc.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
M5	Sample was chosen for matrix spike. Spike recovery did not meet laboratory acceptance criteria, possible matrix interference in sample.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: Hollyfrontier Navajo Refining LCC (HFNR)	**BILL TO**
Project Manager: Robert Combs / Scott Denton	P.O. #: 271426
Address: P.O. Box 159	Company: HFNR
City: Artesia State: NM Zip: 88211-0159	Attn: Susie Aguilar
Phone #: 575-748-3311 Fax #:	Address: P.O. Box 159
Project #: Project Owner:	City: Artesia
Project Name: WW Monitoring	State: NM Zip: 88211-0159
Project Location: Navajo Refinery	Phone #: 575-748-3311
Sampler Name: ~~Brady Hubbard~~ FCC operator	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE: HNO3	ICE / COOL	OTHER : H2SO4	DATE	TIME	Chloride, Sulfate, TDS, TSS	BOD	Ammonia	Total Metals 200.7/200.8	NO3+NO2, Fluoride, TKN	BTEX	Oil and Grease	Cyanide	Total Alkalinity (as HCO3-)	Bacteria (GHB)		
H900996	WW Effluent to WDW-1	G	12		x								3/12/19	10:00	x	x	x	x	x	x	~~x~~ TO	x	x	x		

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Brady Hubbard	Date: 3-13-19	Received By: Tamara Oldaker	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Time: 14:30	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
	Date:		REMARKS: no O+G containers
	Time:		

Delivered By: (Circle One)	Sample Condition	CHECKED BY:
Sampler - UPS - Bus - Other: 2.9° #97	Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	(Initials) TO

FORM-006
Revision 1.0

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 14, 2019

ROBERT COMBS

HOLLYFRONTIER NAVAJO REFINING

501 EAST MAIN STREET

ARTESIA, NM 88210

RE: WW MONITORING

Enclosed are the results of analyses for samples received by the laboratory on 04/25/19 15:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WW EFFLUENT TO WDW - 4	H901494-01	Wastewater	25-Apr-19 13:00	25-Apr-19 15:00

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

WW EFFLUENT TO WDW - 4

H901494-01 (Wastewater)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Ammonia	**111**		2.50	mg/L	50	9040507	AC	03-May-19	350.1	
Biochemical Oxygen Demand	**168**			mg/L	1	9050211	CK	01-May-19	SM 5210B	SUB-AA
Chloride*	**604**		4.00	mg/L	1	9042507	AC	30-Apr-19	4500-Cl-B	
General Heterotrophic Bacteria	<3.00		3.00	MPN/mL	1	9012315	CK	09-May-19	GHB	SUB_LS
Sulfate*	**2550**		500	mg/L	50	9043009	AC	01-May-19	375.4	
TDS*	**3790**		5.00	mg/L	1	9042617	AC	01-May-19	160.1	
Alkalinity, Total*	**630**		4.00	mg/L	1	9042605	AC	26-Apr-19	310.1	
TSS*	**300**		2.00	mg/L	1	9042616	AC	30-Apr-19	160.2	
Volatile Organic Compounds by EPA Method 8260B										
Benzene*	<0.007	0.007	0.025	mg/L	50	9050120	ms	03-May-19	8260B	
Toluene*	<0.006	0.006	0.025	mg/L	50	9050120	ms	03-May-19	8260B	
Ethylbenzene*	<0.004	0.004	0.025	mg/L	50	9050120	ms	03-May-19	8260B	
Total Xylenes*	<0.017	0.017	0.075	mg/L	50	9050120	ms	03-May-19	8260B	
Total BTEX	<0.020	0.020	0.150	mg/L	50	9050120	ms	03-May-19	8260B	
Surrogate: Dibromofluoromethane			*101 %*	*86.5-122*		*9050120*	ms	*03-May-19*	*8260B*	
Surrogate: Toluene-d8			*100 %*	*85.7-112*		*9050120*	ms	*03-May-19*	*8260B*	
Surrogate: 4-Bromofluorobenzene			*107 %*	*86.3-117*		*9050120*	ms	*03-May-19*	*8260B*	
Green Analytical Laboratories										
General Chemistry										
Cyanide, Total*	**0.0189**		0.0100	mg/L	1	B904258	LLG	30-Apr-19	EPA335.4	
Fluoride*	**11.5**		2.00	mg/L	20	B905019	VJL	03-May-19	4500-F- C	
Nitrate/Nitrite as N*	**0.719**		0.020	mg/L	1	B905013	LLG	02-May-19	EPA353.2	
Total Kjeldahl Nitrogen*	**122**		6.00	mg/L	10	B904257	LLG	01-May-19	EPA351.2	
Oil & Grease (HEM)	**93.7**		5.00	mg/L	1	B904166	VJL	29-Apr-19	EPA1664 A	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

