GW – 028

Annual DP Report (Part 9 of 16)

2015

Chain-of-Custody Record

Client: Navajo Refinery

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other

☐ EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name:

Monthly Temporary R.O. Reject

Project #: P.O. # 167796

Project Manager:

Robert Combs

Sampler: Elizabeth Salsberry

On Ice: X Yes ☐ No

Sample Temperature: 5.2°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	8260B: WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470: Mercury	8015: GRO, DRO, ORO	8082: PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB
8-3-15	0930	liquid	Temporary R.O. Reject	2 - 500ml P	1-unpres 1-H2SO4	1508063 -001									X		X	X	X	X	
8-3-15	0930	liquid	Temporary R.O. Reject	3-40ml VOA	HCL		X														
8-3-15	0930	liquid	Temporary R.O. Reject	1-500ml P	HNO3						X										
8-3-15	0930	liquid	Temporary R.O. Reject	1-125ml P	HNO3				X												
8-3-15	0930	liquid	Temporary R.O. Reject	1-500ml P	NaOH					X											
8-3-15	0930	liquid	Temporary R.O. Reject	2- 1L P	HNO3									X							
8-3-15	0930	liquid	Temporary R.O. Reject	3-40ml VOA	Na2S2O3																X
8-3-15	0930	liquid	Temporary R.O. Reject	2 - 1L Glass	unpres							X									
8-3-15	0930	liquid	Temporary R.O. Reject	1 - 1L Glass	unpres			X													
8-3-15	0930	liquid	Temporary R.O. Reject	3-40ml VOA	HCl							X									
8-3-15	0930	liquid	Temporary R.O. Reject	1-250mlGlass	unpres							X									
8-3-15	0930	liquid	Temporary R.O. Reject	1 - 1L Glass	H2SO4											X					
8-3-15	0930	liquid	Trip Blank	2-40ml VOA	HCL	-002															

Date	Time	Relinquished by:	Received by:	Date	Time
8-3-15	10:30	Elizabeth Salsberry			
		Elizabeth Salsberry	Nelson Smith	08/04/15	0913
Date	Time	Relinquished by:	Received by:	Date	Time

Remarks:

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

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

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

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Monthly RO Reject Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	Biannual RO Reject
Samplers Name	Elizabeth Salsberry
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	8/3/2015 @ 09:25
End Date and Time	8/3/2015 @ 9:41

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall / Sample Location: ☐ North Field R.O. Reject Discarge ☑ South Field R.O. Reject Discarge

				Preservatives								
Container	Size	Material	# of Containers	Neat (None)	HCl	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1	500m	Plastic	2	X			X					pH, Cl F, S04, NO2/NO3, TDS
2	40ml	VOA	3		X							8015 GRO
3	500ml	Plastic	1			X						6020 total metals, 7470 Hg
4	125ml	Plastic	1			X						6020 Dissolved Metals
5	500ml	Plastic	2					X				Cyanide
6	1L	Plastic	3			X						Radium 226/228
7	40ml	VOA	2		X							8260 see attached list
8	1L	Glass	1	X								8270 see attached list
9	1L	Glass	2	X								8082 PCBs
10	40ml	VOA	2	X								8015 DRO
11	40ml	VOA	2		X							Radium 226/228

Field Data (Weather, Observations, Etc): 8/3/2015 Tmp. 80.6 °F, Humidity 58%, Wind Dir. NW, Wind Speed 4.0 mph, Conditions Clear
Date and Time:

Field Temp. 26.1°C Field pH 7.77

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

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

August 26, 2015

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

RE: Monthly R.O. Reject OrderNo.: 1508065

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/4/2015 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1508065**
Date Reported: **8/26/2015**

CLIENT: Navajo Refining Company
Project: Monthly R.O. Reject
Lab ID: 1508065-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 8/3/2015 10:10:00 AM
Received Date: 8/4/2015 9:13:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	ND	0.0050		mg/L	5	8/12/2015 8:24:51 PM	D28151
Lead	ND	0.00050		mg/L	1	8/11/2015 9:43:20 PM	R28115
Selenium	0.0067	0.0010		mg/L	1	8/11/2015 9:43:20 PM	R28115
Uranium	0.0047	0.00050		mg/L	1	8/11/2015 9:43:20 PM	R28115
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst: **SUB**	
Radium-226	0.144	0.867		pCi/L	1	8/18/2015	R28452
Radium-226 ±	0.448	0.867		pCi/L	1	8/18/2015	R28452
Radium-228	0.151	0.690		pCi/L	1	8/18/2015	R28452
Radium-228 ±	0.313	0.690		pCi/L	1	8/18/2015	R28452
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	2.4	0.10		mg/L	1	8/4/2015 7:37:13 PM	R27968
Chloride	230	10		mg/L	20	8/4/2015 7:49:37 PM	R27968
Nitrogen, Nitrate (As N)	1.6	0.10		mg/L	1	8/4/2015 7:37:13 PM	R27968
Sulfate	1400	25		mg/L	50	8/14/2015 3:09:51 AM	R28192
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2860	20.0	*	mg/L	1	8/6/2015 8:33:00 PM	20626
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: **SUB**	
Cyanide	ND	0.0100		mg/L	1	8/12/2015	R28452
SM4500-H+B: PH						Analyst: **JRR**	
pH	8.09	1.68	H	pH units	1	8/6/2015 8:11:30 PM	R28029
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Aluminum	ND	0.020		mg/L	1	8/5/2015 9:52:54 PM	R27986
Barium	0.056	0.0020		mg/L	1	8/5/2015 9:52:54 PM	R27986
Boron	0.083	0.040		mg/L	1	8/5/2015 9:52:54 PM	R27986
Cadmium	ND	0.0020		mg/L	1	8/5/2015 9:52:54 PM	R27986
Chromium	ND	0.0060		mg/L	1	8/5/2015 9:52:54 PM	R27986
Cobalt	ND	0.0060		mg/L	1	8/5/2015 9:52:54 PM	R27986
Copper	ND	0.0060		mg/L	1	8/6/2015 3:44:28 PM	C28013
Iron	ND	0.020		mg/L	1	8/7/2015 2:07:43 PM	R28044
Manganese	ND	0.0020		mg/L	1	8/5/2015 9:52:54 PM	R27986
Molybdenum	ND	0.0080		mg/L	1	8/5/2015 9:52:54 PM	R27986
Nickel	ND	0.010		mg/L	1	8/5/2015 9:52:54 PM	R27986
Silver	ND	0.0050		mg/L	1	8/5/2015 9:52:54 PM	R27986
Zinc	0.051	0.010		mg/L	1	8/6/2015 3:44:28 PM	C28013
EPA METHOD 245.1: MERCURY						Analyst: **JLF**	
Mercury	ND	0.00020		mg/L	1	8/7/2015 2:04:07 PM	20665

