

GW-028

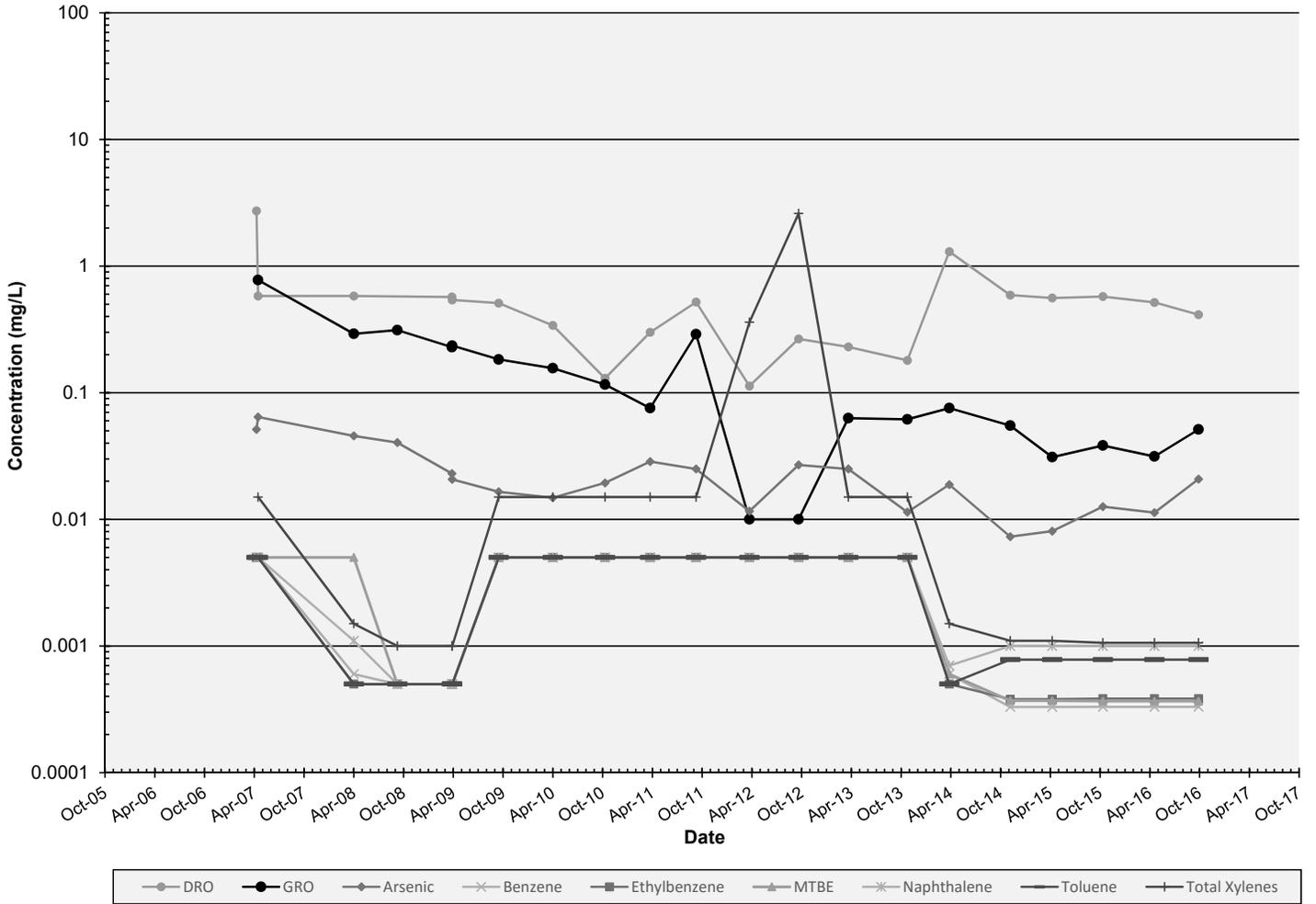
2016

AGWMR

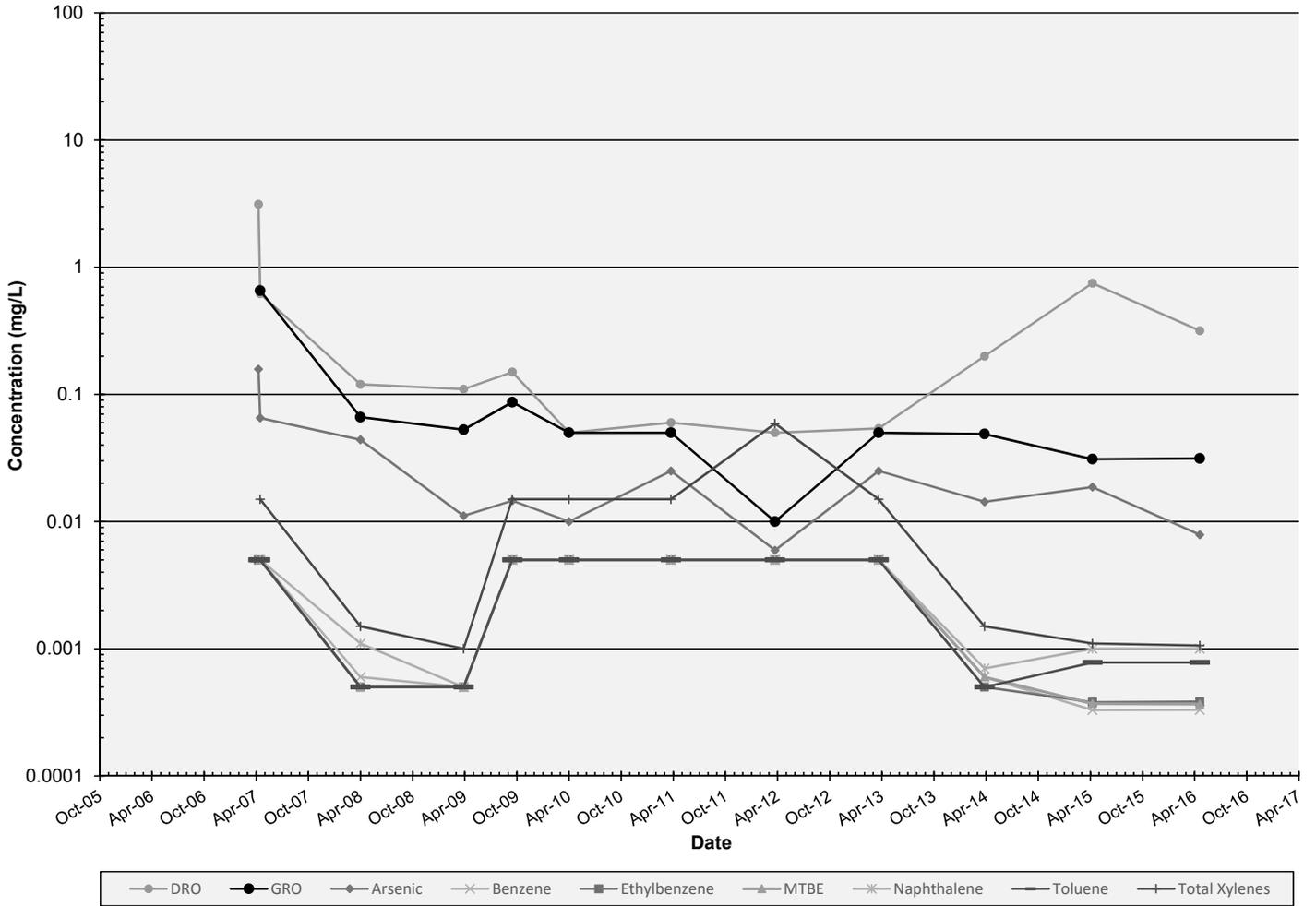
Part 8 of 8

2017

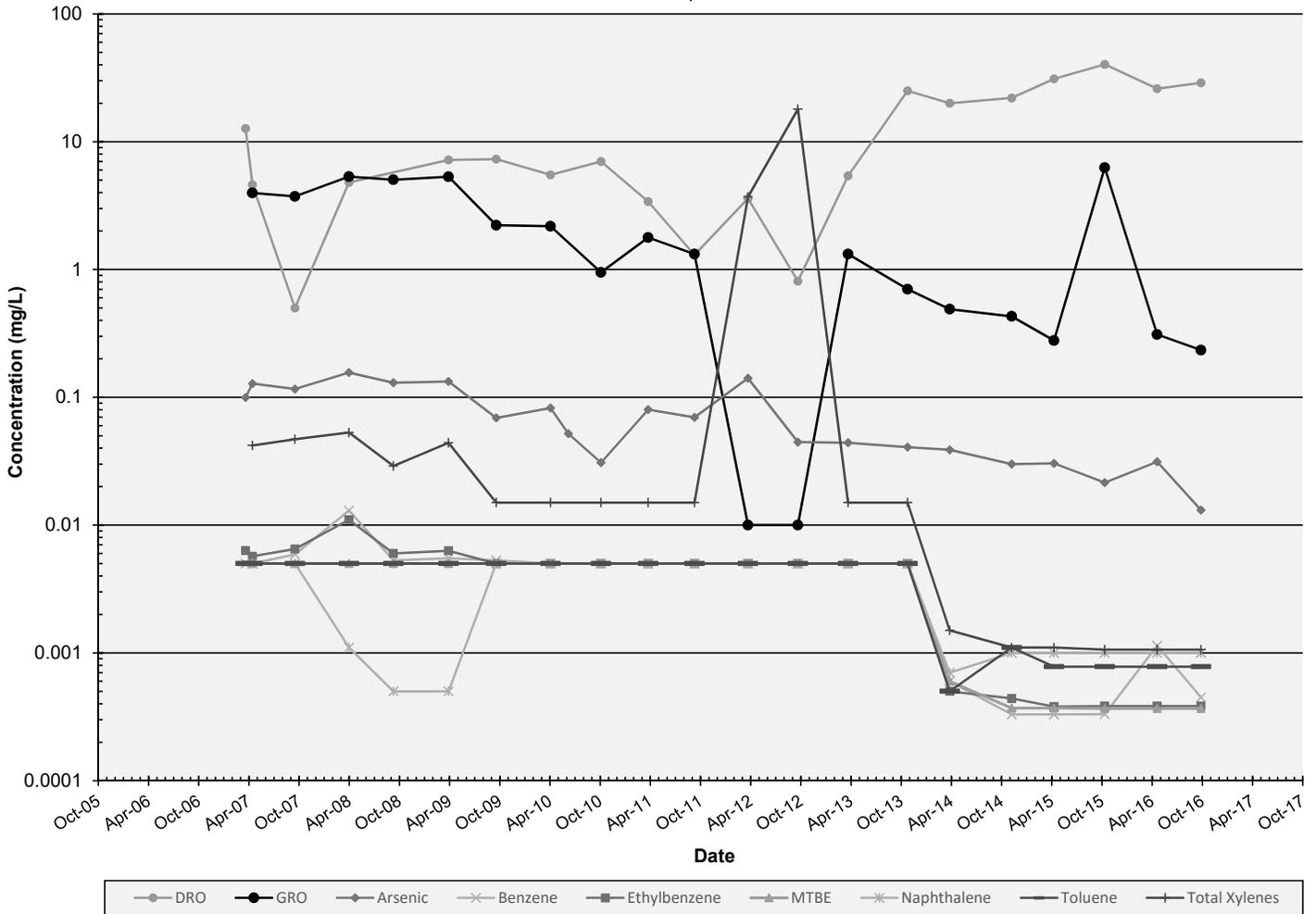
MW-79: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



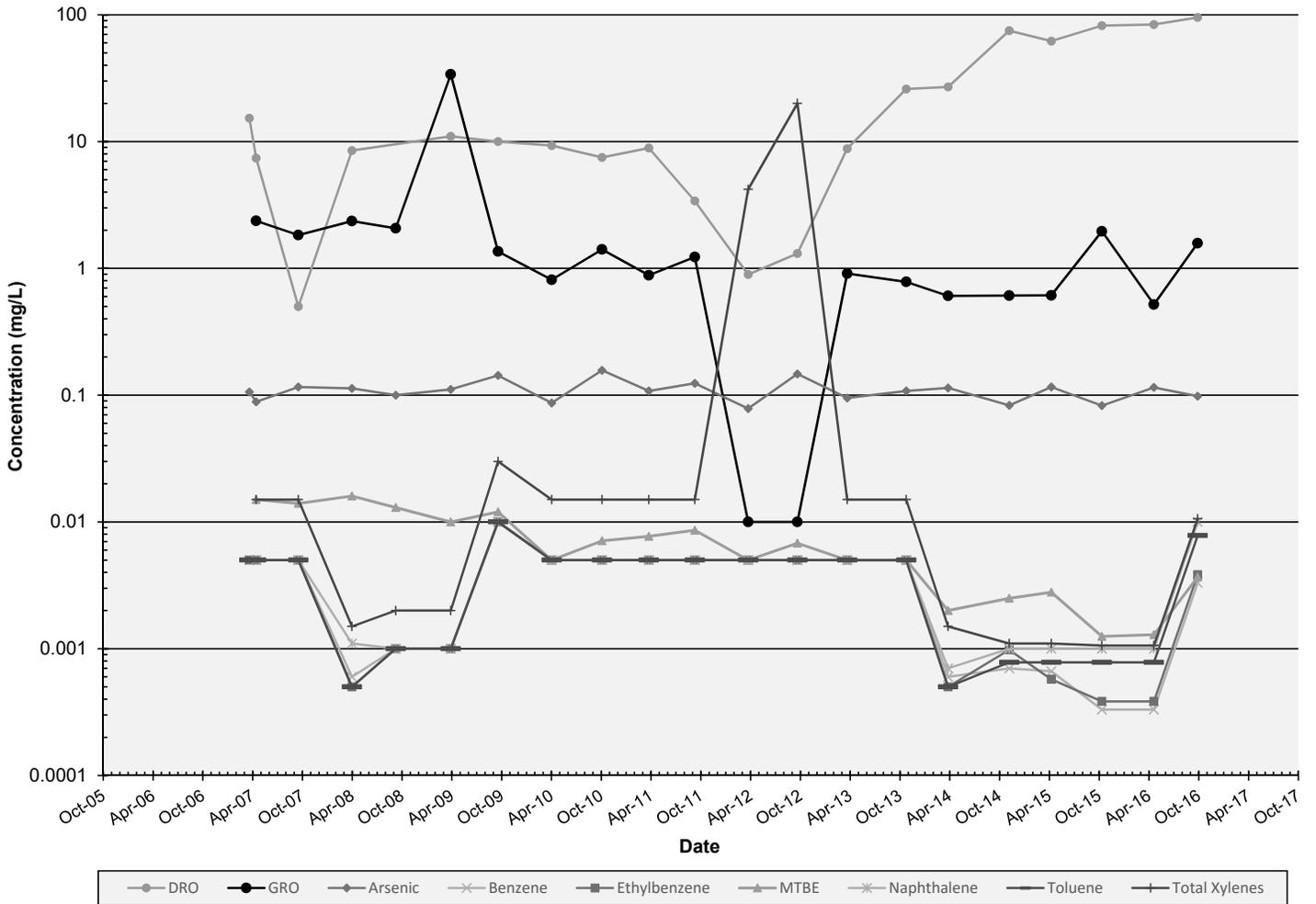
MW-80: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