WW EFFLUENT TO WDW - 4

H901494-01 (Wastewater)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Boron	<1.50		1.50	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Calcium*	**511**		0.500	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Iron*	**5.90**		0.250	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Magnesium*	**156**		0.500	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Potassium*	**67.1**		5.00	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Sodium*	**700**		5.00	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Strontium*	**7.48**		0.500	mg/L	5	B904268	AES	03-May-19	EPA200.7	
Total Recoverable Metals by ICPMS (E200.8)										
Barium*	**0.0671**		0.0005	mg/L	1	B904269	AES	01-May-19	EPA200.8	
Selenium*	**0.0153**		0.0010	mg/L	1	B904269	AES	01-May-19	EPA200.8	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9040507 - General Prep - Wet Chem										
Blank (9040507-BLK1)				Prepared & Analyzed: 05-Apr-19						
Ammonia	ND	0.0500	mg/L							
LCS (9040507-BS1)				Prepared & Analyzed: 05-Apr-19						
Ammonia	1.72	0.0500	mg/L	2.00		86.0	80-120			
Duplicate (9040507-DUP1)		**Source: H901229-03**		Prepared & Analyzed: 05-Apr-19						
Ammonia	218	0.0500	mg/L		211			2.92	20	
Matrix Spike (9040507-MS1)		**Source: H901229-03**		Prepared & Analyzed: 05-Apr-19						
Ammonia	1090	25.0	mg/L	1000	211	87.9	70-130			
Batch 9042507 - General Prep - Wet Chem										
Blank (9042507-BLK1)				Prepared & Analyzed: 25-Apr-19						
Chloride	ND	4.00	mg/L							
LCS (9042507-BS1)				Prepared & Analyzed: 25-Apr-19						
Chloride	108	4.00	mg/L	100		108	80-120			
LCS Dup (9042507-BSD1)				Prepared & Analyzed: 25-Apr-19						
Chloride	104	4.00	mg/L	100		104	80-120	3.77	20	
Duplicate (9042507-DUP1)		**Source: H901458-01**		Prepared & Analyzed: 25-Apr-19						
Chloride	1680	4.00	mg/L		1680			0.00	20	
Matrix Spike (9042507-MS1)		**Source: H901458-01**		Prepared & Analyzed: 25-Apr-19						
Chloride	2240	4.00	mg/L	500	1680	112	80-120			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9042605 - General Prep - Wet Chem										
Blank (9042605-BLK1)				Prepared & Analyzed: 26-Apr-19						
Alkalinity, Total	4.00	4.00	mg/L							
LCS (9042605-BS1)				Prepared & Analyzed: 26-Apr-19						
Alkalinity, Total	270	10.0	mg/L	250		108	80-120			
LCS Dup (9042605-BSD1)				Prepared & Analyzed: 26-Apr-19						
Alkalinity, Total	240	10.0	mg/L	250		96.0	80-120	11.8	20	
Duplicate (9042605-DUP1)		**Source: H901428-23**		Prepared & Analyzed: 26-Apr-19						
Alkalinity, Total	124	4.00	mg/L		128			3.17	20	
Matrix Spike (9042605-MS1)		**Source: H901428-23**		Prepared & Analyzed: 26-Apr-19						
Alkalinity, Total	228	4.00	mg/L	100	128	100	70-130			
Batch 9042616 - Filtration										
Blank (9042616-BLK1)				Prepared: 29-Apr-19 Analyzed: 01-May-19						
TSS	2.00	2.00	mg/L							
Duplicate (9042616-DUP1)		**Source: H901466-01**		Prepared: 29-Apr-19 Analyzed: 01-May-19						
TSS	72.0	2.00	mg/L		66.0			8.70	52.7	
Batch 9042617 - Filtration										
Blank (9042617-BLK1)				Prepared: 29-Apr-19 Analyzed: 01-May-19						
TDS	ND	5.00	mg/L							