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Monthly R.O. Reject
Lab ID: 1508065-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 8/3/2015 10:10:00 AM
Received Date: 8/4/2015 9:13:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	0.072	0.050		mg/L	1	8/5/2015 8:34:25 PM	R27991
Surr: BFB	103	70-130		%REC	1	8/5/2015 8:34:25 PM	R27991
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	8/7/2015 12:22:21 PM	20627
EPA METHOD 8082: PCB'S						Analyst: **SCC**	
Aroclor 1016	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Aroclor 1221	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Aroclor 1232	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Aroclor 1242	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Aroclor 1248	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Aroclor 1254	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Aroclor 1260	ND	1.0		µg/L	1	8/10/2015 12:08:32 PM	20661
Surr: Decachlorobiphenyl	90.0	44.5-110		%REC	1	8/10/2015 12:08:32 PM	20661
Surr: Tetrachloro-m-xylene	108	31.8-95.7	S	%REC	1	8/10/2015 12:08:32 PM	20661
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	8/5/2015 11:43:27 PM	20617
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	8/5/2015 11:43:27 PM	20617
Surr: DNOP	102	72-136		%REC	1	8/5/2015 11:43:27 PM	20617
EPA METHOD 8310: PAHS						Analyst: **SCC**	
Naphthalene	ND	2.0		µg/L	1	8/10/2015 10:49:51 AM	20677
1-Methylnaphthalene	ND	2.0		µg/L	1	8/10/2015 10:49:51 AM	20677
2-Methylnaphthalene	ND	2.0		µg/L	1	8/10/2015 10:49:51 AM	20677
Benzo(a)pyrene	ND	0.070		µg/L	1	8/10/2015 10:49:51 AM	20677
Surr: Benzo(e)pyrene	75.6	37.2-136		%REC	1	8/10/2015 10:49:51 AM	20677
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Toluene	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Ethylbenzene	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Carbon Tetrachloride	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Chloroform	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
1,1-Dichloroethane	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
1,1-Dichloroethene	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Methylene Chloride	ND	3.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Monthly R.O. Reject
Lab ID: 1508065-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 8/3/2015 10:10:00 AM
Received Date: 8/4/2015 9:13:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Vinyl chloride	ND	1.0		µg/L	1	8/5/2015 8:34:25 PM	R27991
Xylenes, Total	ND	1.5		µg/L	1	8/5/2015 8:34:25 PM	R27991
Surr: 1,2-Dichloroethane-d4	96.6	70-130		%REC	1	8/5/2015 8:34:25 PM	R27991
Surr: 4-Bromofluorobenzene	112	70-130		%REC	1	8/5/2015 8:34:25 PM	R27991
Surr: Dibromofluoromethane	107	70-130		%REC	1	8/5/2015 8:34:25 PM	R27991
Surr: Toluene-d8	104	70-130		%REC	1	8/5/2015 8:34:25 PM	R27991
TOTAL PHENOLICS BY SW-846 9067						Analyst: **SCC**	
Phenolics, Total Recoverable	ND	2.5		µg/L	1	8/6/2015	20629

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

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Monthly R.O. Reject
Lab ID: 1508065-002

Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK **Received Date:** 8/4/2015 9:13:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/5/2015 9:02:06 PM	R27991
Surr: BFB	97.5	70-130		%REC	1	8/5/2015 9:02:06 PM	R27991
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	8/7/2015 1:04:28 PM	20627
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Toluene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Ethylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Naphthalene	ND	2.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1-Methylnaphthalene	ND	4.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
2-Methylnaphthalene	ND	4.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Acetone	ND	10		µg/L	1	8/5/2015 9:02:06 PM	R27991
Bromobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Bromodichloromethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Bromoform	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Bromomethane	ND	3.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
2-Butanone	ND	10		µg/L	1	8/5/2015 9:02:06 PM	R27991
Carbon disulfide	ND	10		µg/L	1	8/5/2015 9:02:06 PM	R27991
Carbon Tetrachloride	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Chlorobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Chloroethane	ND	2.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Chloroform	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Chloromethane	ND	3.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
2-Chlorotoluene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
4-Chlorotoluene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
cis-1,2-DCE	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Dibromochloromethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Dibromomethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Monthly R.O. Reject
Lab ID: 1508065-002

Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK
Received Date: 8/4/2015 9:13:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1-Dichloroethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1-Dichloroethene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2-Dichloropropane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,3-Dichloropropane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
2,2-Dichloropropane	ND	2.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1-Dichloropropene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Hexachlorobutadiene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
2-Hexanone	ND	10		µg/L	1	8/5/2015 9:02:06 PM	R27991
Isopropylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
4-Isopropyltoluene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
4-Methyl-2-pentanone	ND	10		µg/L	1	8/5/2015 9:02:06 PM	R27991
Methylene Chloride	ND	3.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
n-Butylbenzene	ND	3.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
n-Propylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
sec-Butylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Styrene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
tert-Butylbenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
trans-1,2-DCE	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Trichlorofluoromethane	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Vinyl chloride	ND	1.0		µg/L	1	8/5/2015 9:02:06 PM	R27991
Xylenes, Total	ND	1.5		µg/L	1	8/5/2015 9:02:06 PM	R27991
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	8/5/2015 9:02:06 PM	R27991
Surr: 4-Bromofluorobenzene	106	70-130		%REC	1	8/5/2015 9:02:06 PM	R27991
Surr: Dibromofluoromethane	109	70-130		%REC	1	8/5/2015 9:02:06 PM	R27991
Surr: Toluene-d8	102	70-130		%REC	1	8/5/2015 9:02:06 PM	R27991

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842241** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842242** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.52	0.020	0.5000	0	104	85	115			
Barium	0.49	0.0020	0.5000	0	98.4	85	115			
Boron	0.51	0.040	0.5000	0	102	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.2	85	115			
Chromium	0.49	0.0060	0.5000	0	98.1	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.6	85	115			
Manganese	0.48	0.0020	0.5000	0	95.6	85	115			
Molybdenum	0.51	0.0080	0.5000	0	102	85	115			
Nickel	0.47	0.010	0.5000	0	94.3	85	115			
Silver	0.10	0.0050	0.1000	0	99.7	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842243** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	115	50	150			
Barium	ND	0.0020	0.002000	0	85.0	50	150			
Boron	ND	0.040	0.04000	0	97.3	50	150			
Cadmium	ND	0.0020	0.002000	0	95.5	50	150			
Chromium	0.0062	0.0060	0.006000	0	104	50	150			
Cobalt	ND	0.0060	0.006000	0	99.3	50	150			
Manganese	0.0026	0.0020	0.002000	0	131	50	150			
Molybdenum	0.0087	0.0080	0.008000	0	109	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842243** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	ND	0.010	0.005000	0	93.4	50	150			
Silver	ND	0.0050	0.005000	0	93.8	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842244** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842245** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.52	0.020	0.5000	0	103	85	115			
Barium	0.50	0.0020	0.5000	0	99.0	85	115			
Boron	0.51	0.040	0.5000	0	103	85	115			
Cadmium	0.50	0.0020	0.5000	0	99.2	85	115			
Chromium	0.49	0.0060	0.5000	0	98.2	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.6	85	115			
Manganese	0.48	0.0020	0.5000	0	96.3	85	115			
Molybdenum	0.51	0.0080	0.5000	0	103	85	115			
Nickel	0.47	0.010	0.5000	0	94.8	85	115			
Silver	0.10	0.0050	0.1000	0	100	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842246** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R27986**	RunNo: **27986**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842246** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	112	50	150			
Barium	ND	0.0020	0.002000	0	98.5	50	150			
Boron	ND	0.040	0.04000	0	99.7	50	150			
Cadmium	ND	0.0020	0.002000	0	77.5	50	150			
Chromium	0.0062	0.0060	0.006000	0	103	50	150			
Cobalt	ND	0.0060	0.006000	0	99.8	50	150			
Manganese	0.0021	0.0020	0.002000	0	104	50	150			
Molybdenum	0.0093	0.0080	0.008000	0	116	50	150			
Nickel	ND	0.010	0.005000	0	97.4	50	150			
Silver	ND	0.0050	0.005000	0	95.4	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **C28013**	RunNo: **28013**
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843253** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.0060								
Zinc	ND	0.010								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **C28013**	RunNo: **28013**
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843254** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.50	0.0060	0.5000	0	99.7	85	115			
Zinc	0.50	0.010	0.5000	0	101	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **C28013**	RunNo: **28013**
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843255** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.0063	0.0060	0.006000	0	105	50	150			
Zinc	ND	0.010	0.005000	0	128	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844435** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844435** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844436** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0	102	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844437** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.026	0.020	0.02000	0	131	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844438** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844439** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.49	0.020	0.5000	0	99.0	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R28044**	RunNo: **28044**
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **844440** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.020	0.020	0.02000	0	101	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **1508065-001GMS**	SampType: **MS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **R.O. Reject**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847552** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.013	0.00050	0.01250	0	107	70	130			
Selenium	0.031	0.0010	0.02500	0.006711	99.1	70	130			
Uranium	0.019	0.00050	0.01250	0.004729	117	70	130			