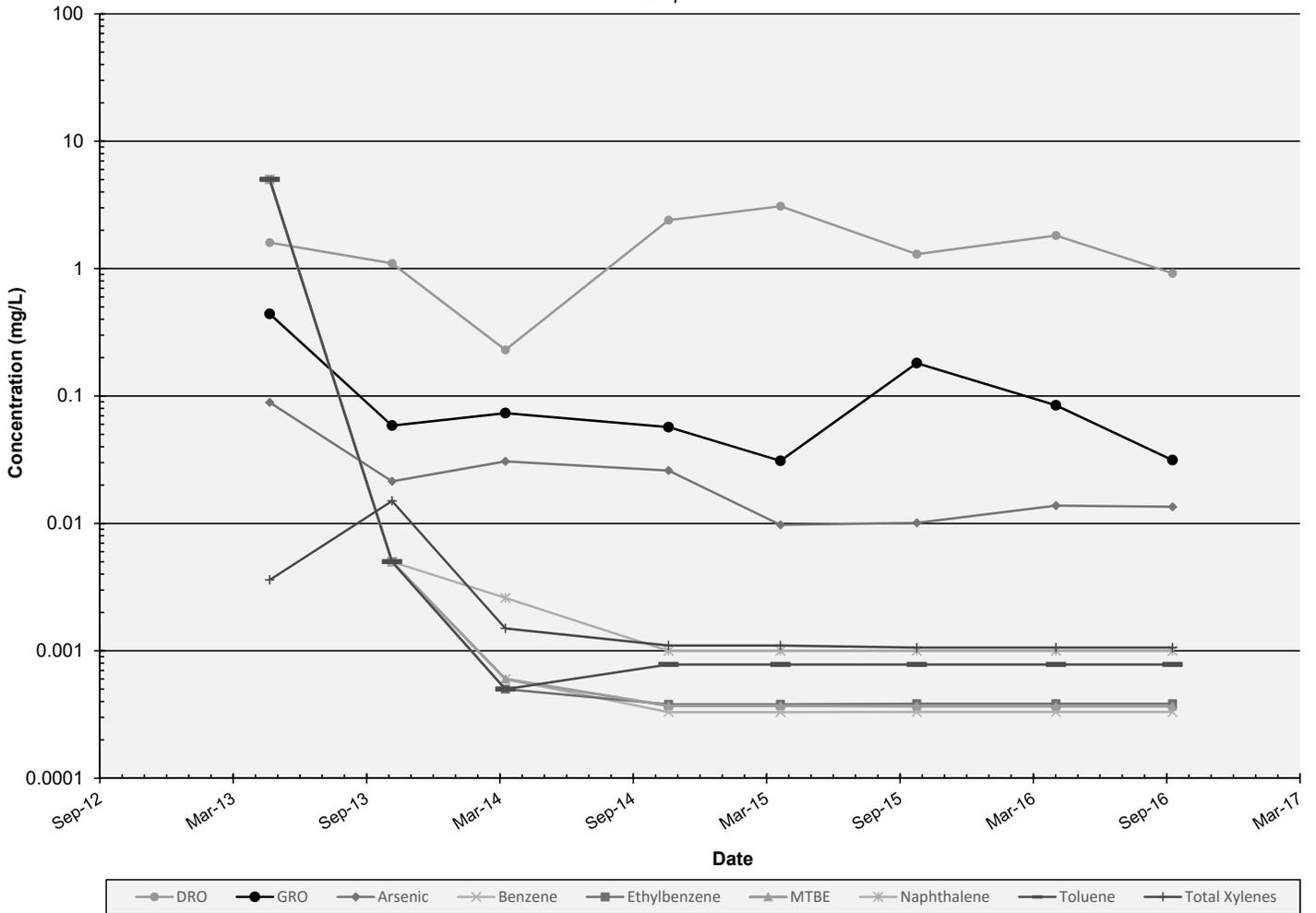
MW-83: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



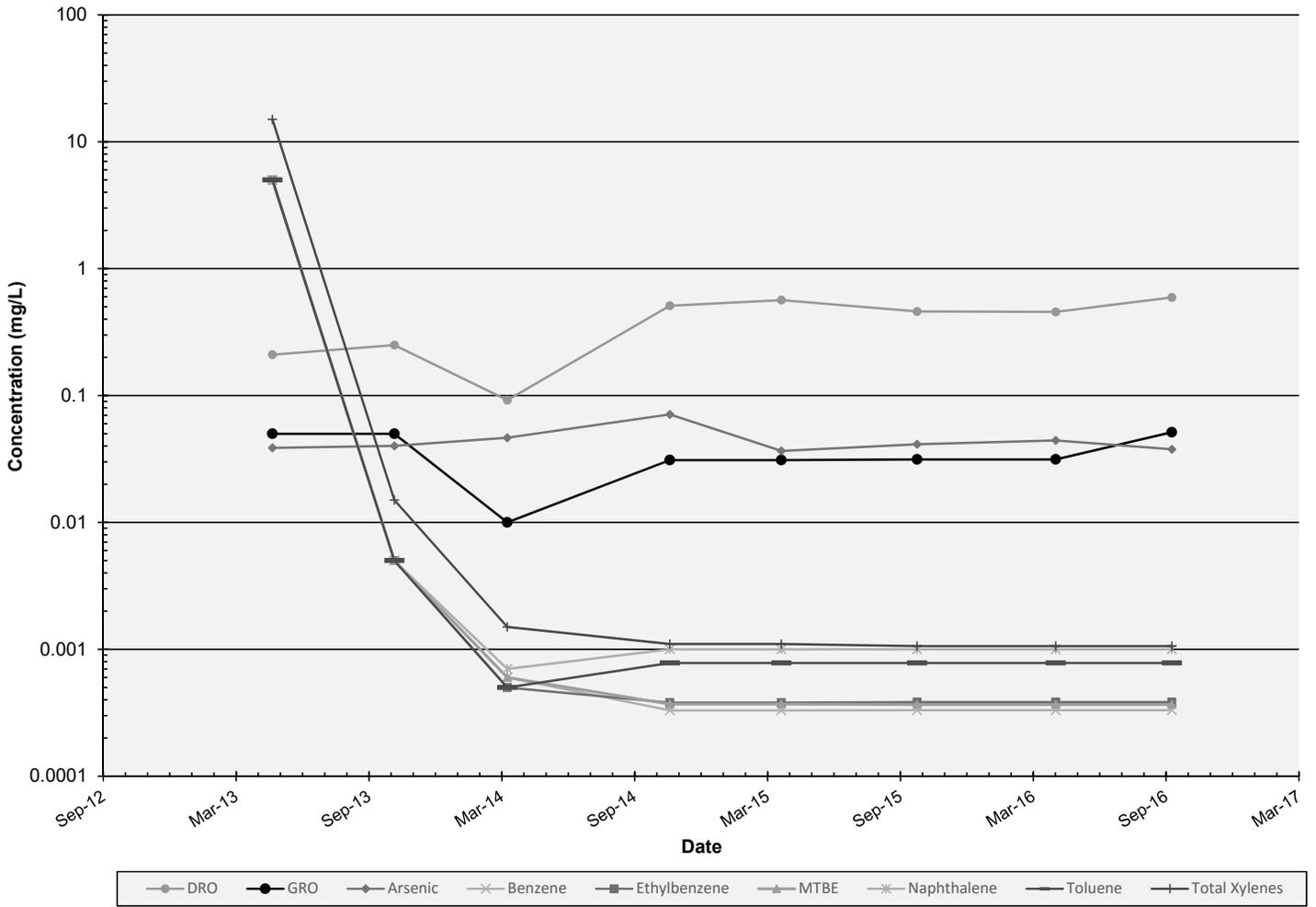
MW-84: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



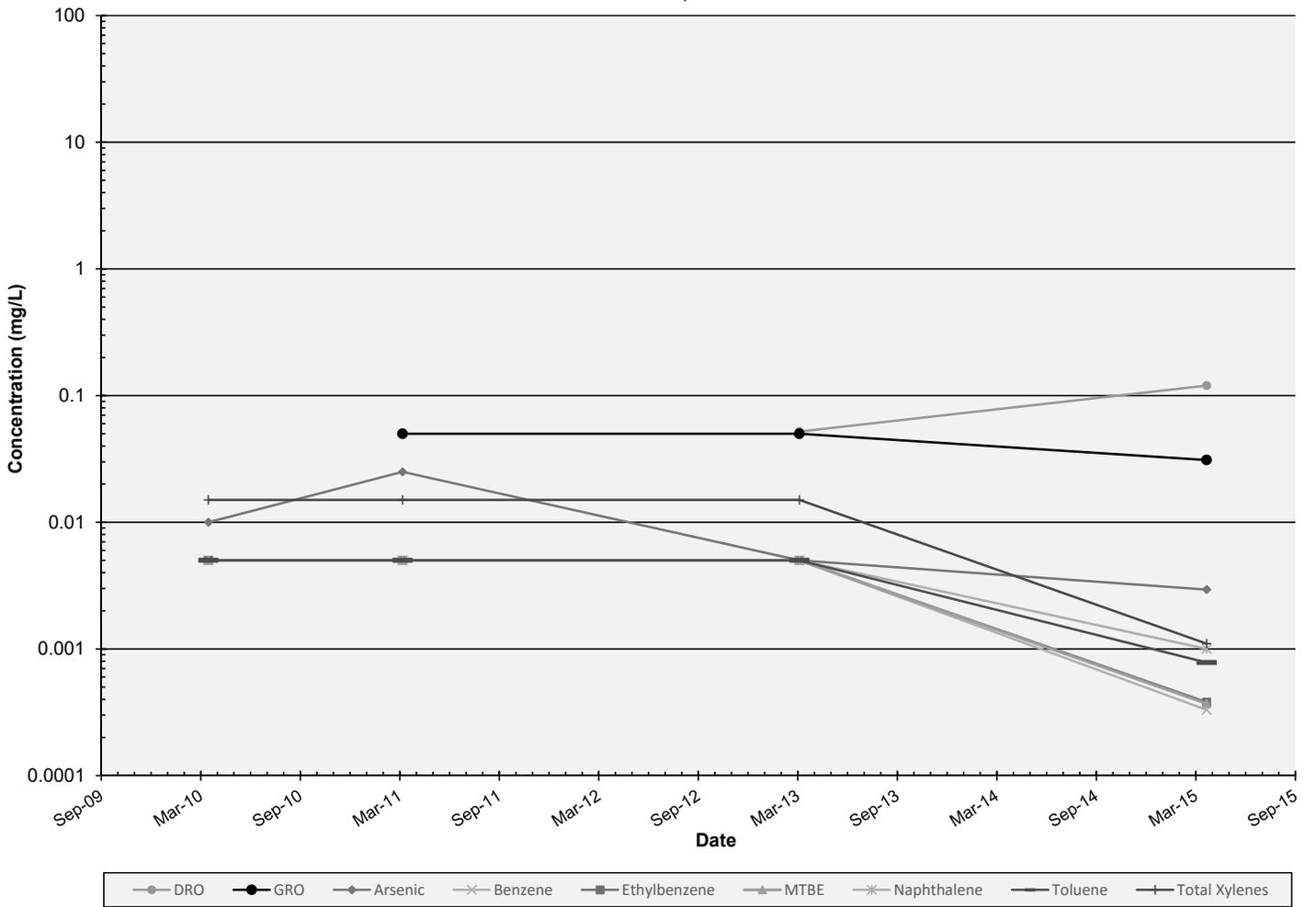
MW-120: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



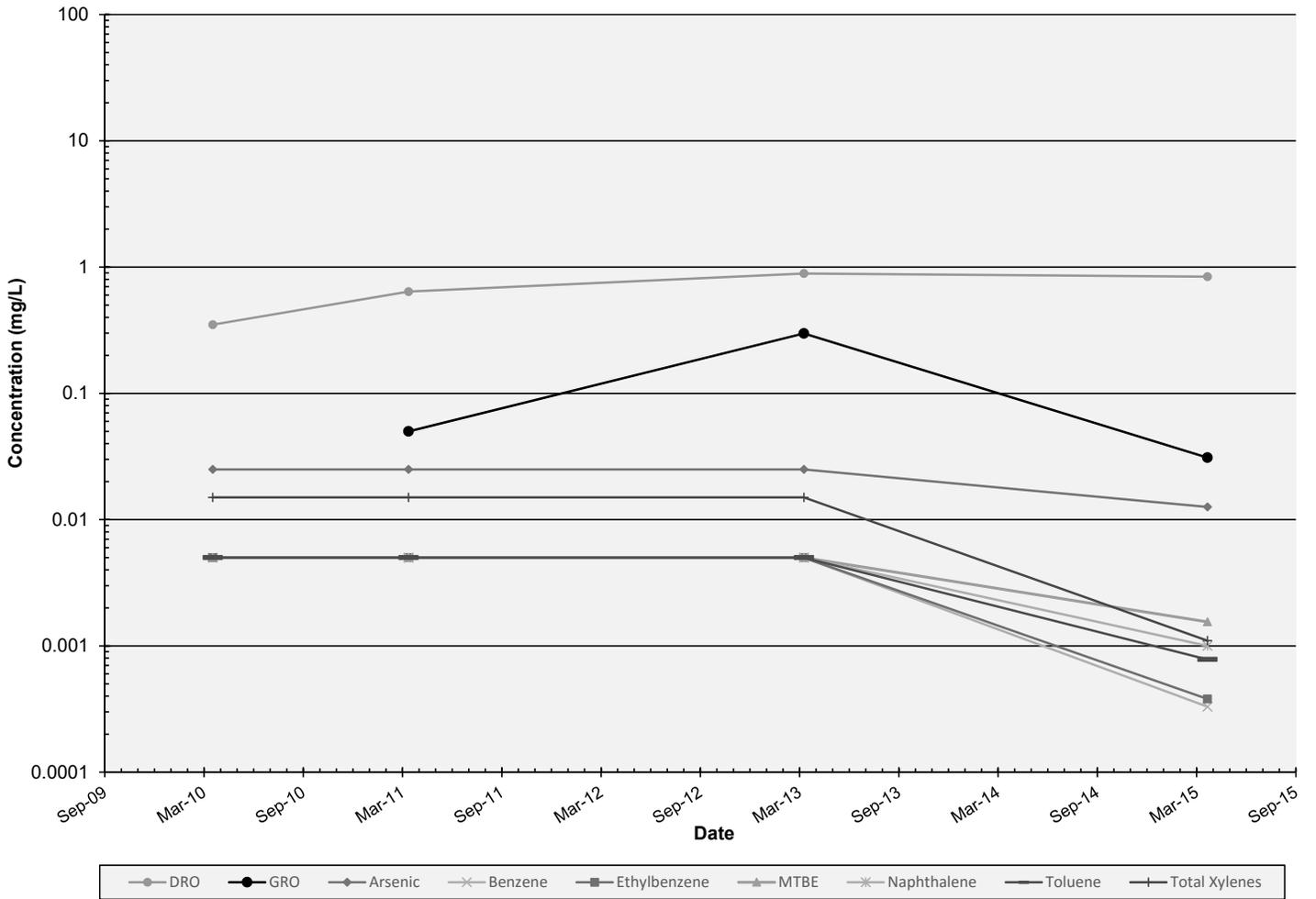
MW-121: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



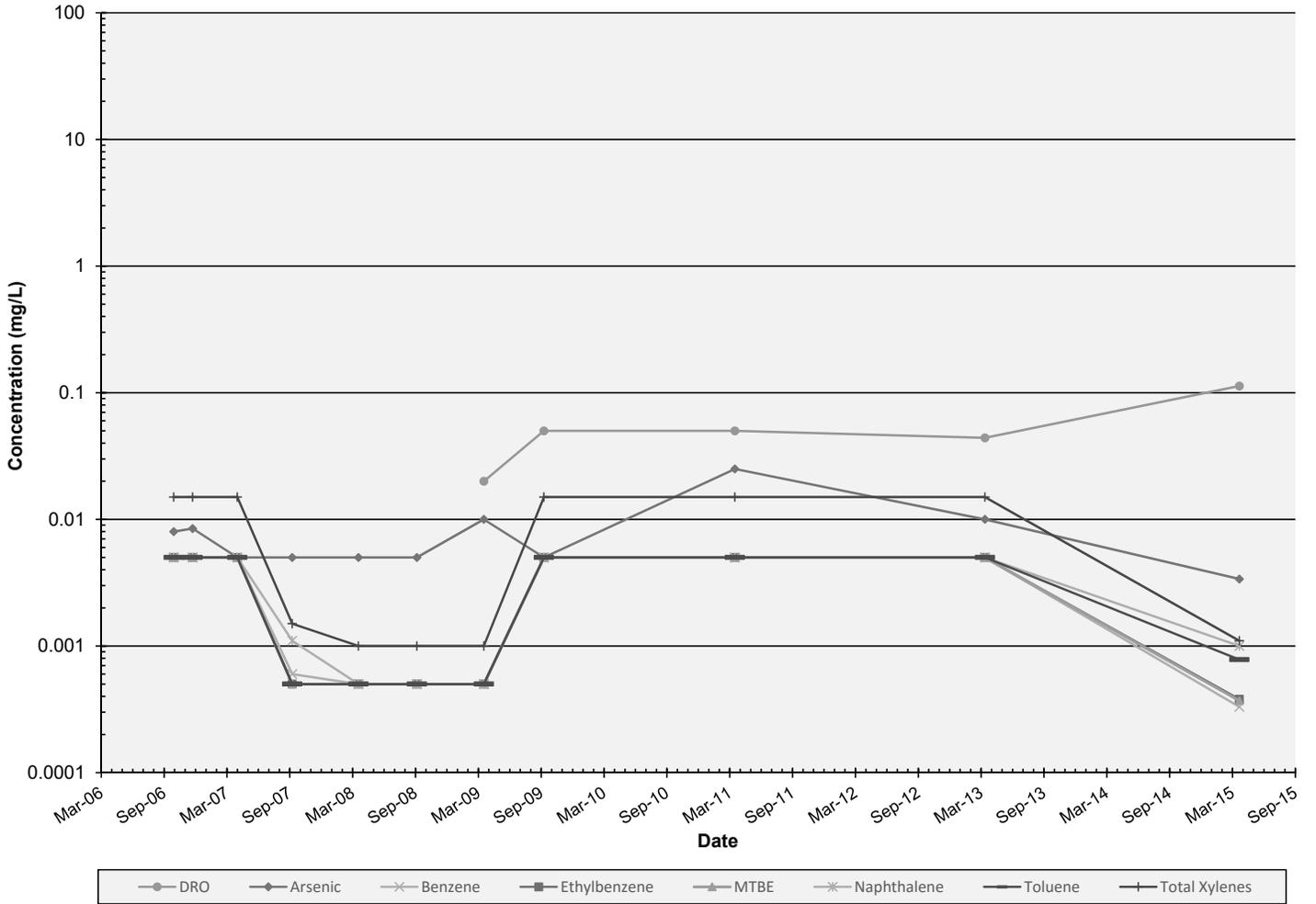
OCD-7B: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