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9042617 - Filtration										
LCS (9042617-BS1)				Prepared: 29-Apr-19 Analyzed: 01-May-19						
TDS	554		mg/L	527		105	80-120			
Duplicate (9042617-DUP1)		**Source: H901465-01**		Prepared: 29-Apr-19 Analyzed: 01-May-19						
TDS	870	5.00	mg/L		1130			26.0	20	QR-05
Batch 9043009 - General Prep - Wet Chem										
Blank (9043009-BLK1)				Prepared & Analyzed: 01-May-19						
Sulfate	ND	10.0	mg/L							
LCS (9043009-BS1)				Prepared & Analyzed: 01-May-19						
Sulfate	20.5	10.0	mg/L	20.0		103	80-120			
LCS Dup (9043009-BSD1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Sulfate	23.3	10.0	mg/L	20.0		117	80-120	12.7	20	
Duplicate (9043009-DUP1)		**Source: H901465-04**		Prepared & Analyzed: 01-May-19						
Sulfate	15000	10.0	mg/L		16100			6.97	20	
Matrix Spike (9043009-MS1)		**Source: H901465-04**		Prepared & Analyzed: 01-May-19						
Sulfate	26100	5000	mg/L	10000	16100	99.4	70-130			
Batch 9050211 - General Prep										
Blank (9050211-BLK1)				Prepared: 26-Apr-19 Analyzed: 01-May-19						
Biochemical Oxygen Demand	0.110		mg/L							

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9050211 - General Prep										
LCS (9050211-BS1)				Prepared: 26-Apr-19 Analyzed: 01-May-19						
Biochemical Oxygen Demand	224		mg/L	198		113	85-115			
LCS Dup (9050211-BSD1)				Prepared: 26-Apr-19 Analyzed: 01-May-19						
Biochemical Oxygen Demand	218		mg/L	198		110	85-115	3.05	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9050120 - Volatiles										
Blank (9050120-BLK1)				Prepared: 01-May-19 Analyzed: 02-May-19						
Benzene	ND	0.0005	mg/L							
Toluene	ND	0.0005	mg/L							
Ethylbenzene	ND	0.0005	mg/L							
Total Xylenes	ND	0.002	mg/L							
Total BTEX	ND	0.003	mg/L							
Surrogate: Dibromofluoromethane	*0.0243*		mg/L	*0.0250*		*97.4*	*86.5-122*			
Surrogate: Toluene-d8	*0.0248*		mg/L	*0.0250*		*99.2*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0252*		mg/L	*0.0250*		*101*	*86.3-117*			
LCS (9050120-BS1)				Prepared: 01-May-19 Analyzed: 02-May-19						
Benzene	0.019	0.0005	mg/L	0.0200		93.6	84.9-121			
Toluene	0.019	0.0005	mg/L	0.0200		93.1	76.1-122			
Ethylbenzene	0.019	0.0005	mg/L	0.0200		93.3	78.5-126			
m+p - Xylene	0.038	0.001	mg/L	0.0400		95.9	81.1-129			
o-Xylene	0.019	0.0005	mg/L	0.0200		96.4	77.5-134			
Total Xylenes	0.058	0.002	mg/L	0.0600		96.1	80.2-130			
Surrogate: Dibromofluoromethane	*0.0252*		mg/L	*0.0250*		*101*	*86.5-122*			
Surrogate: Toluene-d8	*0.0247*		mg/L	*0.0250*		*98.8*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0250*		mg/L	*0.0250*		*100*	*86.3-117*			
LCS Dup (9050120-BSD1)				Prepared: 01-May-19 Analyzed: 02-May-19						
Benzene	0.019	0.0005	mg/L	0.0200		95.8	84.9-121	2.38	7.79	
Toluene	0.019	0.0005	mg/L	0.0200		94.3	76.1-122	1.33	9.78	
Ethylbenzene	0.019	0.0005	mg/L	0.0200		96.9	78.5-126	3.84	8.74	
m+p - Xylene	0.039	0.001	mg/L	0.0400		98.6	81.1-129	2.78	8.94	
o-Xylene	0.019	0.0005	mg/L	0.0200		97.4	77.5-134	0.981	11.4	
Total Xylenes	0.059	0.002	mg/L	0.0600		98.2	80.2-130	2.18	9.04	
Surrogate: Dibromofluoromethane	*0.0257*		mg/L	*0.0250*		*103*	*86.5-122*			
Surrogate: Toluene-d8	*0.0248*		mg/L	*0.0250*		*99.2*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0255*		mg/L	*0.0250*		*102*	*86.3-117*			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9050120 - Volatiles										
Matrix Spike (9050120-MS1)	**Source: H901444-01**			Prepared: 01-May-19 Analyzed: 02-May-19						
Benzene	0.020	0.0005	mg/L	0.0200	ND	99.3	47.6-148			
Toluene	0.020	0.0005	mg/L	0.0200	ND	97.8	41.4-144			
Ethylbenzene	0.020	0.0005	mg/L	0.0200	ND	101	40.6-151			
m+p - Xylene	0.041	0.001	mg/L	0.0400	ND	102	42-155			
o-Xylene	0.020	0.0005	mg/L	0.0200	ND	101	42.6-152			
Total Xylenes	0.061	0.002	mg/L	0.0600	ND	102	42.4-153			
Surrogate: Dibromofluoromethane	*0.0254*		mg/L	*0.0250*		*102*	*86.5-122*			
Surrogate: Toluene-d8	*0.0245*		mg/L	*0.0250*		*98.1*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0252*		mg/L	*0.0250*		*101*	*86.3-117*			
Matrix Spike Dup (9050120-MSD1)	**Source: H901444-01**			Prepared: 01-May-19 Analyzed: 02-May-19						
Benzene	0.021	0.0005	mg/L	0.0200	ND	103	47.6-148	3.90	12.5	
Toluene	0.021	0.0005	mg/L	0.0200	ND	104	41.4-144	5.85	11.5	
Ethylbenzene	0.021	0.0005	mg/L	0.0200	ND	106	40.6-151	4.74	17.6	
m+p - Xylene	0.044	0.001	mg/L	0.0400	ND	109	42-155	6.61	18.6	
o-Xylene	0.021	0.0005	mg/L	0.0200	ND	106	42.6-152	5.60	18.1	
Total Xylenes	0.065	0.002	mg/L	0.0600	ND	108	42.4-153	6.28	18.3	
Surrogate: Dibromofluoromethane	*0.0254*		mg/L	*0.0250*		*102*	*86.5-122*			
Surrogate: Toluene-d8	*0.0250*		mg/L	*0.0250*		*99.8*	*85.7-112*			
Surrogate: 4-Bromofluorobenzene	*0.0254*		mg/L	*0.0250*		*102*	*86.3-117*			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