Sample ID **1508065-001GMSD**	SampType: **MSD**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **R.O. Reject**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847553** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.013	0.00050	0.01250	0	105	70	130	2.13	20	
Selenium	0.032	0.0010	0.02500	0.006711	100	70	130	0.805	20	
Uranium	0.019	0.00050	0.01250	0.004729	115	70	130	1.42	20	

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847560** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	99.5	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			
Uranium	0.012	0.00050	0.01250	0	99.9	85	115			

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847561** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	98.8	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			
Uranium	0.012	0.00050	0.01250	0	99.1	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847562** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00051	0.00050	0.0005000	0	103	50	150			
Selenium	0.0010	0.0010	0.001000	0	103	50	150			
Uranium	0.00051	0.00050	0.0005000	0	103	50	150			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847563** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00053	0.00050	0.0005000	0	105	50	150			
Selenium	0.0011	0.0010	0.001000	0	113	50	150			
Uranium	0.00052	0.00050	0.0005000	0	104	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847564** Units: **mg/L**

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

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R28115**	RunNo: **28115**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **847565** Units: **mg/L**

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

Sample ID **1508065-001GMS**	SampType: **MS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **R.O. Reject**	Batch ID: **D28151**	RunNo: **28151**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **848111** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.12	0.0050	0.1250	0.001284	97.9	70	130			

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **D28151**	RunNo: **28151**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **848117** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.024	0.0010	0.02500	0	97.0	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **D28151**	RunNo: **28151**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **848119** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0010	0.0010	0.001000	0	104	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **D28151**	RunNo: **28151**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **848122** Units: **mg/L**

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-20665**	SampType: **MBLK**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW**	Batch ID: **20665**	RunNo: **28038**
Prep Date: **8/7/2015**	Analysis Date: **8/7/2015**	SeqNo: **844199** Units: **mg/L**

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

Sample ID **LCS-20665**	SampType: **LCS**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW**	Batch ID: **20665**	RunNo: **28038**
Prep Date: **8/7/2015**	Analysis Date: **8/7/2015**	SeqNo: **844200** 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	99.8	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
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R27968**	RunNo: **27968**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **841566** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R27968**	RunNo: **27968**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **841567** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Chloride	4.8	0.50	5.000	0	96.4	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R28192**	RunNo: **28192**
Prep Date:	Analysis Date: **8/13/2015**	SeqNo: **849498** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R28192**	RunNo: **28192**
Prep Date:	Analysis Date: **8/13/2015**	SeqNo: **849499** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.9	0.50	10.00	0	99.0	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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-20627**	SampType: **MBLK**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **PBW**	Batch ID: **20627**	RunNo: **28045**
Prep Date: **8/6/2015**	Analysis Date: **8/7/2015**	SeqNo: **844775** Units: **µg/L**

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

Sample ID **LCS-20627**	SampType: **LCS**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **LCSW**	Batch ID: **20627**	RunNo: **28045**
Prep Date: **8/6/2015**	Analysis Date: **8/7/2015**	SeqNo: **844776** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.11	0.010	0.1000	0	110	70	130			

Sample ID **1508065-001BMS**	SampType: **MS**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **R.O. Reject**	Batch ID: **20627**	RunNo: **28045**
Prep Date: **8/6/2015**	Analysis Date: **8/7/2015**	SeqNo: **844786** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.13	0.010	0.1000	0	127	45.7	164			

Sample ID **1508065-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **R.O. Reject**	Batch ID: **20627**	RunNo: **28045**
Prep Date: **8/6/2015**	Analysis Date: **8/7/2015**	SeqNo: **844787** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.14	0.010	0.1000	0	135	45.7	164	6.11	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
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **LCS-20617**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range**						
Client ID: **LCSW**	Batch ID: **20617**			RunNo: **27957**						
Prep Date: **8/5/2015**	Analysis Date: **8/5/2015**			SeqNo: **842448**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.9	1.0	5.000	0	118	60.1	156			
Surr: DNOP	0.52		0.5000		104	72	136			

Sample ID **MB-20617**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range**						
Client ID: **PBW**	Batch ID: **20617**			RunNo: **27957**						
Prep Date: **8/5/2015**	Analysis Date: **8/5/2015**			SeqNo: **842468**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.95		1.000		95.5	72	136			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-20661**	SampType: **MBLK**	TestCode: **EPA Method 8082: PCB's**							
Client ID: **PBW**	Batch ID: **20661**	RunNo: **28049**							
Prep Date: **8/7/2015**	Analysis Date: **8/10/2015**	SeqNo: **845110**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	1.8		2.500		73.6	44.5	110			
Surr: Tetrachloro-m-xylene	2.3		2.500		90.4	31.8	95.7			

Sample ID **LCS-20661**	SampType: **LCS**	TestCode: **EPA Method 8082: PCB's**							
Client ID: **LCSW**	Batch ID: **20661**	RunNo: **28049**							
Prep Date: **8/7/2015**	Analysis Date: **8/10/2015**	SeqNo: **845133**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	5.9	1.0	5.000	0	117	9.01	142			
Aroclor 1260	6.0	1.0	5.000	0	119	25.6	164			
Surr: Decachlorobiphenyl	2.2		2.500		89.2	44.5	110			
Surr: Tetrachloro-m-xylene	2.7		2.500		107	31.8	95.7			S

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R27991**	RunNo: **27991**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842681** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	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
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S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R27991**	RunNo: **27991**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842681** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	12		10.00		116	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R27991**	RunNo: **27991**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842682** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Chlorobenzene	20	1.0	20.00	0	98.4	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R27991**	RunNo: **27991**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842682** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20	1.0	20.00	0	101	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		99.9	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		110	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.8		10.00		98.3	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-20677**	SampType: **MBLK**	TestCode: **EPA Method 8310: PAHs**
Client ID: **PBW**	Batch ID: **20677**	RunNo: **28051**
Prep Date: **8/10/2015**	Analysis Date: **8/10/2015**	SeqNo: **844835** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Benzo(a)pyrene	ND	0.070								
Surr: Benzo(e)pyrene	14		20.00		68.8	37.2	136			

Sample ID **LCS-20677**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **20677**	RunNo: **28051**
Prep Date: **8/10/2015**	Analysis Date: **8/10/2015**	SeqNo: **845107** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	71	2.0	80.00	0	89.4	57.8	83.9			S
1-Methylnaphthalene	74	2.0	80.20	0	91.8	43.5	88.5			S
2-Methylnaphthalene	72	2.0	80.00	0	89.4	34.2	94.5			
Benzo(a)pyrene	0.44	0.070	0.5020	0	87.6	56.3	98.6			
Surr: Benzo(e)pyrene	14		20.00		70.8	37.2	136			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-20629**	SampType: **MBLK**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **PBW**	Batch ID: **20629**	RunNo: **27992**
Prep Date: **8/6/2015**	Analysis Date: **8/6/2015**	SeqNo: **842690** Units: **µg/L**

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

Sample ID **LCS-20629**	SampType: **LCS**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSW**	Batch ID: **20629**	RunNo: **27992**
Prep Date: **8/6/2015**	Analysis Date: **8/6/2015**	SeqNo: **842691** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	21	2.5	20.00	0	104	64.4	135			