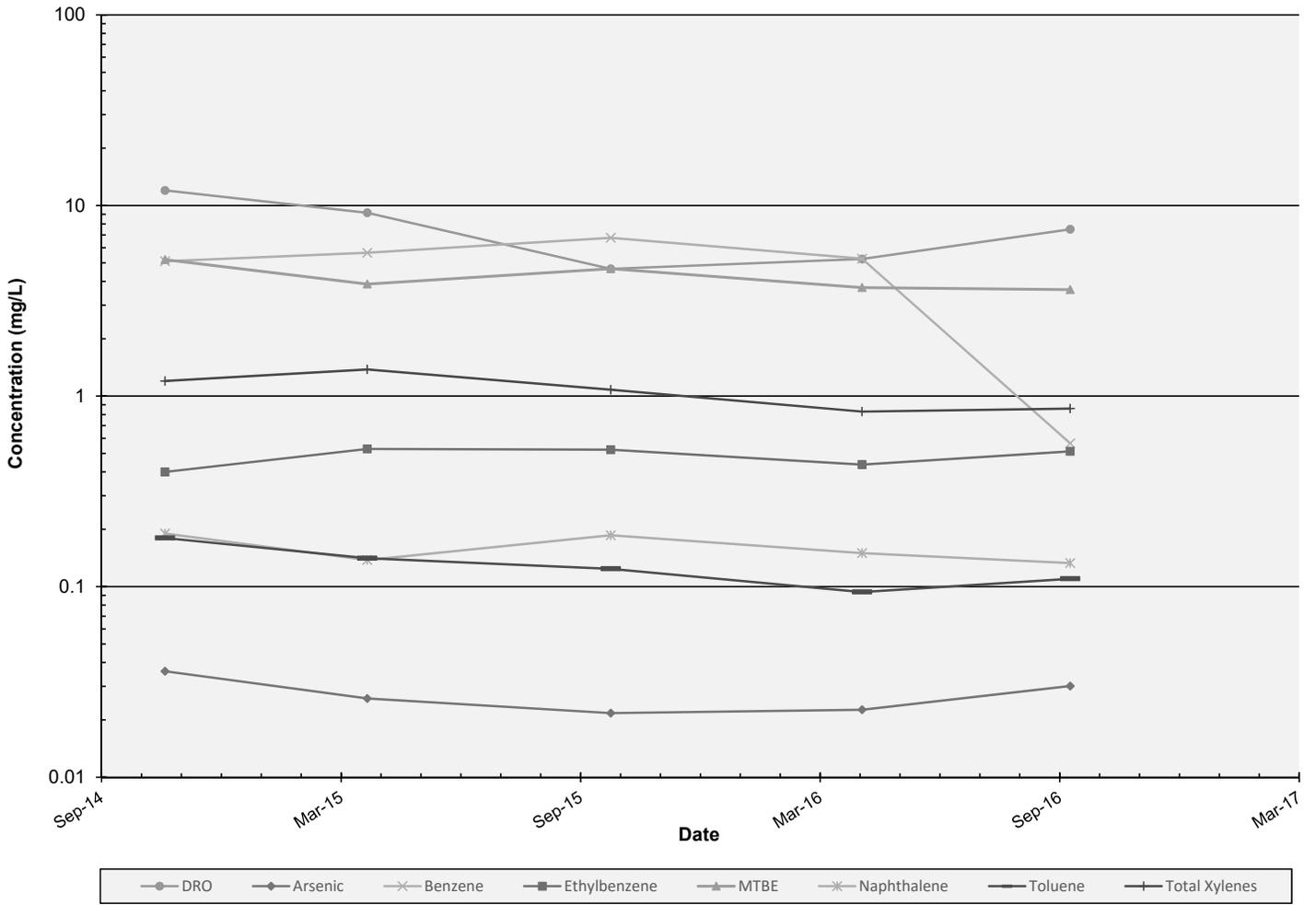
OCD-8B: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Evaporation Ponds



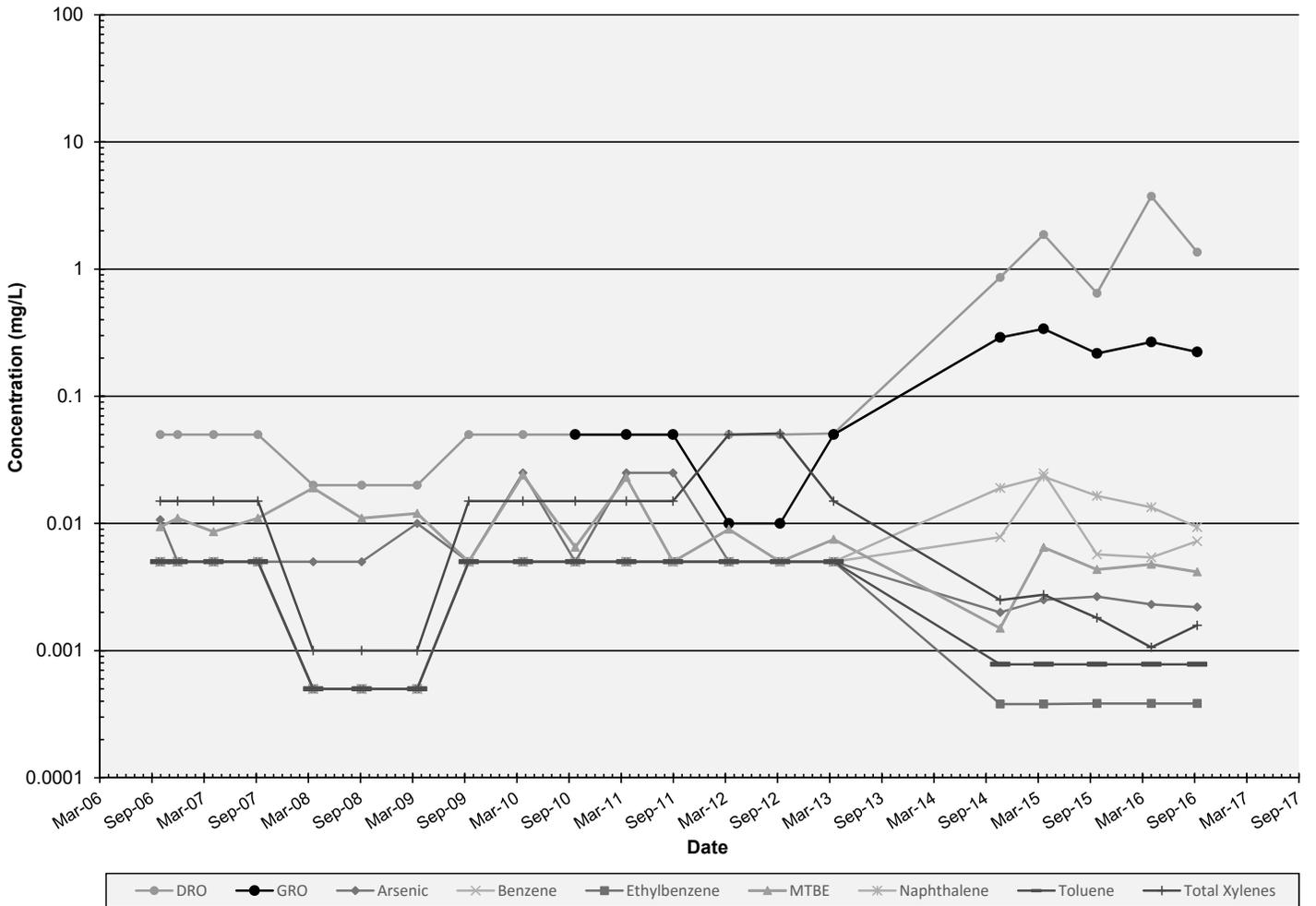
KWB-1C: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



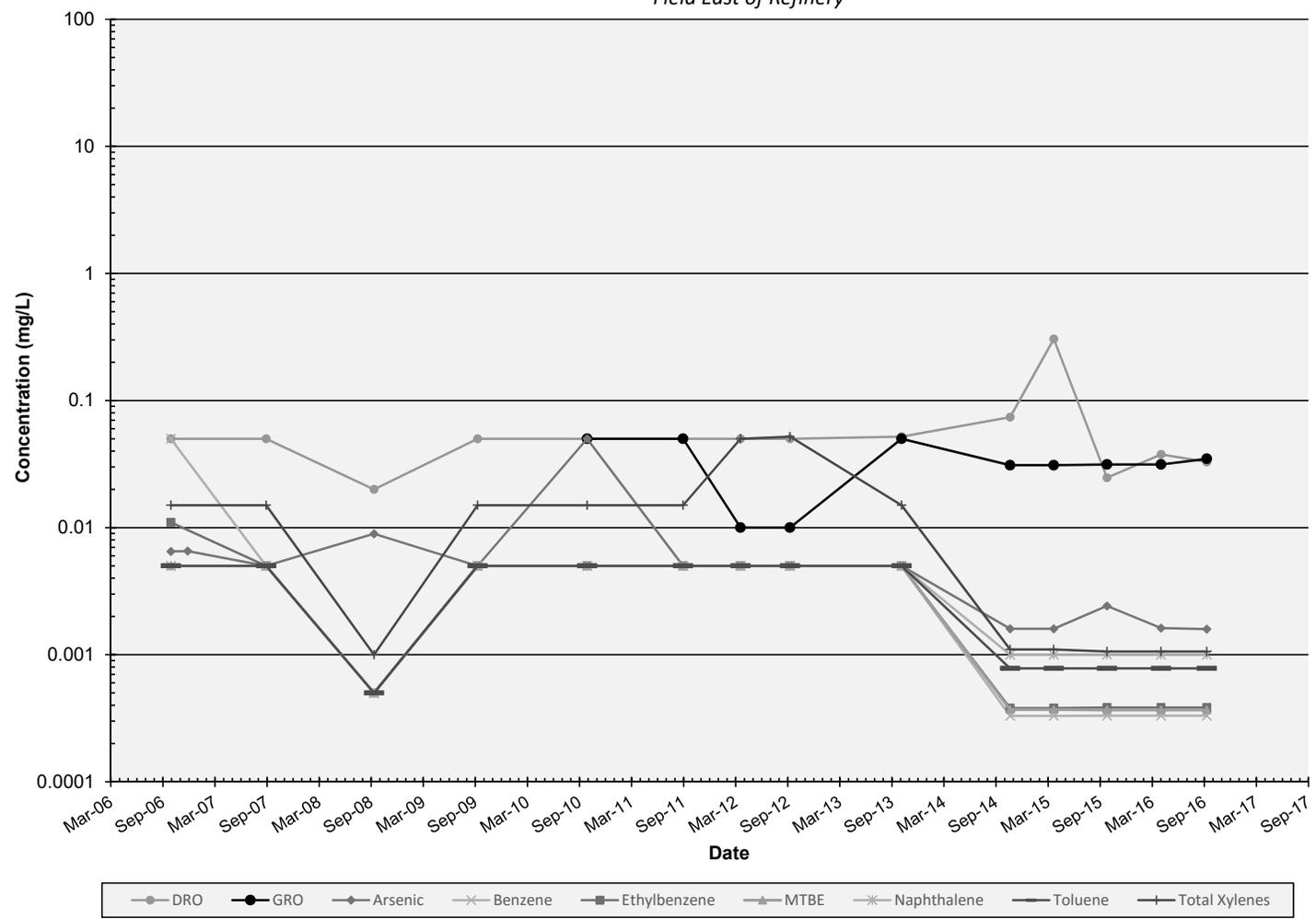
KWB-10R: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



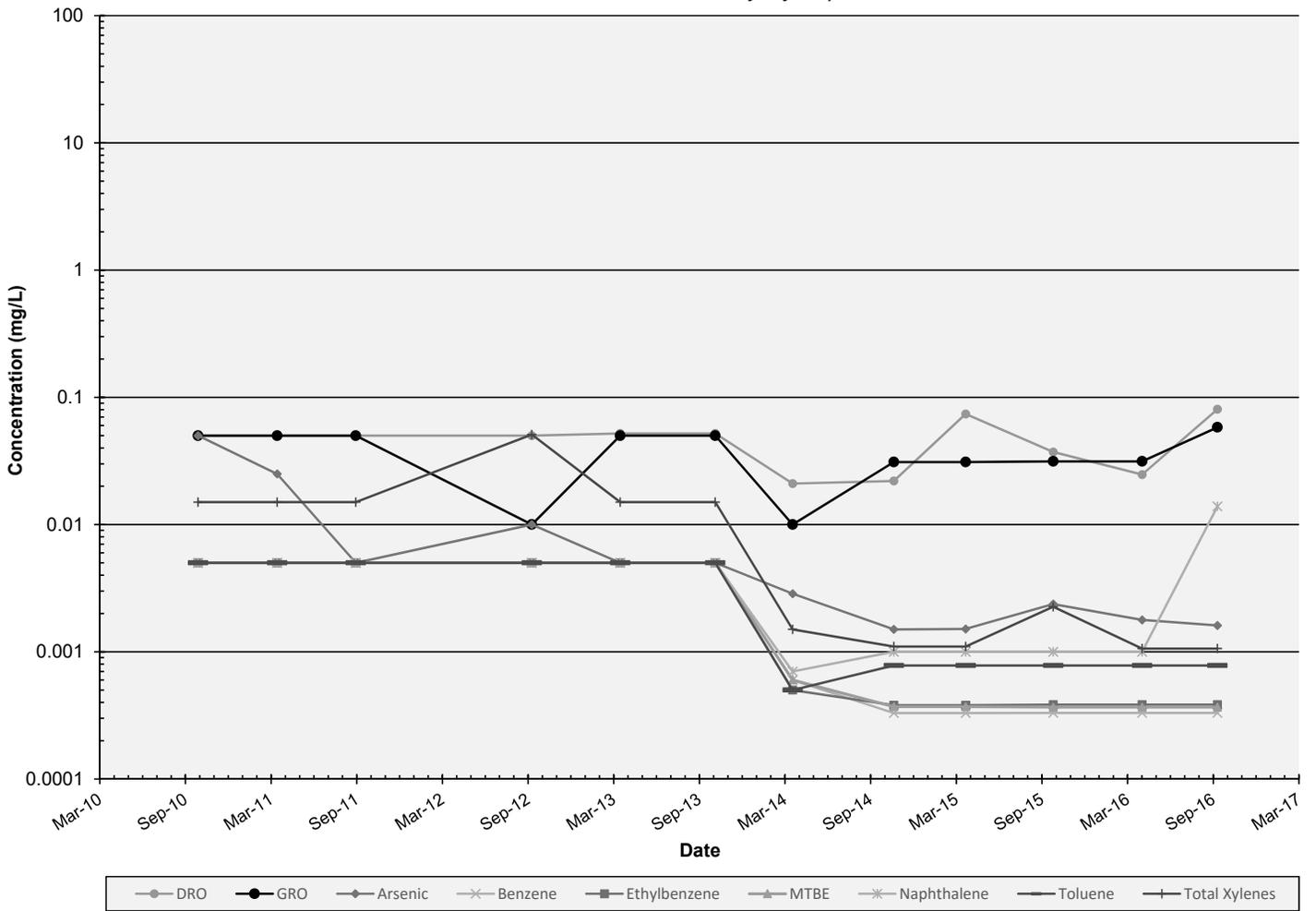
KWB-11A: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