General Chemistry - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B904166 - General Prep - Wet Chem										
Blank (B904166-BLK1)				Prepared: 17-Apr-19 Analyzed: 22-Apr-19						
Oil & Grease (HEM)	ND	5.00	mg/L							
LCS (B904166-BS1)				Prepared: 17-Apr-19 Analyzed: 22-Apr-19						
Oil & Grease (HEM)	34.6	5.00	mg/L	40.0		86.5	85-115			
LCS Dup (B904166-BSD1)				Prepared: 17-Apr-19 Analyzed: 23-Apr-19						
Oil & Grease (HEM)	35.8	5.00	mg/L	40.0		89.5	85-115	3.41	20	
Batch B904257 - General Prep - Wet Chem										
Blank (B904257-BLK1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Total Kjeldahl Nitrogen	ND	0.500	mg/L							
LCS (B904257-BS1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Total Kjeldahl Nitrogen	10.1	0.500	mg/L	10.0		101	90-110			
LCS Dup (B904257-BSD1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Total Kjeldahl Nitrogen	9.90	0.500	mg/L	10.0		99.0	90-110	2.45	20	
Batch B904258 - General Prep - Wet Chem										
Blank (B904258-BLK1)				Prepared & Analyzed: 30-Apr-19						
Cyanide, Total	ND	0.0100	mg/L							
LCS (B904258-BS1)				Prepared & Analyzed: 30-Apr-19						
Cyanide, Total	0.0977	0.0100	mg/L	0.100		97.7	90-110			