Sample ID **LCSD-20629**	SampType: **LCSD**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSS02**	Batch ID: **20629**	RunNo: **27992**
Prep Date: **8/6/2015**	Analysis Date: **8/6/2015**	SeqNo: **842692** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	18	2.5	20.00	0	91.6	64.4	135	12.7	21.4	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-R28452**	SampType: **MBLK**	TestCode: **EPA 335.4: Total Cyanide Subbed**
Client ID: **PBW**	Batch ID: **R28452**	RunNo: **28452**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **859841** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID **LCS-R28452**	SampType: **LCS**	TestCode: **EPA 335.4: Total Cyanide Subbed**
Client ID: **LCSW**	Batch ID: **R28452**	RunNo: **28452**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **859842** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.521		0.5000	0	104	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
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R27991**	RunNo: **27991**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842759** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	11		10.00		110	70	130			

Sample ID **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R27991**	RunNo: **27991**
Prep Date:	Analysis Date: **8/5/2015**	SeqNo: **842760** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	100	80.6	122			
Surr: BFB	10		10.00		103	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
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-R28452**	SampType: **MBLK**	TestCode: **EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID: **PBW**	Batch ID: **R28452**	RunNo: **28452**
Prep Date:	Analysis Date: **8/18/2015**	SeqNo: **859845** Units: **pCi/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	ND	0.551								
Radium-226 ±	0.342	0.551								
Radium-228	0.014	0.860								
Radium-228 ±	0.371	0.860								

Sample ID **MB-R28452**	SampType: **MBLK**	TestCode: **EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID: **PBW**	Batch ID: **R28452**	RunNo: **28452**
Prep Date:	Analysis Date: **8/18/2015**	SeqNo: **859847** Units: **pCi/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.556	0.599								
Radium-226 ±	0.441	0.599								
Radium-228	0.314	0.882								
Radium-228 ±	0.412	0.882								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1508065**

26-Aug-15

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID **MB-20626**	SampType: **MBLK**			TestCode: **SM2540C MOD: Total Dissolved Solids**					
Client ID: **PBW**	Batch ID: **20626**			RunNo: **28016**					
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**			SeqNo: **843340**		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-20626**	SampType: **LCS**			TestCode: **SM2540C MOD: Total Dissolved Solids**					
Client ID: **LCSW**	Batch ID: **20626**			RunNo: **28016**					
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**			SeqNo: **843341**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

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

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: 1508065 RcptNo: 1

Received by/date: CS 08/04/15

Logged By: Ashley Gallegos 8/4/2015 9:13:00 AM

Completed By: Ashley Gallegos 8/4/2015 10:09:41 AM

Reviewed By: 08/05/15

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑ 08/05/15	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

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

Person Notified: ____ Date: ____

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

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.2	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refinery

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush _____

Project Name:

Monthly R.O. Reject

Project #: P.O. # 167796

Project Manager:

Robert Combs

Sampler: Elizabeth Salsberry

On Ice: X Yes ☐ No

Sample Temperature: 1.0°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	8260B:WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470 Mercury	8015 GRO, DRO, ORO	8082 PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB
						Analysis Request															
8-3-15	10:10	liquid	R.O. Reject	2 - 500ml P	1-unpres 1-H2SO4	1508065 -001									X		X	X	X	X	
8-3-15	10:10	liquid	R.O. Reject	3-40ml VOA	HCL		X														
8-3-15	10:10	liquid	R.O. Reject	1-500ml P	HNO3						X										
8-3-15	10:10	liquid	R.O. Reject	1-125ml P	HNO3				X												
8-3-15	10:10	liquid	R.O. Reject	1-500ml P	NaOH					X											
8-3-15	10:10	liquid	R.O. Reject	2- 1L P	HNO3									X							
8-3-15	10:10	liquid	R.O. Reject	3-40ml VOA	Na2S2O3																X
8-3-15	10:10	liquid	R.O. Reject	2 - 1L Glass	unpres								X								
8-3-15	10:10	liquid	R.O. Reject	1 - 1L Glass	unpres			X													
8-315	10:10	liquid	R.O Reject	3-40ml VOA	HCl							X									
8-315	10:10	liquid	R.O. Reject	1-250mlGlas	unpres							X									
8-315	10:10	liquid	R.O. Reject	1 - 1L Glass	H2SO4											X					
8-315	10:10	liquid	Trip Blank	2-40ml VOA	HCL	-002															

Date	Time	Relinquished by:	Received by:	Date	Time
8-315	10:30	Elizabeth Salsbury			
				08/04/15	0913

Date	Time	Relinquished by:	Received by:	Date	Time

Remarks:

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

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

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

HOLLYFRONTIER.

October 12, 2015

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

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

RE: WQA-OCD-CO-2015-002
Monthly Report – September 2015 Reporting Period

Dear Sirs:

In accordance with Exhibit A, paragraph 5, to Agreed Compliance Order No. WQA-OCD-CO-2015-002 (the Order), the Navajo Refining Company, L.L.C. (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's October 2015 monthly report, for the period of September 1-30, under the Order.

Specifically, this report covers the September 2015 reporting period and includes the following data and information as required by Exhibit A, Paragraph 2 and Paragraph 5.a – c:

- Daily discharge flow measurements for each reverse osmosis (RO) unit and for all RO units together.
- Calculation of stipulated penalties, if any, required under Section III, Paragraph 2 of the Order.
- Results of the monthly discharge sample results.
- Updates on any new developments related to the treatment and disposal of RO reject fluid at the facility.

A discussion of each topic is provided below and the associated data is provided in Attachments 1 through 3.

Daily RO Reject Fluid Discharge Flow Measurements

Flow rate for the RO reject fluid is monitored from the two permanent RO units and the temporary RO unit on a daily basis. Daily discharge volumes are provided in Attachment 1.

Stipulated Penalties

In accordance with Exhibit A, Paragraph 1 of the Order, Navajo submitted the GW-028 discharge permit modification request on May 22, 2015, prior to 30 days from April 27, 2015, the date of the Order. Therefore, for the entire September reporting period, Paragraph III.2.b.i.2 of the Order is applicable. Stipulated penalties were calculated for each day following Navajo's submittal of the permit modification request, and prior to OCD action on that request, as follows:

- $100 per day for each daily RO reject fluid discharge volume between 10,000 and 15,000 barrels from September 1 through September 30.
- $500 per day for each daily RO reject fluid discharge volume that exceeds 15,000 barrels from September 1 through September 30.

Navajo has calculated a penalty of $3,000 for September 2015. The daily discharge volume exceeded the 10,000 barrels/day (bbl/day) limit, but was under 15,000 barrels total, on 30 days in September. Calculations conducted in accordance with Paragraph III.2.b.i.2 of the Agreed Compliance Order are provided in Attachment 2.

Payment of the stipulated penalty will be sent to the OCD Director's mailing address within 30 days after the date of this monthly report pursuant to Paragraph III.2.b. of the Order.

Monthly Discharge Sample Results

Navajo collected a sample of the RO reject fluid discharge from both the permanent RO units (combined discharge) and the temporary RO unit on September 3, 2015. The analytical lab report for these samples is provided in Attachment 3.

Updates Regarding Treatment and Disposal of RO Reject Fluid

As described in the Order, Navajo is working to enhance its water management system and reduce the total volume of RO reject fluid that is discharged pursuant to its groundwater discharge permit. Navajo is currently preparing a permit modification request to Discharge Permit GW-028 for installation of a third permanent primary RO unit to replace the temporary RO unit and the installation of a secondary RO unit to improve recovery of water as part of Navajo's water conservation effort.

Navajo is also evaluating options for the underground injection of RO reject fluid.