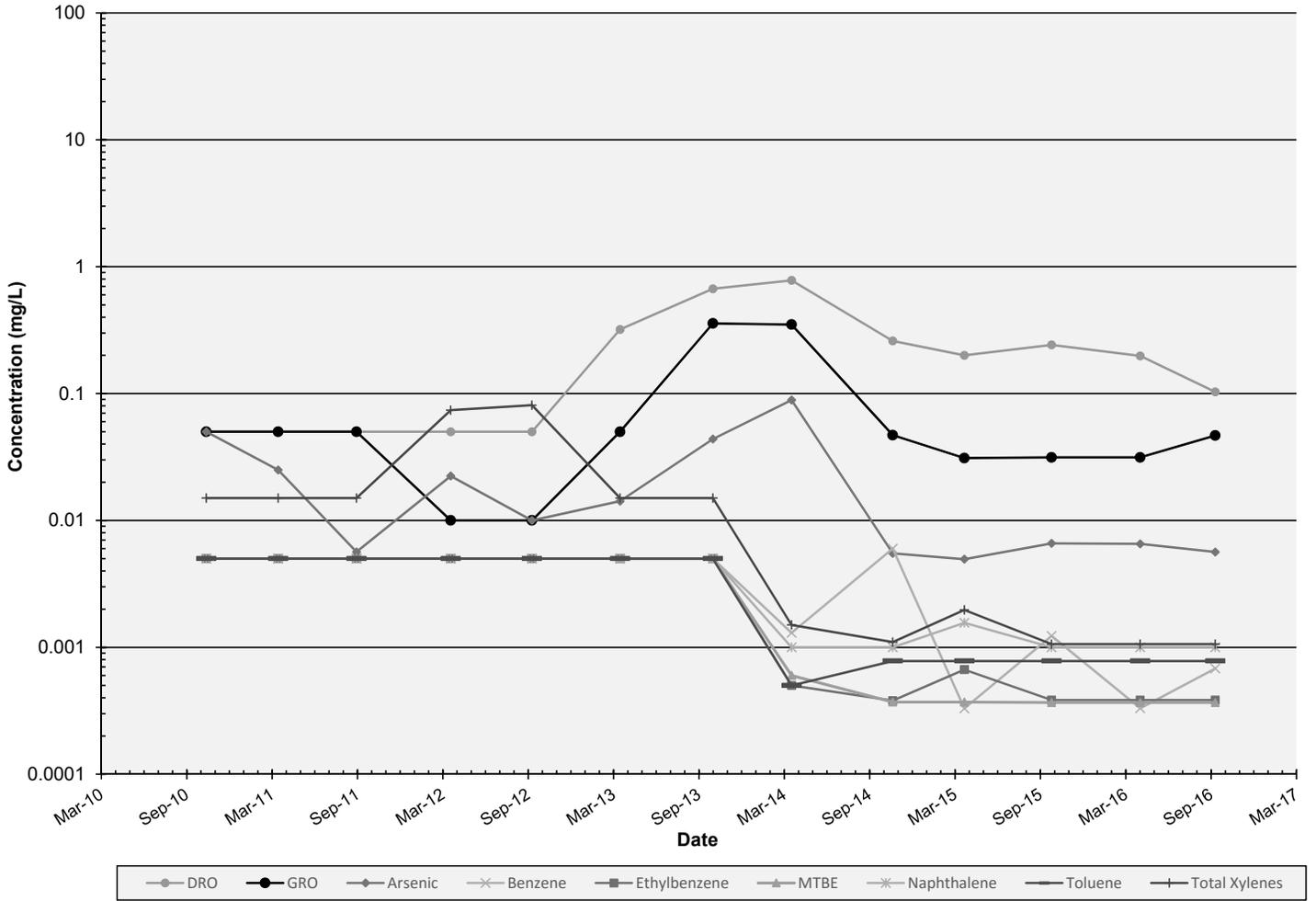
KWB-12A: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



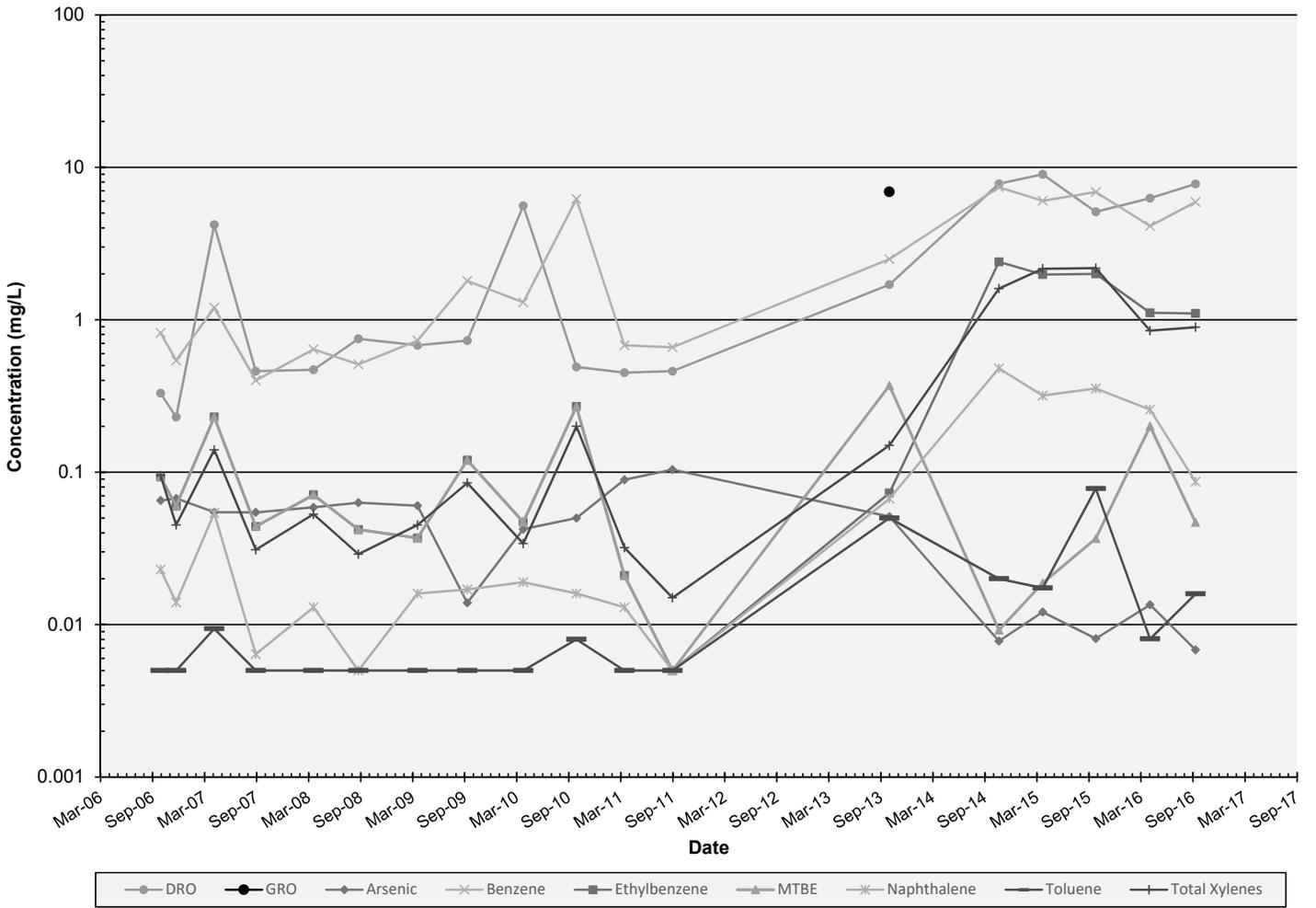
KWB-12B: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



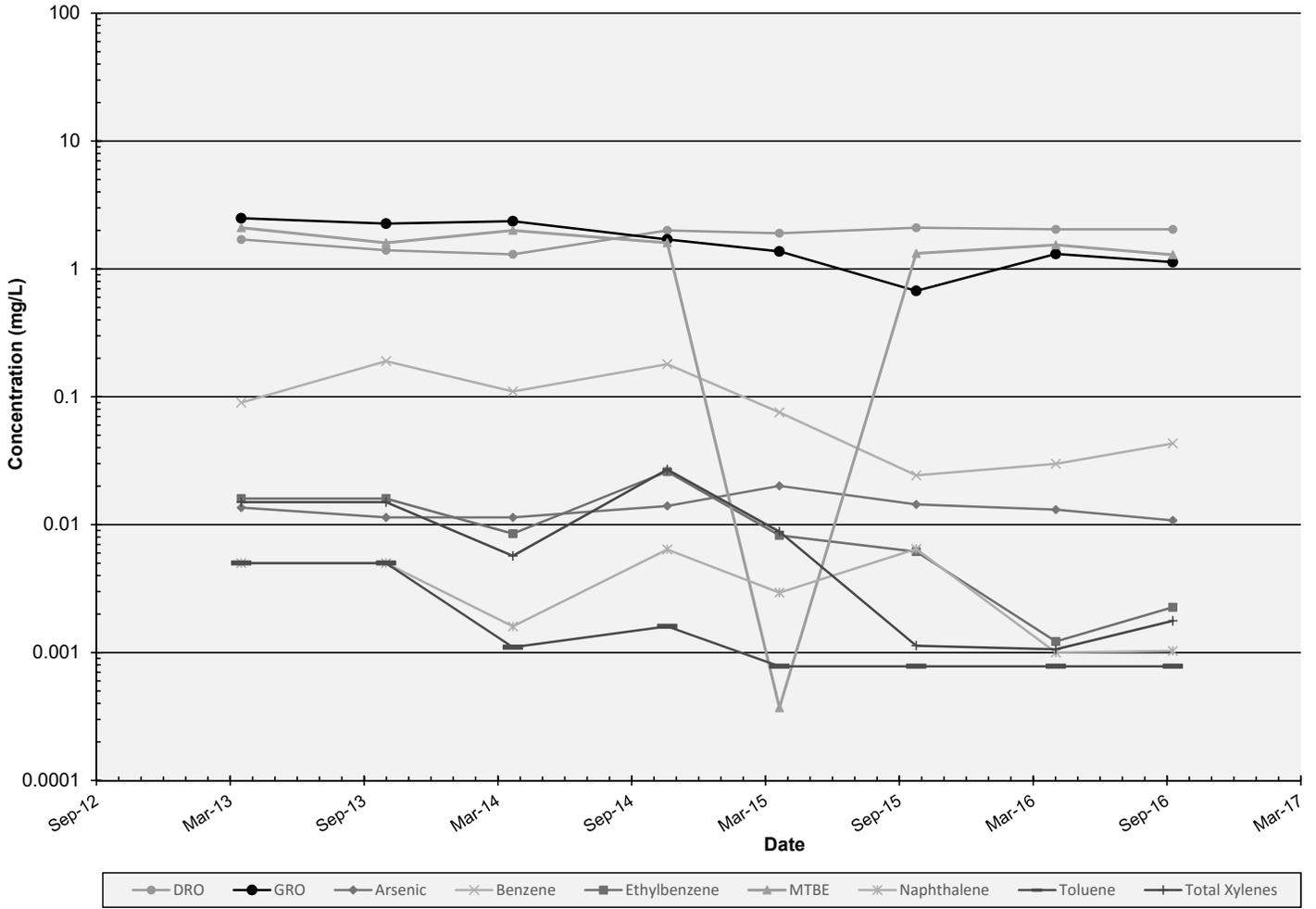
MW-57: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



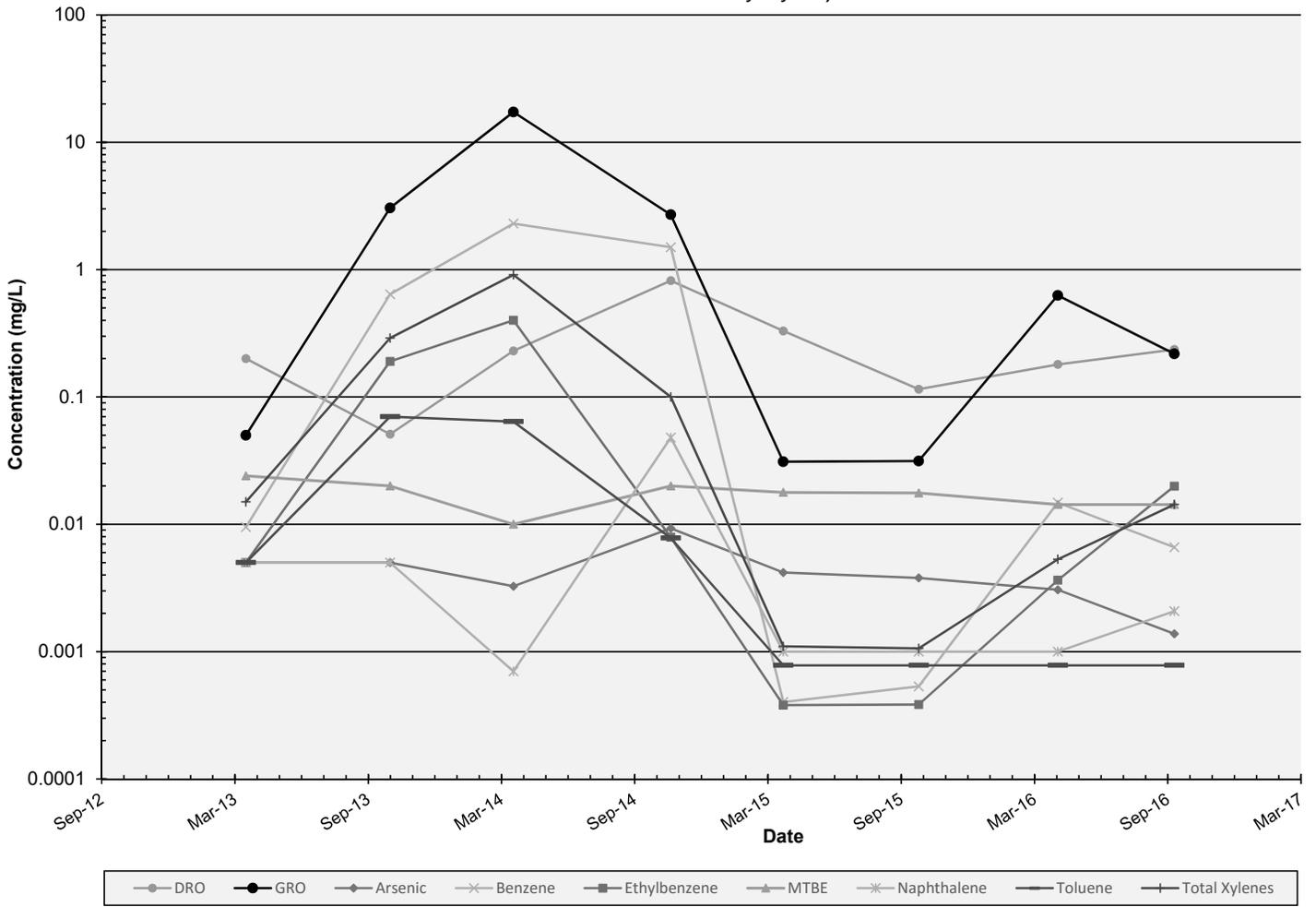
MW-58: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