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

General Chemistry - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B904258 - General Prep - Wet Chem										
LCS Dup (B904258-BSD1)				Prepared & Analyzed: 30-Apr-19						
Cyanide, Total	0.101	0.0100	mg/L	0.100		101	90-110	3.32	20	
Batch B905013 - General Prep - Wet Chem										
Blank (B905013-BLK1)				Prepared: 01-May-19 Analyzed: 02-May-19						
Nitrate/Nitrite as N	ND	0.020	mg/L							
LCS (B905013-BS1)				Prepared: 01-May-19 Analyzed: 02-May-19						
Nitrate/Nitrite as N	1.05	0.020	mg/L	1.00		105	90-110			
LCS Dup (B905013-BSD1)				Prepared: 01-May-19 Analyzed: 02-May-19						
Nitrate/Nitrite as N	1.05	0.020	mg/L	1.00		105	90-110	0.218	20	
Batch B905019 - General Prep - Wet Chem										
Blank (B905019-BLK1)				Prepared: 02-May-19 Analyzed: 03-May-19						
Fluoride	ND	0.100	mg/L							
LCS (B905019-BS1)				Prepared: 02-May-19 Analyzed: 03-May-19						
Fluoride	1.13	0.100	mg/L	1.00		113	85-115			
LCS Dup (B905019-BSD1)				Prepared: 02-May-19 Analyzed: 03-May-19						
Fluoride	1.14	0.100	mg/L	1.00		114	85-115	1.50	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Total Recoverable Metals by ICP (E200.7) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B904268 - Total Rec. 200.7/200.8/200.2										
Blank (B904268-BLK1)				Prepared: 30-Apr-19 Analyzed: 02-May-19						
Calcium	ND	0.100	mg/L							
Iron	ND	0.050	mg/L							
Potassium	ND	1.00	mg/L							
Strontium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							
Magnesium	ND	0.100	mg/L							
Boron	ND	0.300	mg/L							
LCS (B904268-BS1)				Prepared: 30-Apr-19 Analyzed: 02-May-19						
Strontium	4.09	0.100	mg/L	4.00		102	85-115			
Sodium	3.21	1.00	mg/L	3.24		99.0	85-115			
Potassium	7.93	1.00	mg/L	8.00		99.2	85-115			
Magnesium	20.5	0.100	mg/L	20.0		103	85-115			
Boron	4.07	0.300	mg/L	4.00		102	85-115			
Calcium	4.08	0.100	mg/L	4.00		102	85-115			
Iron	4.06	0.050	mg/L	4.00		101	85-115			
LCS Dup (B904268-BSD1)				Prepared: 30-Apr-19 Analyzed: 02-May-19						
Strontium	4.03	0.100	mg/L	4.00		101	85-115	1.32	20	
Boron	4.07	0.300	mg/L	4.00		102	85-115	0.0563	20	
Magnesium	20.1	0.100	mg/L	20.0		100	85-115	2.20	20	
Calcium	4.02	0.100	mg/L	4.00		100	85-115	1.64	20	
Sodium	3.17	1.00	mg/L	3.24		97.8	85-115	1.28	20	
Potassium	7.94	1.00	mg/L	8.00		99.2	85-115	0.0393	20	
Iron	4.02	0.050	mg/L	4.00		101	85-115	0.883	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

HOLLYFRONTIER NAVAJO REFINING 501 EAST MAIN STREET ARTESIA NM, 88210	Project: WW MONITORING Project Number: NONE GIVEN Project Manager: ROBERT COMBS Fax To: NONE	Reported: 14-May-19 14:27

Total Recoverable Metals by ICPMS (E200.8) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B904269 - Total Rec. 200.7/200.8/200.2										
Blank (B904269-BLK1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Barium	ND	0.0005	mg/L							
Selenium	ND	0.0010	mg/L							
LCS (B904269-BS1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Selenium	0.254	0.0010	mg/L	0.250		101	85-115			
Barium	0.0490	0.0005	mg/L	0.0500		98.0	85-115			
LCS Dup (B904269-BSD1)				Prepared: 30-Apr-19 Analyzed: 01-May-19						
Barium	0.0484	0.0005	mg/L	0.0500		96.8	85-115	1.26	20	
Selenium	0.250	0.0010	mg/L	0.250		100	85-115	1.32	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

SUB-AA	Analysis subcontracted to Advanced Analysis, Inc.
SUB_LS	Analysis subcontracted to Laboratory Services, Inc.
QR-05	The RPD exceeded historical limits.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: Holly Frontier Navajo Refining, LLC (HFNR)	BILL TO
Project Manager: Robert Combs / Scott Denton	P.O. #: 122783
Address: P.O. Box 159	Company: Navajo Refinery LLC
City: Artesia State: NM Zip: 88211-0159	Attn: Susie Aguilar
Phone #: 575-748-3311 Fax #:	Address: P.O. Box 159
Project #: Project Owner:	City: Artesia
Project Name: WW Monitoring	State: NM Zip: 88211-0159
Project Location: Navajo Refinery	Phone #: 575-748-3311
Sampler Name: Brady Hubbard	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE: HNO3	ICE / COOL	OTHER : H2SO4	DATE	TIME	Chloride, Sulfate, TDS, TSS	BOD	Ammonia	Total Metals 200.7/200.8	NO3+NO2, Fluoride, TKN	BTEX	Oil and Grease	Cyanide	Total Alkalinity (as HCO3-)	Bacteria (GHB)		
H901494																									
1	WW Effluent to WDW-4	G	12		x								4/25/19	1:00	x	x	x	x	x	x	x	x	x	x		

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Brady Hubbard	Date: 4/25/19	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 15:00		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 4.9°C #97

Sample Condition: Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No

CHECKED BY: (Initials)

FORM-006
Revision 1.0

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476