In accordance with Exhibit A, Paragraph 1 of the Order, Navajo submitted a GW-028 discharge permit modification request on May 22, 2015. The requested modifications include operating a temporary RO unit at the Navajo Refinery and increasing the total maximum volume of RO reject fluids that can be applied to the surface of Navajo's discharge fields from approximately 10,000 bbl/day to approximately 20,000 bbl/day calculated on a rolling 12-month average. Navajo submitted an *Evaluation of Groundwater Quality – RO Reject Fields* memo on August 27, 2015, and the *Background Groundwater Investigation Report* on September 2, 2015, in support of this modification request.

OCD notified Navajo that the application for the requested permit modification is administratively complete by letter dated July 1, 2015. Navajo submitted proof of completion of the public notice, including an affidavit of mailing and the list of property owners, proof of publication, and an affidavit of posting, to the OCD on September 3, 2015.

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

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flow Rates
Attachment 2: Stipulated Penalty Calculation
Attachment 3: Analytical Lab Reports

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

Attachment 1
Daily Discharge Flow Rates

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Temporary Unit		Daily Discharge Volume
	Metered Data		Combined RO Reject Discharge (Calculated)		Total RO Reject Discharge (Calculated from Log Data)		
	GPM	GPM	GPM	BBL/DAY	GPM	BBL/DAY	BBL
	SOUTH	NORTH					
9/1/2015	128	119	247	8,469	45	1,546	10,015
9/2/2015	200	168	368	12,617	57	1,944	14,561
9/3/2015	109	175	284	9,737	57	1,954	11,691
9/4/2015	110	182	292	10,011	57	1,954	11,965
9/5/2015	112	179	291	9,977	60	2,054	12,031
9/6/2015	112	178	290	9,943	59	2,027	11,970
9/7/2015	115	177	292	10,011	58	1,998	12,009
9/8/2015	114	181	295	10,114	60	2,046	12,160
9/9/2015	106	171	277	9,497	61	2,104	11,601
9/10/2015	115	178	293	10,046	63	2,159	12,205
9/11/2015	113	177	290	9,943	66	2,261	12,204
9/12/2015	114	178	292	10,011	65	2,231	12,242
9/13/2015	115	180	295	10,114	68	2,328	12,442
9/14/2015	116	179	295	10,114	69	2,358	12,472
9/15/2015	115	179	294	10,080	68	2,332	12,412
9/16/2015	120	180	300	10,286	71	2,432	12,718
9/17/2015	117	175	292	10,011	65	2,243	12,254
9/18/2015	115	177	292	10,011	69	2,383	12,394
9/19/2015	111	178	289	9,909	72	2,467	12,376
9/20/2015	115	179	294	10,080	63	2,173	12,253
9/21/2015	116	174	290	9,943	49	1,680	11,623
9/22/2015	115	176	291	9,977	51	1,763	11,740
9/23/2015	120	178	298	10,217	67	2,297	12,514
9/24/2015	116	176	292	10,011	72	2,465	12,476
9/25/2015	116	177	293	10,046	91	3,124	13,170
9/26/2015	121	164	285	9,771	73	2,490	12,261
9/27/2015	125	162	287	9,840	74	2,527	12,367
9/28/2015	126	163	289	9,909	73	2,507	12,416
9/29/2015	125	102	227	7,783	94	3,223	11,006
9/30/2015	123	100	223	7,646	73	2,510	10,156

Attachment 2
Stipulated Penalty Calculation

Calculation of Stipulated Penalties - October 2015

Order Section III., Paragraph Number	Penalty	Payment per day	No. of Days (per violation)	Amount
2.b.i	Exceedance of the 10,000 barrel per day RO reject fluid discharge volume limit specified in Discharge Permit GW-028:	--	--	--
2.b.i.1	- **Prior** to Navajo submitting a discharge permit modification application	$1,000		$0
2.b.i.2	- If the daily volume is between 10,000 and 15,000 barrels **after** Navajo submits discharge permit modification application	$100	30	$3,000
2.b.i.2	- If the daily volume exceeds 15,000 barrels **after** Navajo submits discharge permit modification application	$500		$0
2.b.ii	Failure to conduct sampling as required in Exhibit A of Order	$2,000		$0
2.b.iii	Failure to timely submit any report or notifications as required in Exhibit A of Order	$1,000		$0
2.b.iv	Failure to record the daily discharge flow from the permanent and the temporary RO units	$1,000		$0
		Total Amount:		**$3,000**

Attachment 3
Analytical Lab Report

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 06, 2015

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

RE: Monthly Temporary R.O. Reject OrderNo.: 1509214

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/4/2015 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Temporary R.O. Reject
Project: Monthly Temporary R.O. Reject
Collection Date: 9/3/2015 8:50:00 AM
Lab ID: 1509214-001 **Matrix:** AQUEOUS **Received Date:** 9/4/2015 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst:	**DBD**
Arsenic	ND	0.0050		mg/L	5	9/18/2015 2:59:55 PM	B28981
Lead	ND	0.0025		mg/L	5	9/18/2015 2:59:55 PM	B28981
Selenium	0.0086	0.0050		mg/L	5	9/18/2015 2:59:55 PM	B28981
Uranium	0.0056	0.0025		mg/L	5	9/18/2015 2:59:55 PM	B28981
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst:	**SUB**
Radium-226	1.7	0.563		pCi/L	1	9/28/2015	R29270
Radium-226 ±	0.701	0.563		pCi/L	1	9/28/2015	R29270
Radium-228	0.308	0.574		pCi/L	1	9/28/2015	R29270
Radium-228 ±	0.283	0.574		pCi/L	1	9/28/2015	R29270
EPA METHOD 300.0: ANIONS						Analyst:	**LGT**
Fluoride	3.2	2.0		mg/L	20	9/4/2015 11:00:00 PM	R28686
Chloride	300	10		mg/L	20	9/4/2015 11:00:00 PM	R28686
Nitrogen, Nitrate (As N)	2.0	0.10		mg/L	1	9/4/2015 10:47:35 PM	R28686
Sulfate	1800	50		mg/L	100	9/15/2015 12:07:52 AM	R28852
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	3720	20.0	*	mg/L	1	9/10/2015 5:38:00 PM	21204
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst:	**SUB**
Cyanide	ND	0.0100		mg/L	1	9/15/2015	R29270
SM4500-H+B: PH						Analyst:	**JRR**
pH	7.89	1.68	H	pH units	1	9/8/2015 6:24:49 PM	R28726
EPA METHOD 200.7: DISSOLVED METALS						Analyst:	**ELS**
Aluminum	ND	0.020		mg/L	1	9/10/2015 2:52:57 PM	B28759
Barium	0.059	0.0020		mg/L	1	9/10/2015 2:52:57 PM	B28759
Boron	0.098	0.040		mg/L	1	9/10/2015 2:52:57 PM	B28759
Cadmium	ND	0.0020		mg/L	1	9/10/2015 2:52:57 PM	B28759
Chromium	0.0067	0.0060		mg/L	1	9/11/2015 1:33:20 PM	A28781
Cobalt	0.0061	0.0060		mg/L	1	9/11/2015 1:33:20 PM	A28781
Copper	ND	0.0060		mg/L	1	9/10/2015 2:52:57 PM	B28759
Iron	0.048	0.020		mg/L	1	9/10/2015 2:52:57 PM	B28759
Manganese	ND	0.0020		mg/L	1	9/10/2015 2:52:57 PM	B28759
Molybdenum	ND	0.0080		mg/L	1	9/11/2015 1:33:20 PM	A28781
Nickel	ND	0.010		mg/L	1	9/10/2015 2:52:57 PM	B28759
Silver	ND	0.0050		mg/L	1	9/11/2015 1:33:20 PM	A28781
Zinc	0.019	0.010		mg/L	1	9/11/2015 1:33:20 PM	A28781
EPA METHOD 245.1: MERCURY						Analyst:	**JLF**
Mercury	ND	0.00020		mg/L	1	9/15/2015 3:50:01 PM	21298