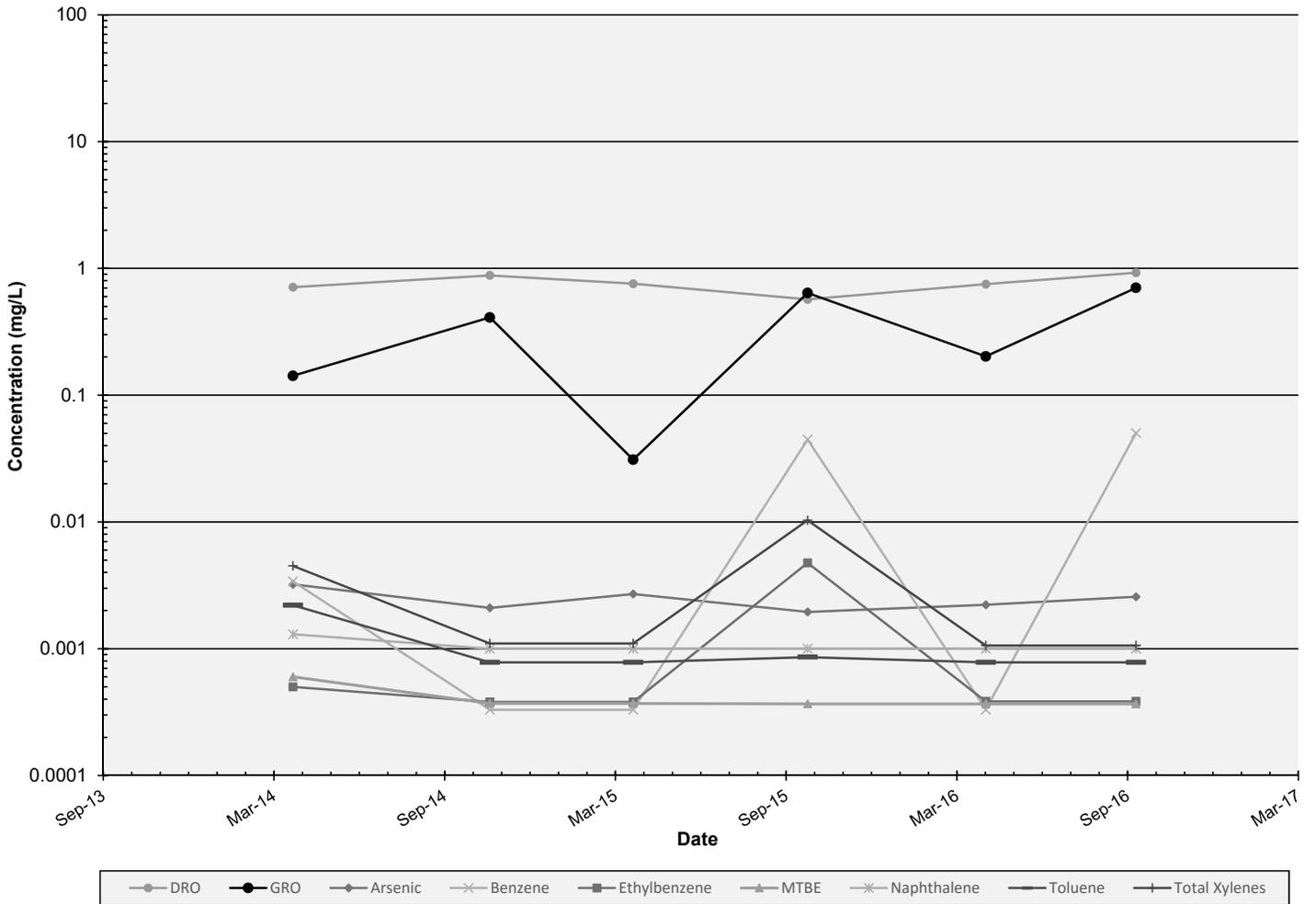
MW-111: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



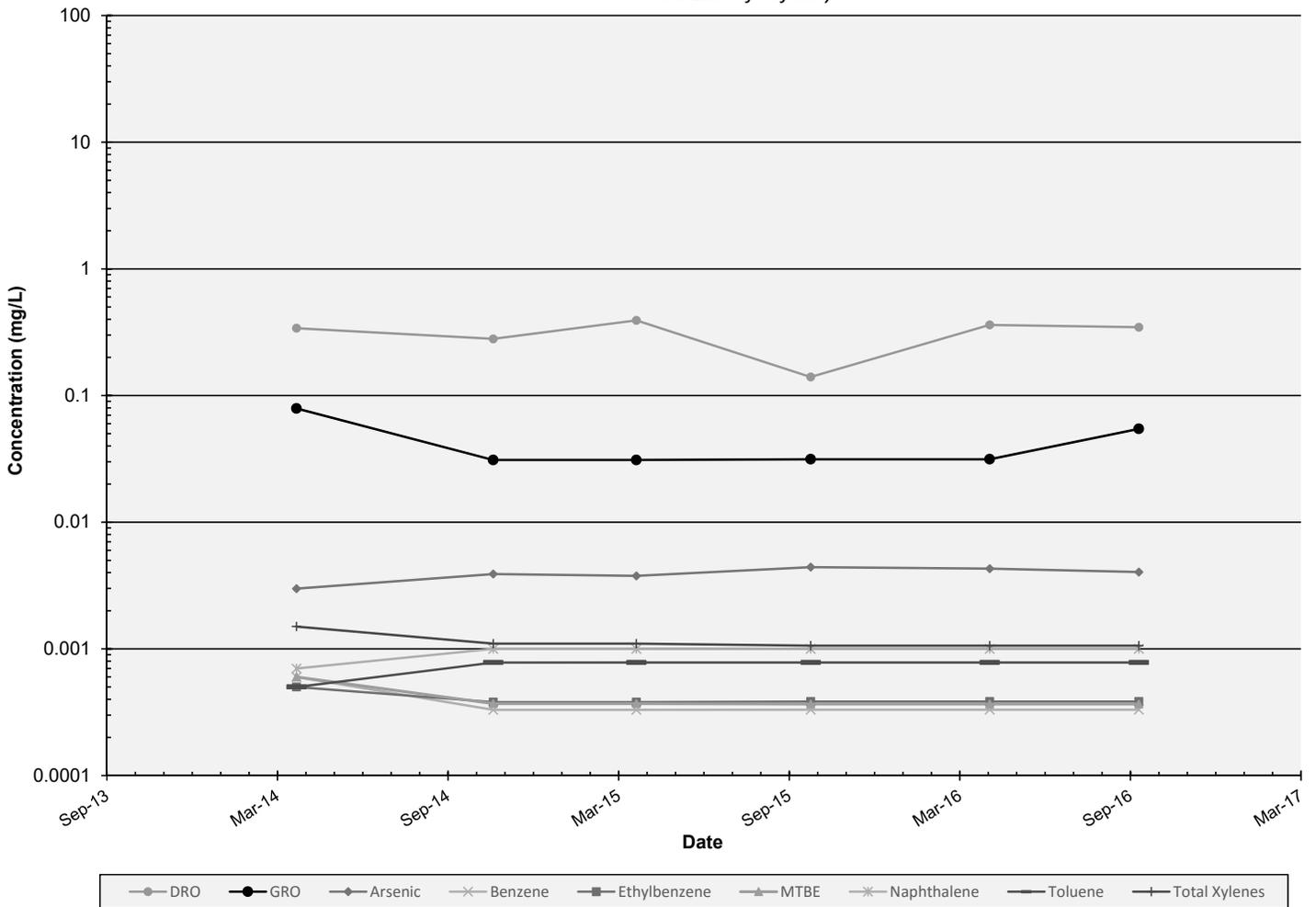
MW-113: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



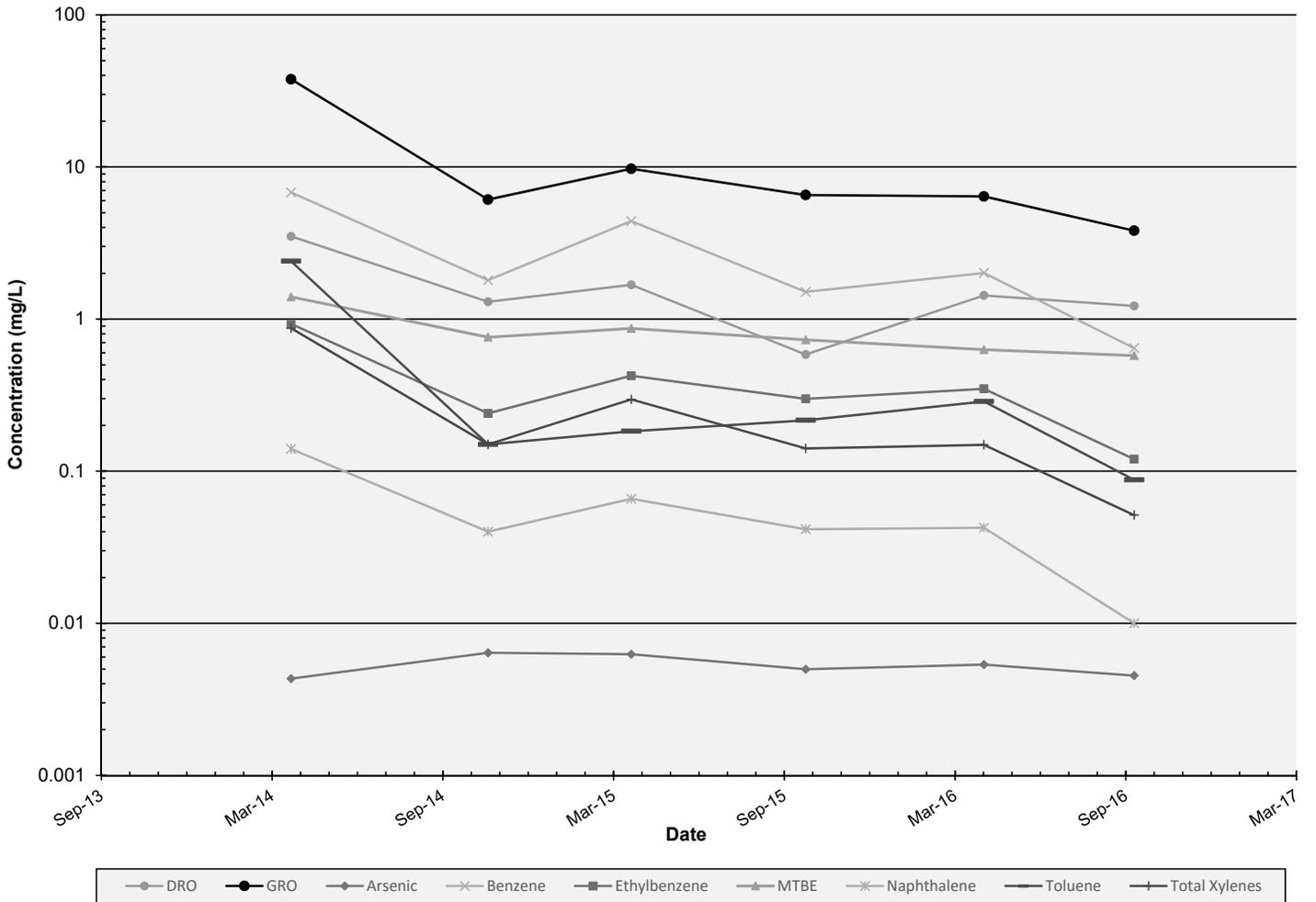
MW-126A: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



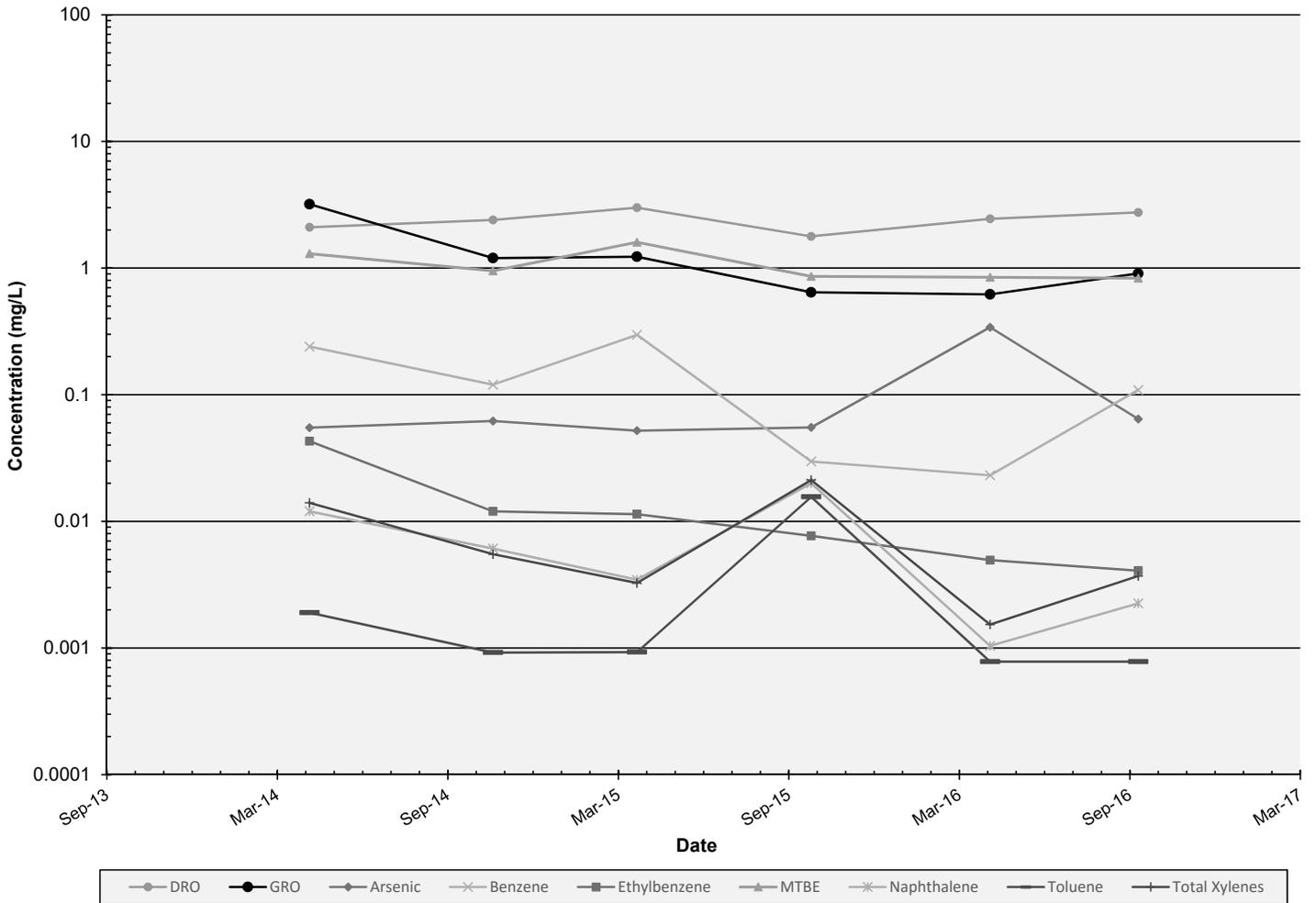
MW-126B: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