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Temporary R.O. Reject
Project: Monthly Temporary R.O. Reject
Collection Date: 9/3/2015 8:50:00 AM
Lab ID: 1509214-001 **Matrix:** AQUEOUS **Received Date:** 9/4/2015 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	9/9/2015 2:48:42 PM	21198
EPA METHOD 8082: PCB'S						Analyst: **SCC**	
Aroclor 1016	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Aroclor 1221	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Aroclor 1232	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Aroclor 1242	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Aroclor 1248	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Aroclor 1254	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Aroclor 1260	ND	1.0		µg/L	1	9/11/2015 10:58:41 AM	21192
Surr: Decachlorobiphenyl	74.0	17.7-151		%REC	1	9/11/2015 10:58:41 AM	21192
Surr: Tetrachloro-m-xylene	67.6	20.6-151		%REC	1	9/11/2015 10:58:41 AM	21192
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	9/9/2015 4:47:41 PM	21183
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	9/9/2015 4:47:41 PM	21183
Surr: DNOP	108	72-136		%REC	1	9/9/2015 4:47:41 PM	21183
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/10/2015 1:16:54 PM	R28761
Surr: BFB	94.5	57.8-137		%REC	1	9/10/2015 1:16:54 PM	R28761
EPA METHOD 8310: PAHS						Analyst: **SCC**	
Naphthalene	ND	2.0		µg/L	1	9/11/2015 8:09:56 AM	21193
1-Methylnaphthalene	ND	2.0		µg/L	1	9/11/2015 8:09:56 AM	21193
2-Methylnaphthalene	ND	2.0		µg/L	1	9/11/2015 8:09:56 AM	21193
Benzo(a)pyrene	ND	0.070		µg/L	1	9/11/2015 8:09:56 AM	21193
Surr: Benzo(e)pyrene	41.3	37.2-136		%REC	1	9/11/2015 8:09:56 AM	21193
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Toluene	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Ethylbenzene	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Carbon Tetrachloride	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Chloroform	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
1,1-Dichloroethane	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
1,1-Dichloroethene	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Methylene Chloride	ND	3.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Temporary R.O. Reject
Project: Monthly Temporary R.O. Reject
Collection Date: 9/3/2015 8:50:00 AM
Lab ID: 1509214-001 **Matrix:** AQUEOUS **Received Date:** 9/4/2015 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Vinyl chloride	ND	1.0		µg/L	1	9/8/2015 2:48:27 PM	R28707
Xylenes, Total	ND	1.5		µg/L	1	9/8/2015 2:48:27 PM	R28707
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%REC	1	9/8/2015 2:48:27 PM	R28707
Surr: 4-Bromofluorobenzene	99.5	70-130		%REC	1	9/8/2015 2:48:27 PM	R28707
Surr: Dibromofluoromethane	97.9	70-130		%REC	1	9/8/2015 2:48:27 PM	R28707
Surr: Toluene-d8	99.1	70-130		%REC	1	9/8/2015 2:48:27 PM	R28707
TOTAL PHENOLICS BY SW-846 9067						Analyst: **SCC**	
Phenolics, Total Recoverable	ND	2.5		µg/L	1	9/30/2015	21585

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Monthly Temporary R.O. Reject
Collection Date:
Lab ID: 1509214-002
Matrix: TRIP BLANK
Received Date: 9/4/2015 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/10/2015 1:42:19 PM	R28761
Surr: BFB	93.2	57.8-137		%REC	1	9/10/2015 1:42:19 PM	R28761
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Toluene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Ethylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Naphthalene	ND	2.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1-Methylnaphthalene	ND	4.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
2-Methylnaphthalene	ND	4.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Acetone	ND	10		µg/L	1	9/8/2015 3:17:15 PM	R28707
Bromobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Bromodichloromethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Bromoform	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Bromomethane	ND	3.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
2-Butanone	ND	10		µg/L	1	9/8/2015 3:17:15 PM	R28707
Carbon disulfide	ND	10		µg/L	1	9/8/2015 3:17:15 PM	R28707
Carbon Tetrachloride	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Chlorobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Chloroethane	ND	2.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Chloroform	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Chloromethane	ND	3.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
2-Chlorotoluene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
4-Chlorotoluene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
cis-1,2-DCE	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Dibromochloromethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Dibromomethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1-Dichloroethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1-Dichloroethene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Monthly Temporary R.O. Reject
Collection Date:
Lab ID: 1509214-002 **Matrix:** TRIP BLANK **Received Date:** 9/4/2015 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,2-Dichloropropane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,3-Dichloropropane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
2,2-Dichloropropane	ND	2.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1-Dichloropropene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Hexachlorobutadiene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
2-Hexanone	ND	10		µg/L	1	9/8/2015 3:17:15 PM	R28707
Isopropylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
4-Isopropyltoluene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
4-Methyl-2-pentanone	ND	10		µg/L	1	9/8/2015 3:17:15 PM	R28707
Methylene Chloride	ND	3.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
n-Butylbenzene	ND	3.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
n-Propylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
sec-Butylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Styrene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
tert-Butylbenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
trans-1,2-DCE	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Trichlorofluoromethane	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Vinyl chloride	ND	1.0		µg/L	1	9/8/2015 3:17:15 PM	R28707
Xylenes, Total	ND	1.5		µg/L	1	9/8/2015 3:17:15 PM	R28707
Surr: 1,2-Dichloroethane-d4	93.0	70-130		%REC	1	9/8/2015 3:17:15 PM	R28707
Surr: 4-Bromofluorobenzene	98.0	70-130		%REC	1	9/8/2015 3:17:15 PM	R28707
Surr: Dibromofluoromethane	97.2	70-130		%REC	1	9/8/2015 3:17:15 PM	R28707
Surr: Toluene-d8	100	70-130		%REC	1	9/8/2015 3:17:15 PM	R28707

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B28759**	RunNo: **28759**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **871972** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.50	0.020	0.5000	0	99.8	85	115			
Barium	0.49	0.0020	0.5000	0	98.9	85	115			
Boron	0.53	0.040	0.5000	0	105	85	115			
Cadmium	0.51	0.0020	0.5000	0	102	85	115			
Copper	0.47	0.0060	0.5000	0	94.2	85	115			
Iron	0.53	0.020	0.5000	0	107	85	115			
Manganese	0.49	0.0020	0.5000	0	97.9	85	115			
Nickel	0.48	0.010	0.5000	0	95.4	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B28759**	RunNo: **28759**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **871973** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	104	50	150			
Barium	ND	0.0020	0.002000	0	90.0	50	150			
Boron	ND	0.040	0.04000	0	95.7	50	150			
Cadmium	ND	0.0020	0.002000	0	93.5	50	150			
Copper	ND	0.0060	0.006000	0	98.2	50	150			
Iron	0.021	0.020	0.02000	0	105	50	150			
Manganese	0.0022	0.0020	0.002000	0	108	50	150			
Nickel	ND	0.010	0.005000	0	119	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B28759**	RunNo: **28759**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **871977** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **1509214-001IMS** SampType: **MS** TestCode: **EPA Method 200.7: Dissolved Metals**

Client ID: **Temporary R.O. Rej** Batch ID: **B28759** RunNo: **28759**

Prep Date: Analysis Date: **9/10/2015** SeqNo: **872105** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.53	0.020	0.5000	0.004060	106	70	130			
Barium	0.50	0.0020	0.5000	0.05899	88.1	70	130			
Boron	0.64	0.040	0.5000	0.09823	108	70	130			
Cadmium	0.47	0.0020	0.5000	0	93.9	70	130			
Copper	0.47	0.0060	0.5000	0	94.4	70	130			
Iron	0.50	0.020	0.5000	0.04757	90.7	70	130			
Manganese	0.46	0.0020	0.5000	0.001650	91.3	70	130			
Nickel	0.41	0.010	0.5000	0	82.0	70	130			