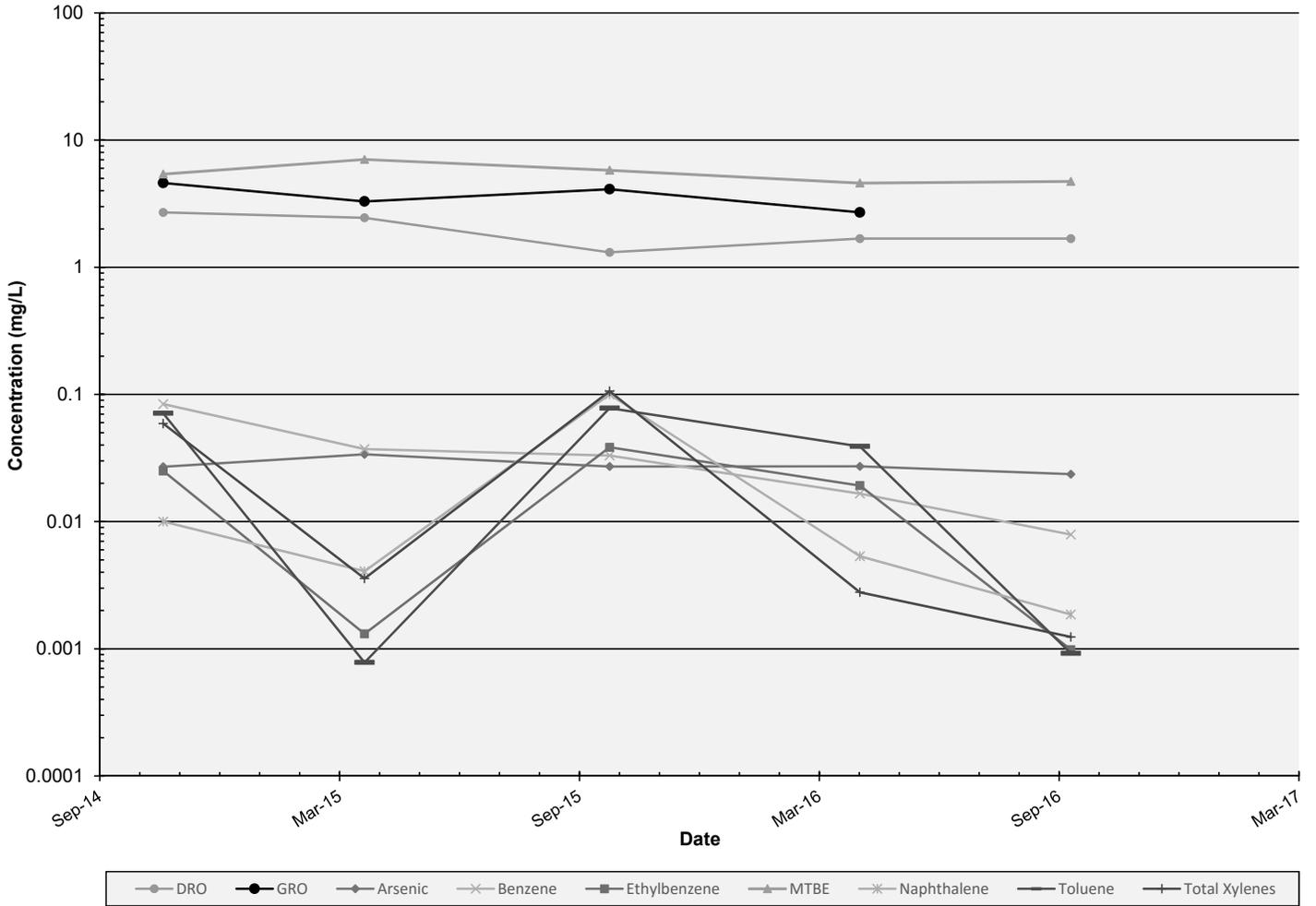
MW-127: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



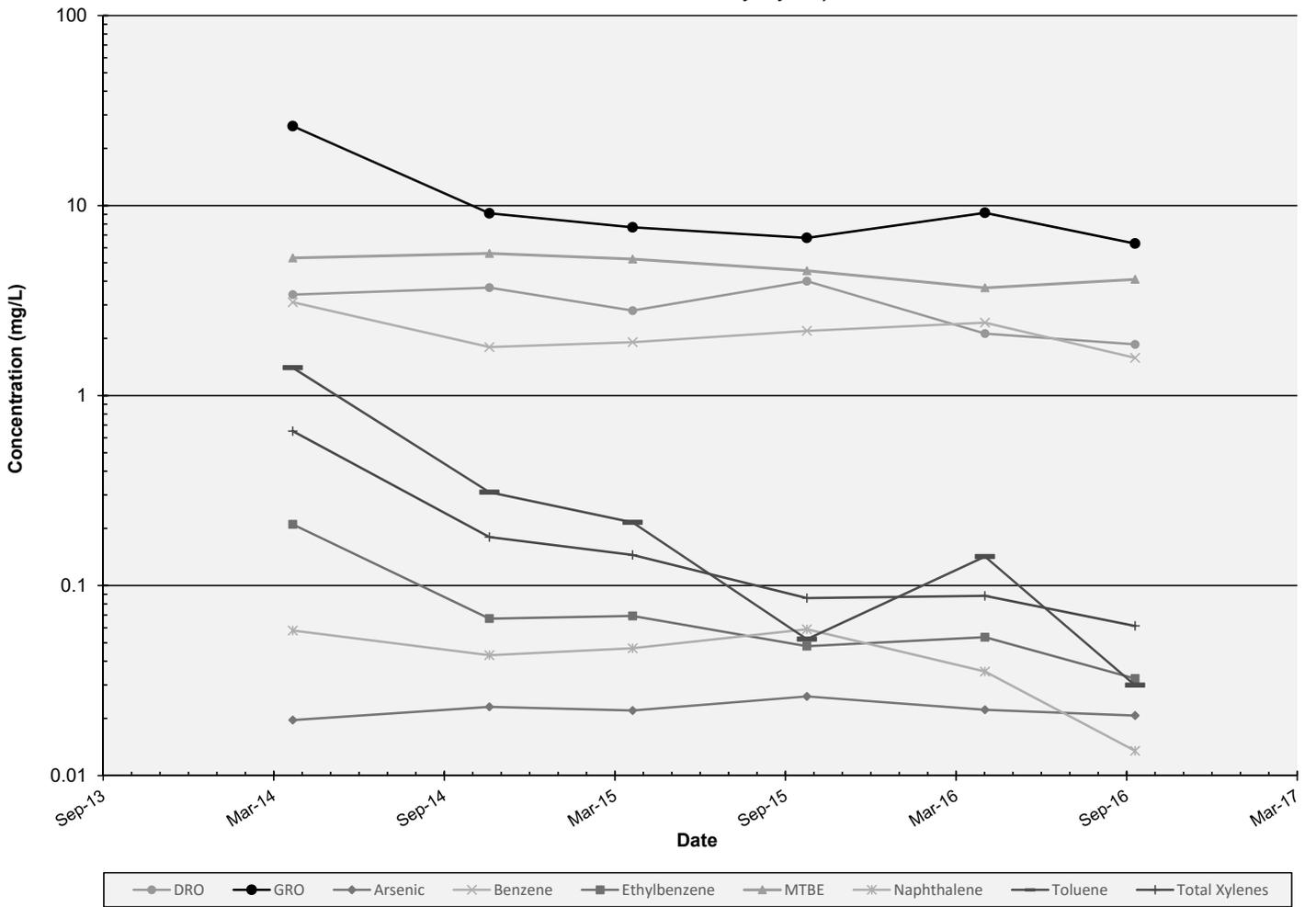
MW-128: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



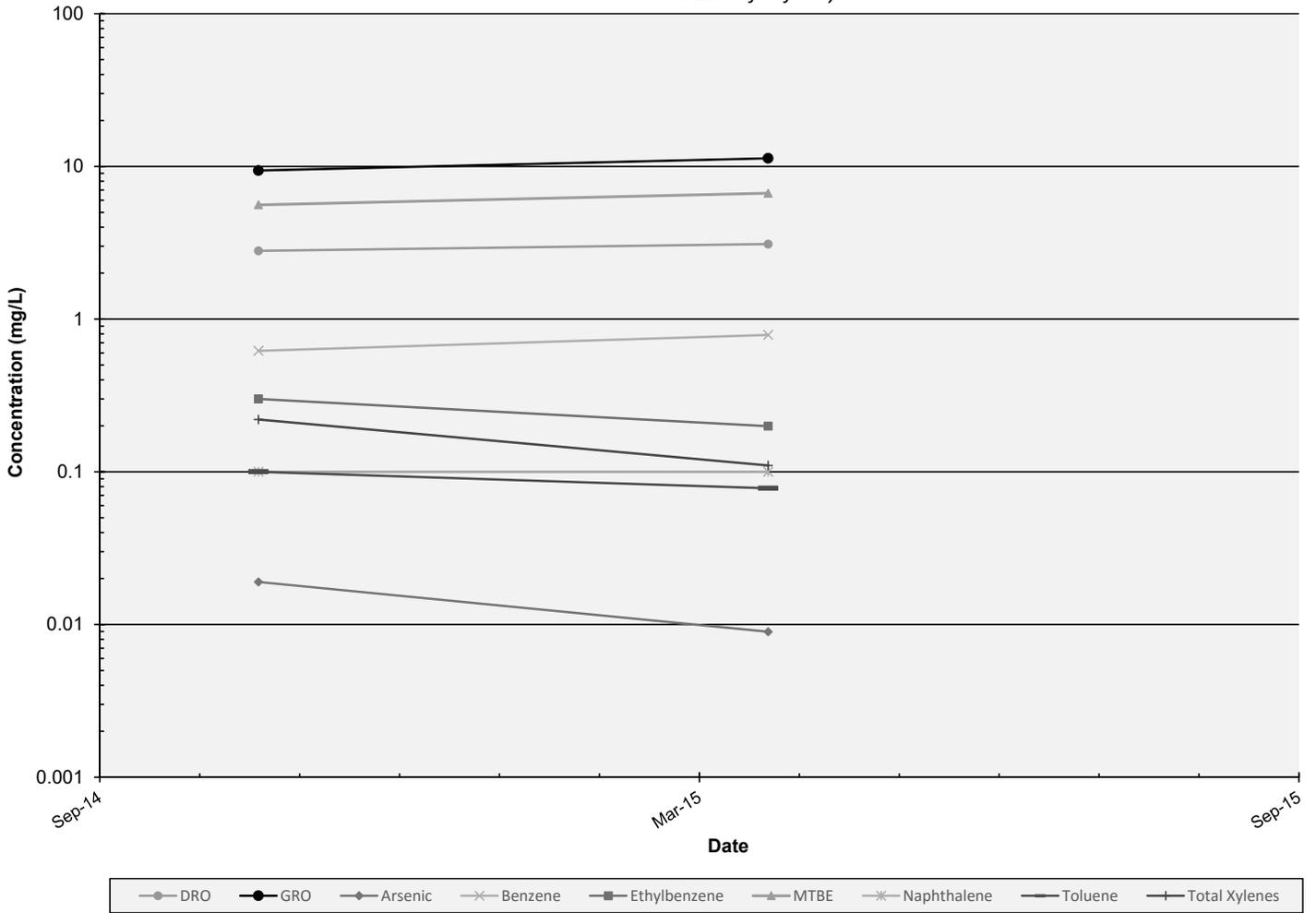
MW-129: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



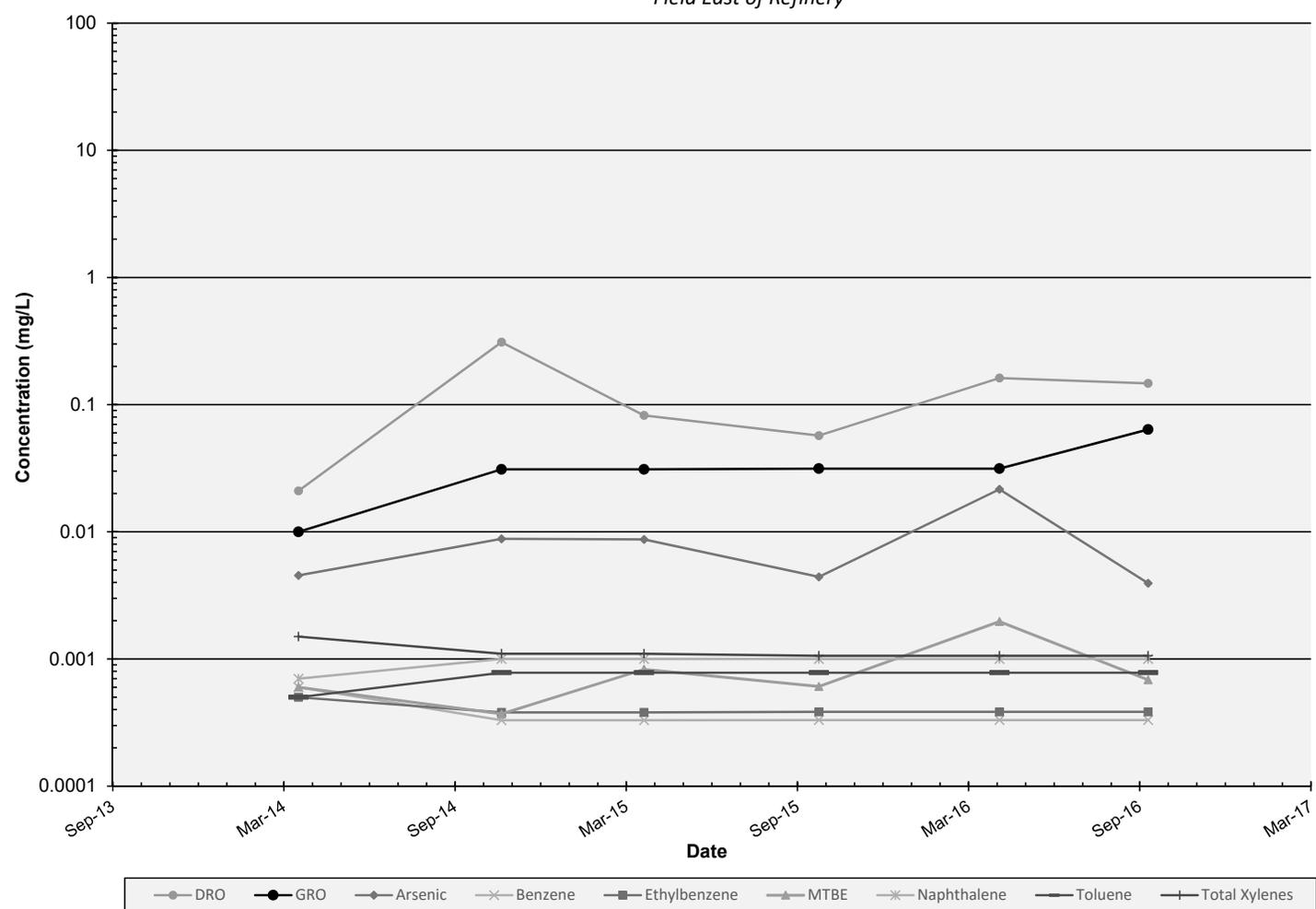
MW-131: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



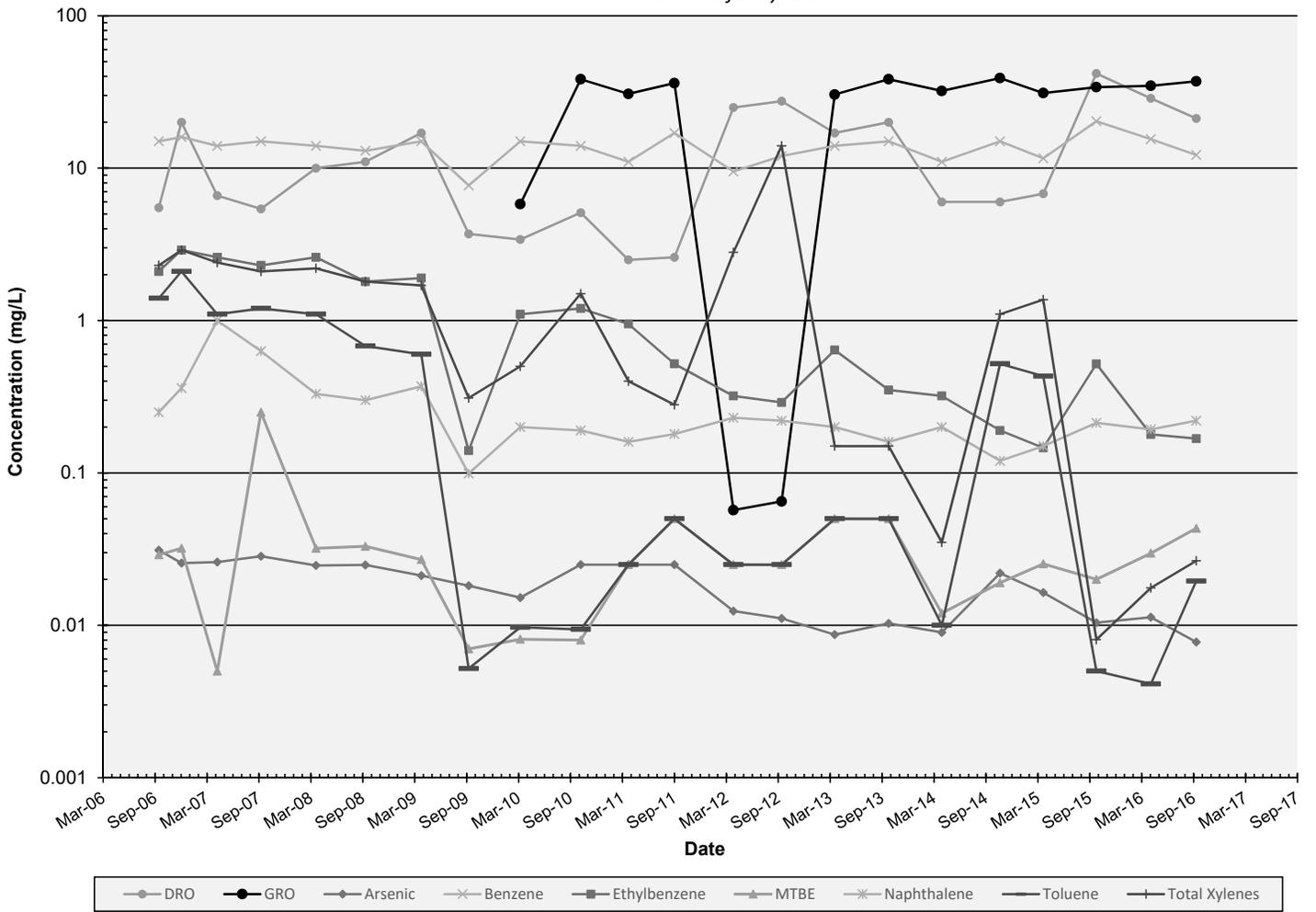
MW-133: COC Concentrations
HollyFrontier Navajo Refining LLC - Artesia Refinery
Field East of Refinery



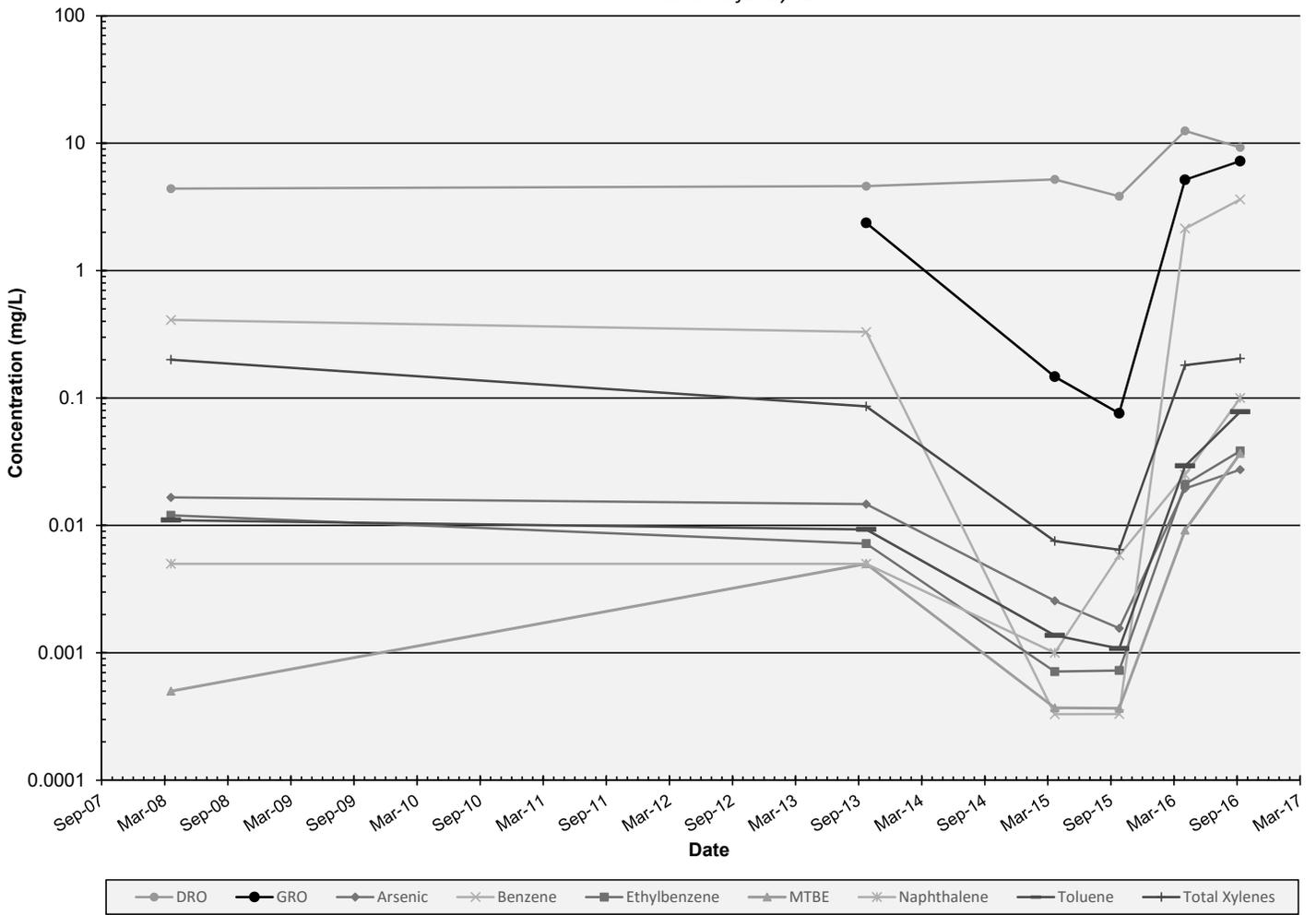
MW-135: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Field East of Refinery



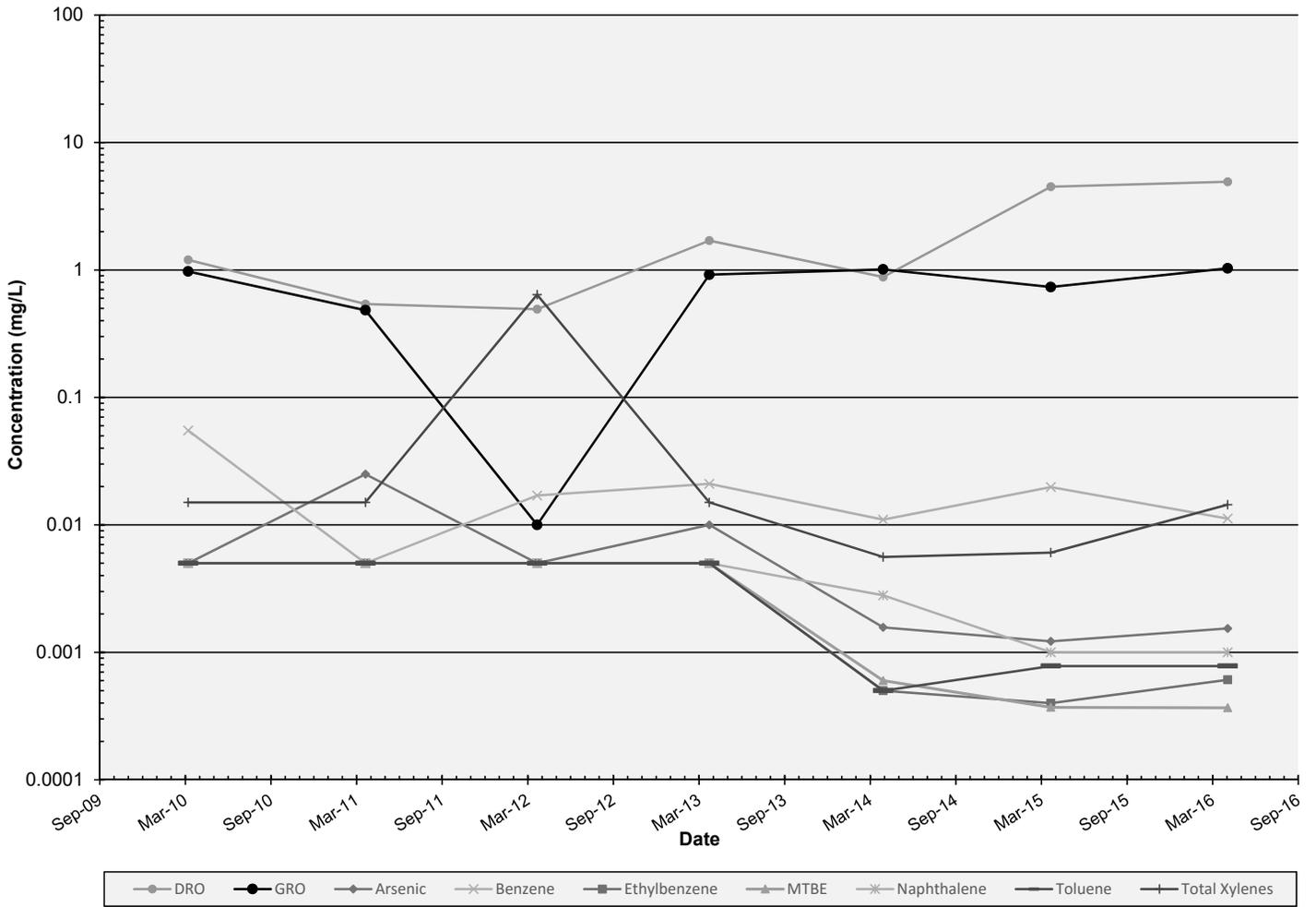
MW-23: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



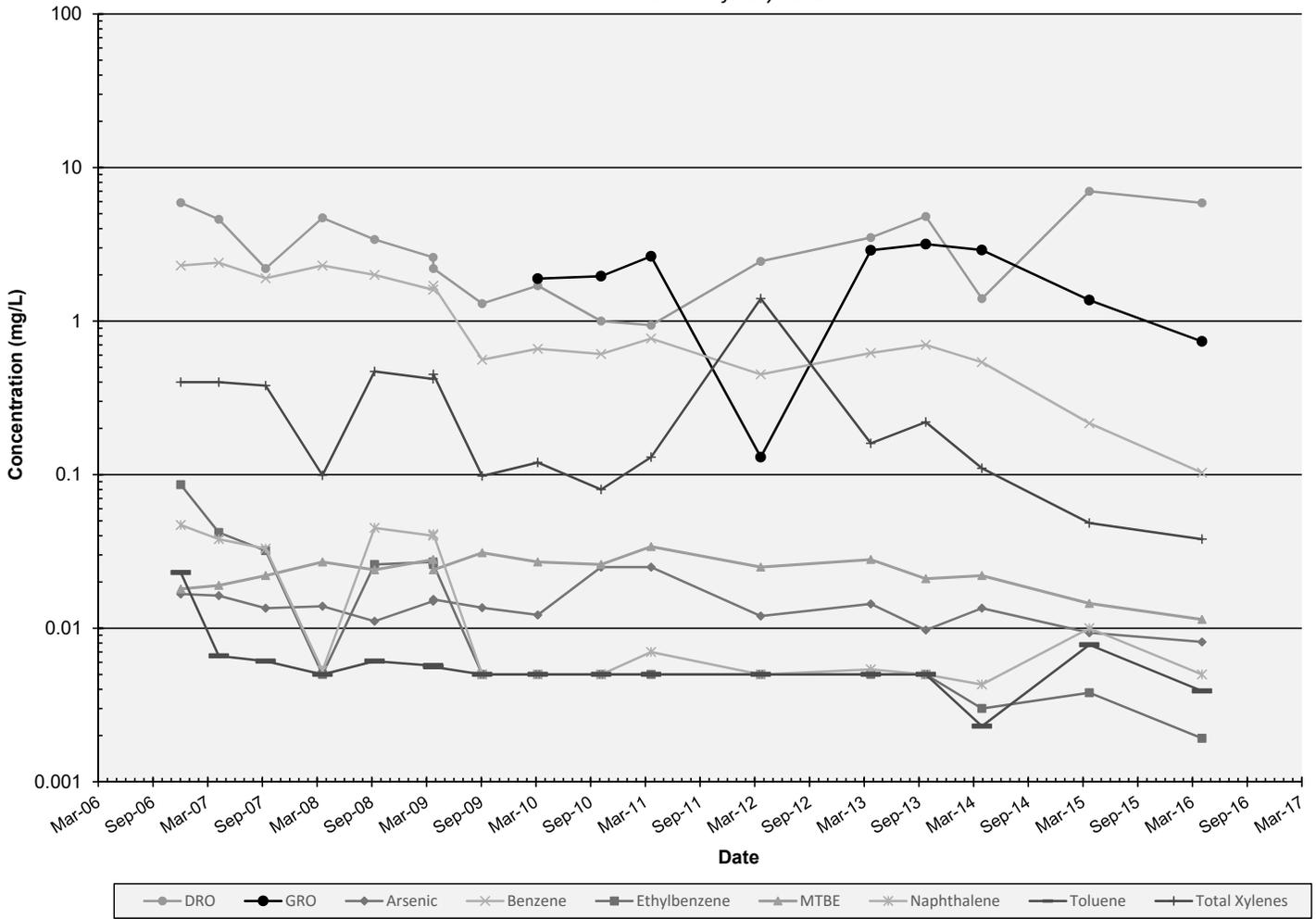
MW-39: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



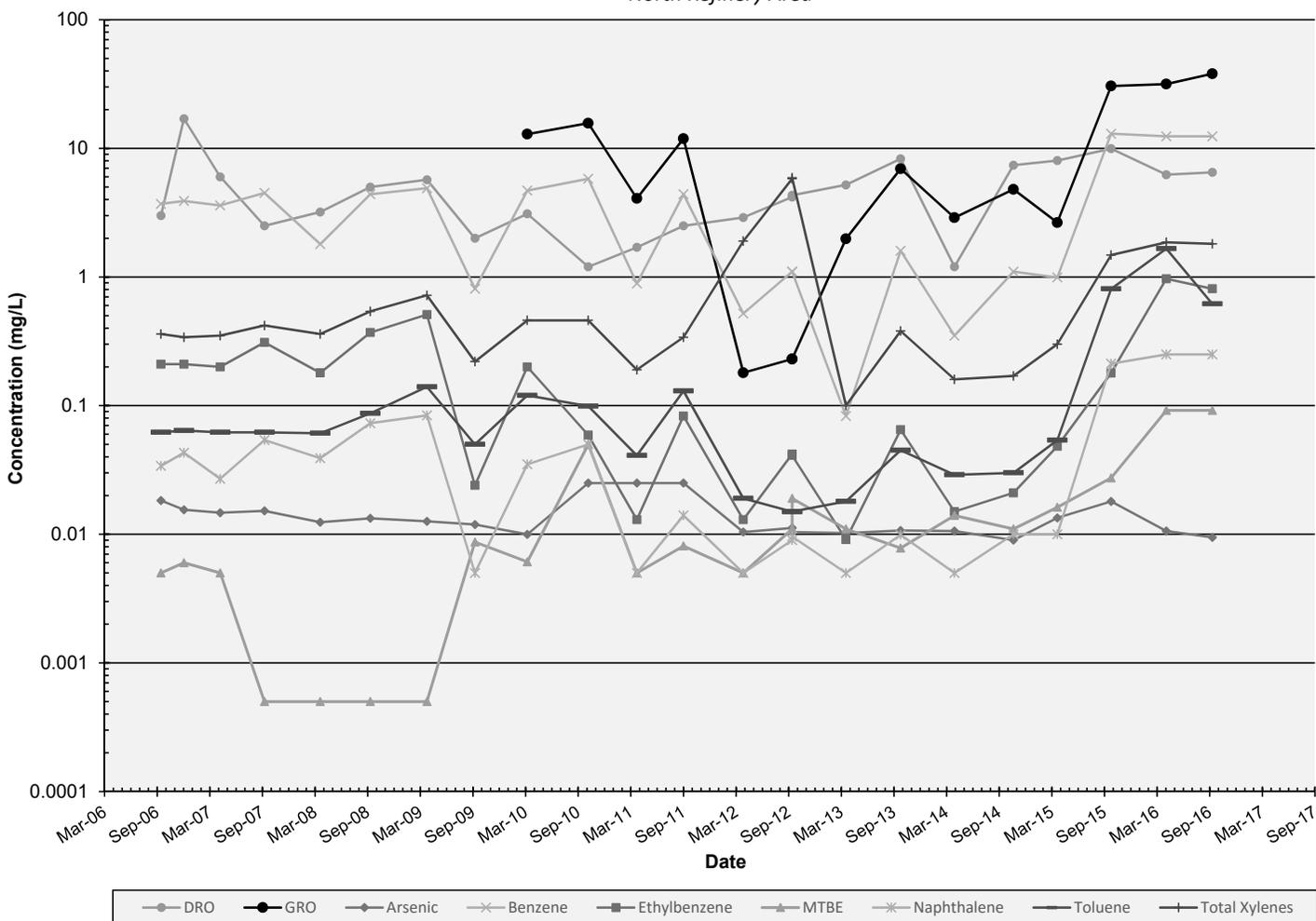
MW-40: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