Sample ID **1509214-001IMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Dissolved Metals**

Client ID: **Temporary R.O. Rej** Batch ID: **B28759** RunNo: **28759**

Prep Date: Analysis Date: **9/10/2015** SeqNo: **872106** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.53	0.020	0.5000	0.004060	106	70	130	0.150	20	
Barium	0.50	0.0020	0.5000	0.05899	88.6	70	130	0.493	20	
Boron	0.65	0.040	0.5000	0.09823	110	70	130	1.05	20	
Cadmium	0.47	0.0020	0.5000	0	94.6	70	130	0.694	20	
Copper	0.47	0.0060	0.5000	0	94.4	70	130	0.0890	20	
Iron	0.51	0.020	0.5000	0.04757	92.7	70	130	1.99	20	
Manganese	0.46	0.0020	0.5000	0.001650	91.8	70	130	0.605	20	
Nickel	0.41	0.010	0.5000	0	82.1	70	130	0.178	20	

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**

Client ID: **LCSW** Batch ID: **A28781** RunNo: **28781**

Prep Date: Analysis Date: **9/11/2015** SeqNo: **872822** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.49	0.0060	0.5000	0	98.4	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.7	85	115			
Molybdenum	0.50	0.0080	0.5000	0	99.3	85	115			
Silver	0.089	0.0050	0.1000	0	89.1	85	115			
Zinc	0.49	0.010	0.5000	0	97.9	85	115			

Sample ID **LLLCS** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**

Client ID: **BatchQC** Batch ID: **A28781** RunNo: **28781**

Prep Date: Analysis Date: **9/11/2015** SeqNo: **872823** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	ND	0.0060	0.006000	0	82.5	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**LLLCS**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**BatchQC**	Batch ID:	**A28781**	RunNo:	**28781**					
Prep Date:		Analysis Date:	**9/11/2015**	SeqNo:	**872823**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	ND	0.0060	0.006000	0	86.0	50	150			
Molybdenum	ND	0.0080	0.008000	0	53.8	50	150			
Silver	ND	0.0050	0.005000	0	86.8	50	150			
Zinc	ND	0.010	0.005000	0	103	50	150			

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**PBW**	Batch ID:	**A28781**	RunNo:	**28781**					
Prep Date:		Analysis Date:	**9/11/2015**	SeqNo:	**872843**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Molybdenum	ND	0.0080								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID	**1509214-001IMS**	SampType:	**MS**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**Temporary R.O. Rej**	Batch ID:	**A28781**	RunNo:	**28781**					
Prep Date:		Analysis Date:	**9/11/2015**	SeqNo:	**873630**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.49	0.0060	0.5000	0.006680	96.5	70	130			
Cobalt	0.46	0.0060	0.5000	0.006090	91.2	70	130			
Molybdenum	0.47	0.0080	0.5000	0	93.9	70	130			
Silver	0.072	0.0050	0.1000	0	71.5	70	130			
Zinc	0.50	0.010	0.5000	0.01942	97.0	70	130			

Sample ID	**1509214-001IMSD**	SampType:	**MSD**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**Temporary R.O. Rej**	Batch ID:	**A28781**	RunNo:	**28781**					
Prep Date:		Analysis Date:	**9/11/2015**	SeqNo:	**873631**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.50	0.0060	0.5000	0.006680	98.3	70	130	1.84	20	
Cobalt	0.47	0.0060	0.5000	0.006090	93.3	70	130	2.27	20	
Molybdenum	0.47	0.0080	0.5000	0	93.6	70	130	0.403	20	
Silver	0.074	0.0050	0.1000	0	74.4	70	130	3.93	20	
Zinc	0.50	0.010	0.5000	0.01942	97.0	70	130	0.0436	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**1509214-001IMS**	SampType:	**MS**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**Temporary R.O. Rej**	Batch ID:	**B28981**	RunNo:	**28981**
Prep Date:		Analysis Date:	**9/18/2015**	SeqNo:	**879521** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.13	0.0050	0.1250	0.001661	99.8	70	130			
Lead	0.061	0.0025	0.06250	0	97.7	70	130			
Selenium	0.12	0.0050	0.1250	0.008634	92.3	70	130			
Uranium	0.072	0.0025	0.06250	0.005627	106	70	130			

Sample ID	**LCS**	SampType:	**LCS**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**LCSW**	Batch ID:	**B28981**	RunNo:	**28981**
Prep Date:		Analysis Date:	**9/18/2015**	SeqNo:	**879546** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.024	0.0010	0.02500	0	95.3	85	115			
Lead	0.012	0.00050	0.01250	0	99.4	85	115			
Selenium	0.023	0.0010	0.02500	0	91.2	85	115			
Uranium	0.013	0.00050	0.01250	0	100	85	115			

Sample ID	**LLLCS**	SampType:	**LCSLL**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**BatchQC**	Batch ID:	**B28981**	RunNo:	**28981**
Prep Date:		Analysis Date:	**9/18/2015**	SeqNo:	**879550** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	93.3	50	150			
Lead	0.00054	0.00050	0.0005000	0	109	50	150			
Selenium	ND	0.0010	0.001000	0	89.0	50	150			
Uranium	0.00052	0.00050	0.0005000	0	104	50	150			

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**PBW**	Batch ID:	**B28981**	RunNo:	**28981**
Prep Date:		Analysis Date:	**9/18/2015**	SeqNo:	**879554** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-21298**	SampType:	**MBLK**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**21298**	RunNo:	**28872**					
Prep Date:	**9/15/2015**	Analysis Date:	**9/15/2015**	SeqNo:	**875782**	Units:	**mg/L**			

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

Sample ID	**LCS-21298**	SampType:	**LCS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**21298**	RunNo:	**28872**					
Prep Date:	**9/15/2015**	Analysis Date:	**9/15/2015**	SeqNo:	**875785**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	95.4	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R28686**	RunNo: **28686**
Prep Date:	Analysis Date: **9/4/2015**	SeqNo: **869229** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R28686**	RunNo: **28686**
Prep Date:	Analysis Date: **9/4/2015**	SeqNo: **869230** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.5	90	110			
Chloride	4.9	0.50	5.000	0	98.5	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	104	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R28852**	RunNo: **28852**
Prep Date:	Analysis Date: **9/14/2015**	SeqNo: **875093** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R28852**	RunNo: **28852**
Prep Date:	Analysis Date: **9/14/2015**	SeqNo: **875094** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.8	0.50	10.00	0	98.4	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
- R RPD outside accepted recovery limits
- 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 Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-21198**	SampType:	**MBLK**	TestCode:	**EPA Method 8011/504.1: EDB**					
Client ID:	**PBW**	Batch ID:	**21198**	RunNo:	**28723**					
Prep Date:	**9/9/2015**	Analysis Date:	**9/9/2015**	SeqNo:	**870483**	Units:	**µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	**LCS-21198**	SampType:	**LCS**	TestCode:	**EPA Method 8011/504.1: EDB**					
Client ID:	**LCSW**	Batch ID:	**21198**	RunNo:	**28723**					
Prep Date:	**9/9/2015**	Analysis Date:	**9/9/2015**	SeqNo:	**870484**	Units:	**µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	78.0	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-21183**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **21183**	RunNo: **28717**
Prep Date: **9/8/2015**	Analysis Date: **9/9/2015**	SeqNo: **870900** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		102	72	136			

Sample ID **LCS-21183**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **21183**	RunNo: **28717**
Prep Date: **9/8/2015**	Analysis Date: **9/9/2015**	SeqNo: **870912** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.1	1.0	5.000	0	102	52.4	154			
Surr: DNOP	0.52		0.5000		104	72	136			

Sample ID **1509214-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **Temporary R.O. Rej**	Batch ID: **21183**	RunNo: **28717**
Prep Date: **9/8/2015**	Analysis Date: **9/9/2015**	SeqNo: **870914** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.1	1.0	5.000	0	123	41.3	177			
Surr: DNOP	0.61		0.5000		122	72	136			

Sample ID **1509214-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **Temporary R.O. Rej**	Batch ID: **21183**	RunNo: **28717**
Prep Date: **9/8/2015**	Analysis Date: **9/9/2015**	SeqNo: **870915** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.1	1.0	5.000	0	102	-94.6	317	18.0	22.1	
Surr: DNOP	0.54		0.5000		108	72	136	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R28761**	RunNo: **28761**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **872128** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		90.2	57.8	137			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R28761**	RunNo: **28761**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **872129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.9	80	120			
Surr: BFB	19		20.00		94.5	57.8	137			

Sample ID **1509214-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Temporary R.O. Rej**	Batch ID: **R28761**	RunNo: **28761**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **872139** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.43	0.050	0.5000	0	85.6	70	130			
Surr: BFB	20		20.00		99.4	57.8	137			

Sample ID **1509214-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Temporary R.O. Rej**	Batch ID: **R28761**	RunNo: **28761**
Prep Date:	Analysis Date: **9/10/2015**	SeqNo: **872140** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.0	70	130	9.31	20	
Surr: BFB	21		20.00		104	57.8	137	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-21192**	SampType: **MBLK**	TestCode: **EPA Method 8082: PCB's**
Client ID: **PBW**	Batch ID: **21192**	RunNo: **28758**
Prep Date: **9/9/2015**	Analysis Date: **9/11/2015**	SeqNo: **872597** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	1.6		2.500		62.8	17.7	151			
Surr: Tetrachloro-m-xylene	1.3		2.500		50.4	20.6	151			

Sample ID **LCS-21192**	SampType: **LCS**	TestCode: **EPA Method 8082: PCB's**
Client ID: **LCSW**	Batch ID: **21192**	RunNo: **28758**
Prep Date: **9/9/2015**	Analysis Date: **9/11/2015**	SeqNo: **873603** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.2	1.0	5.000	0	44.8	9.01	142			
Aroclor 1260	3.3	1.0	5.000	0	65.3	25.6	164			
Surr: Decachlorobiphenyl	1.4		2.500		58.0	17.7	151			
Surr: Tetrachloro-m-xylene	1.3		2.500		52.0	20.6	151			

Sample ID **LCSD-21192**	SampType: **LCSD**	TestCode: **EPA Method 8082: PCB's**
Client ID: **LCSS02**	Batch ID: **21192**	RunNo: **28758**
Prep Date: **9/9/2015**	Analysis Date: **9/11/2015**	SeqNo: **873604** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.0	1.0	5.000	0	39.0	9.01	142	13.7	26.9	
Aroclor 1260	3.0	1.0	5.000	0	59.2	25.6	164	9.84	29.1	
Surr: Decachlorobiphenyl	1.3		2.500		53.2	17.7	151	0	0	
Surr: Tetrachloro-m-xylene	1.1		2.500		42.8	20.6	151	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R28707**	RunNo: **28707**
Prep Date:	Analysis Date: **9/8/2015**	SeqNo: **870059** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	70	130			
Toluene	20	1.0	20.00	0	100	70	130			
Chlorobenzene	21	1.0	20.00	0	104	70	130			
1,1-Dichloroethene	23	1.0	20.00	0	117	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	94.0	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R28707**	RunNo: **28707**
Prep Date:	Analysis Date: **9/8/2015**	SeqNo: **870063** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R28707**	RunNo: **28707**
Prep Date:	Analysis Date: **9/8/2015**	SeqNo: **870063** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R28707**	RunNo: **28707**
Prep Date:	Analysis Date: **9/8/2015**	SeqNo: **870063** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		97.3	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.5	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.0		10.00		90.4	70	130			

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-21193**	SampType: **MBLK**	TestCode: **EPA Method 8310: PAHs**
Client ID: **PBW**	Batch ID: **21193**	RunNo: **28760**
Prep Date: **9/9/2015**	Analysis Date: **9/11/2015**	SeqNo: **872124** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Benzo(a)pyrene	ND	0.070								
Surr: Benzo(e)pyrene	7.7		20.00		38.7	37.2	136			

Sample ID **LCS-21193**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **21193**	RunNo: **28760**
Prep Date: **9/9/2015**	Analysis Date: **9/11/2015**	SeqNo: **872224** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	60	2.0	80.00	0	74.8	57.8	83.9			
1-Methylnaphthalene	60	2.0	80.20	0	75.2	43.5	88.5			
2-Methylnaphthalene	60	2.0	80.00	0	74.6	34.2	94.5			
Benzo(a)pyrene	0.38	0.070	0.5020	0	75.7	56.3	98.6			
Surr: Benzo(e)pyrene	9.9		20.00		49.3	37.2	136			

Sample ID **LCSD-21193**	SampType: **LCSD**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSS02**	Batch ID: **21193**	RunNo: **28760**
Prep Date: **9/9/2015**	Analysis Date: **9/11/2015**	SeqNo: **872225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	59	2.0	80.00	0	73.6	57.8	83.9	1.55	20	
1-Methylnaphthalene	59	2.0	80.20	0	73.8	43.5	88.5	1.94	20	
2-Methylnaphthalene	58	2.0	80.00	0	72.8	34.2	94.5	2.46	20	
Benzo(a)pyrene	0.37	0.070	0.5020	0	73.7	56.3	98.6	2.67	20	
Surr: Benzo(e)pyrene	9.3		20.00		46.4	37.2	136	0		

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-21585**	SampType:	**MBLK**	TestCode:	**Total Phenolics by SW-846 9067**					
Client ID:	**PBW**	Batch ID:	**21585**	RunNo:	**29183**					
Prep Date:	**9/30/2015**	Analysis Date:	**9/30/2015**	SeqNo:	**886370**	Units:	**µg/L**			

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

Sample ID	**LCS-21585**	SampType:	**LCS**	TestCode:	**Total Phenolics by SW-846 9067**					
Client ID:	**LCSW**	Batch ID:	**21585**	RunNo:	**29183**					
Prep Date:	**9/30/2015**	Analysis Date:	**9/30/2015**	SeqNo:	**886371**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	17	2.5	20.00	0	83.6	64.4	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-R29270**	SampType:	**MBLK**	TestCode:	**EPA 335.4: Total Cyanide Subbed**				
Client ID:	**PBW**	Batch ID:	**R29270**	RunNo:	**29270**				
Prep Date:		Analysis Date:	**9/15/2015**	SeqNo:	**889324**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	**LCS-R29270**	SampType:	**LCS**	TestCode:	**EPA 335.4: Total Cyanide Subbed**				
Client ID:	**LCSW**	Batch ID:	**R29270**	RunNo:	**29270**				
Prep Date:		Analysis Date:	**9/15/2015**	SeqNo:	**889325**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.478		0.5000	0	95.6	90	110			

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-R29270**	SampType:	**MBLK**	TestCode:	**EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID:	**PBW**	Batch ID:	**R29270**	RunNo:	**29270**
Prep Date:		Analysis Date:	**9/28/2015**	SeqNo:	**889327**
Units:	**pCi/L**				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.461	0.612								
Radium-226 ±	0.431	0.612								
Radium-228	0.202	0.549								
Radium-228 ±	0.259	0.549								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1509214**

06-Oct-15

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-21204**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **21204**	RunNo: **28757**
Prep Date: **9/9/2015**	Analysis Date: **9/10/2015**	SeqNo: **871932** 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-21204**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **21204**	RunNo: **28757**
Prep Date: **9/9/2015**	Analysis Date: **9/10/2015**	SeqNo: **871933** Units: **mg/L**

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

Qualifiers:

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