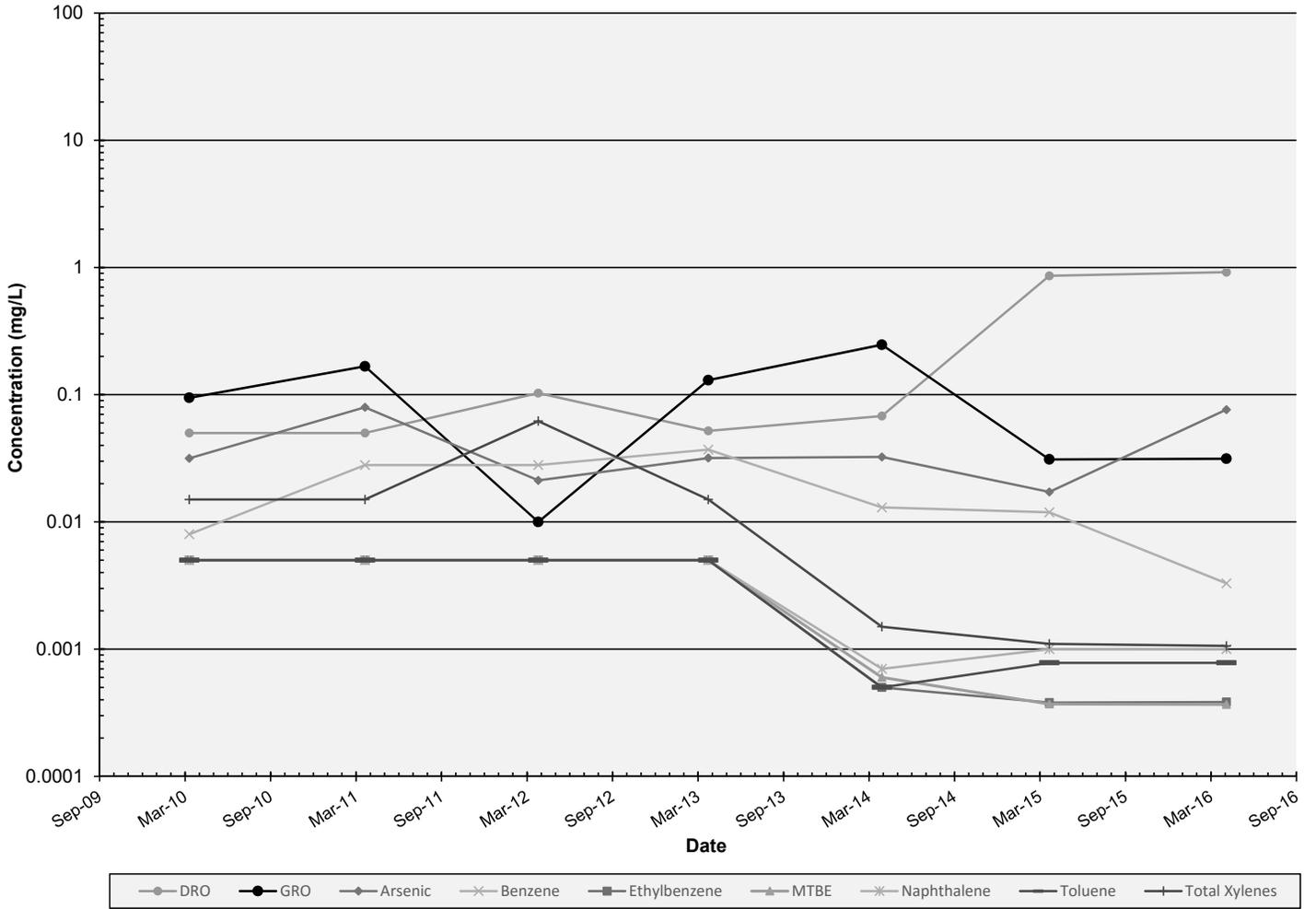
MW-42: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



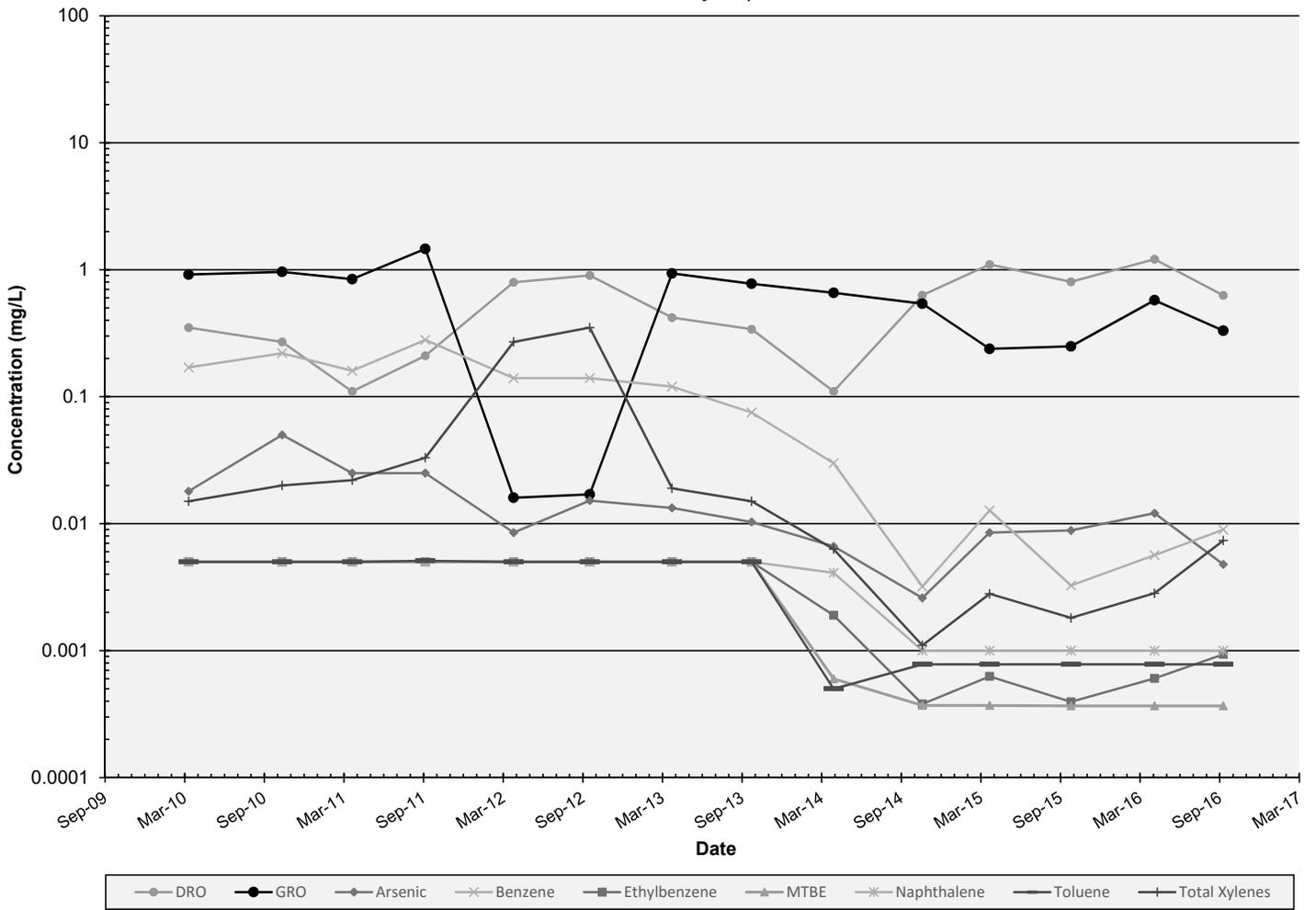
MW-43: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



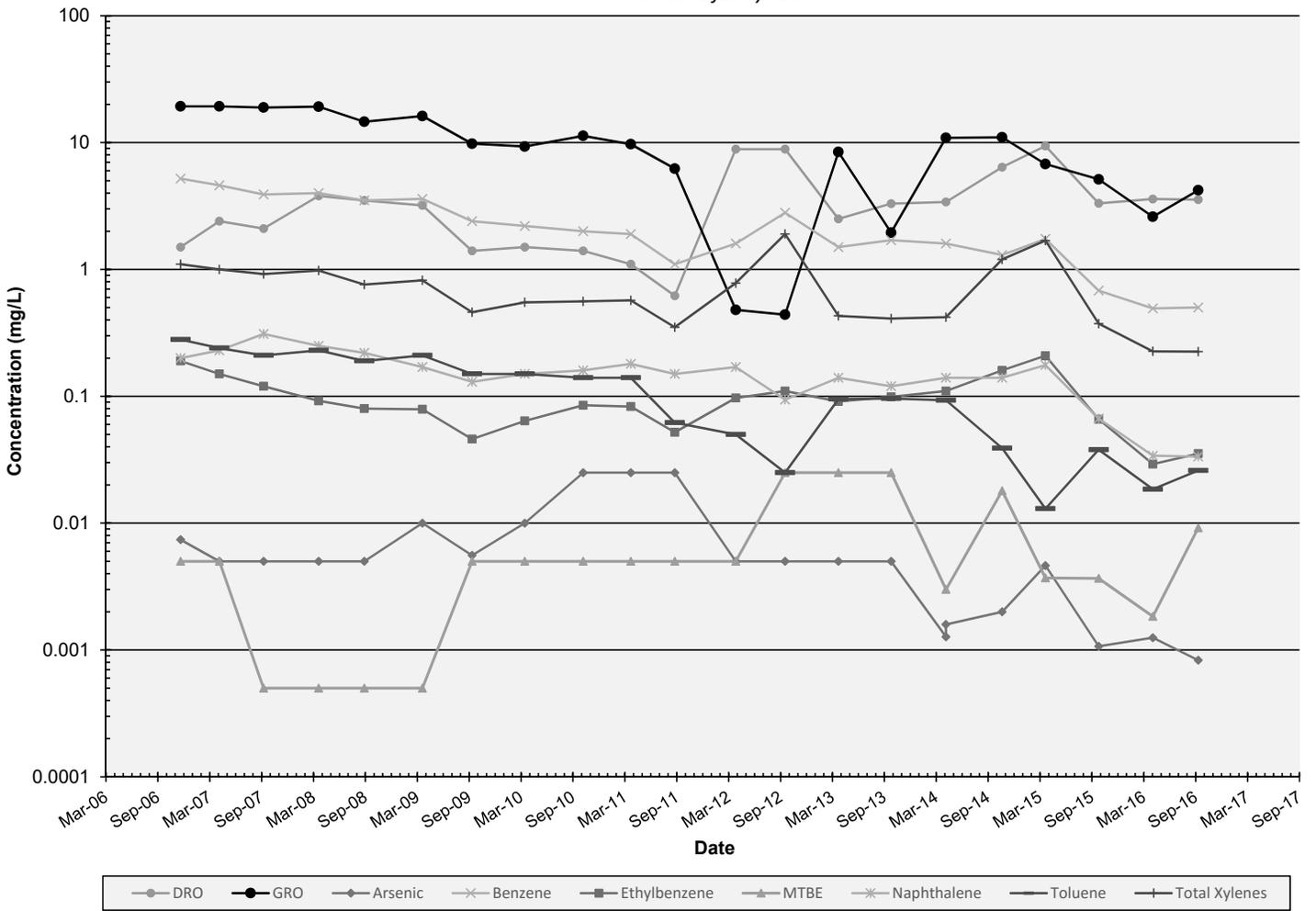
MW-59: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



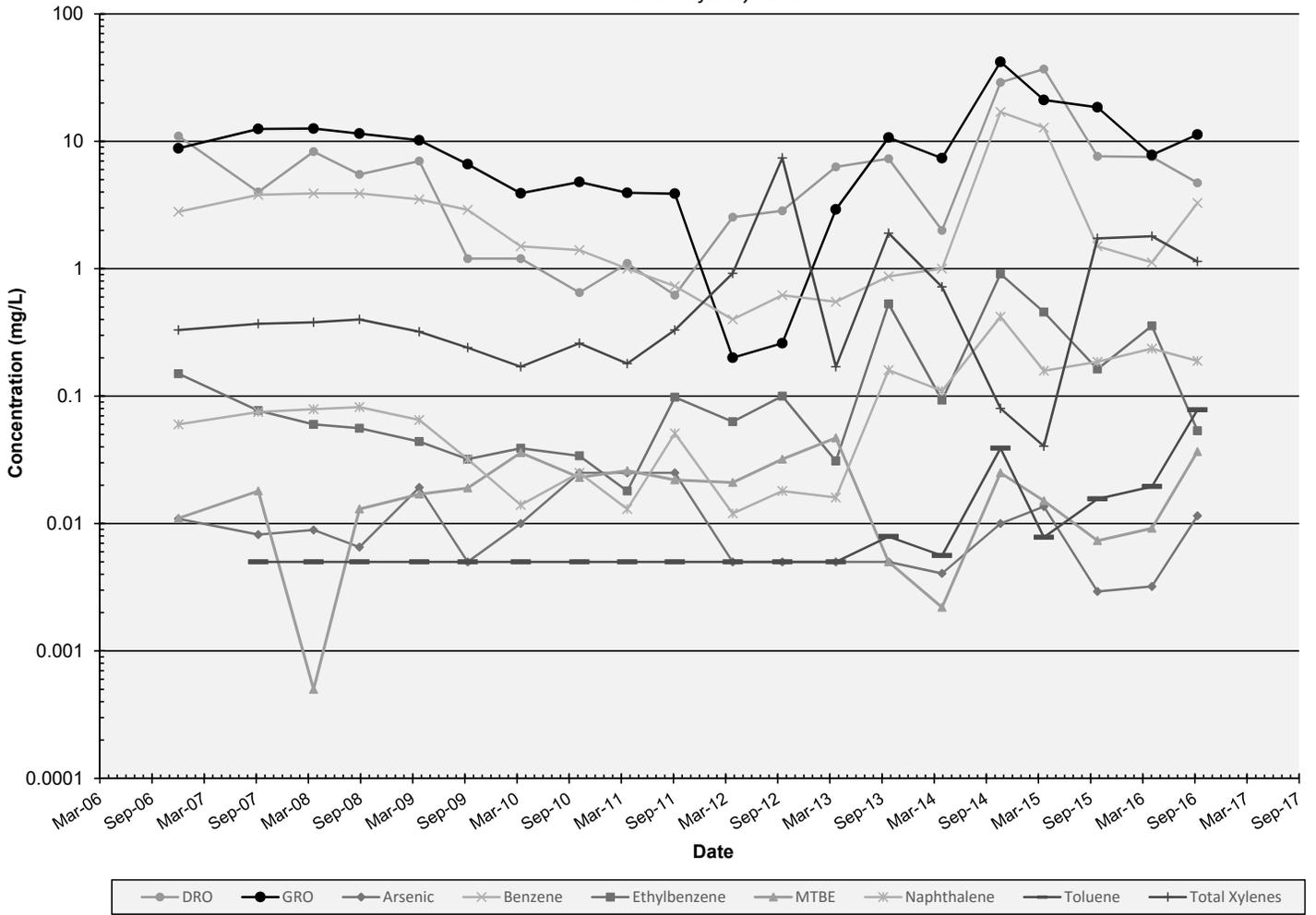
MW-60: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



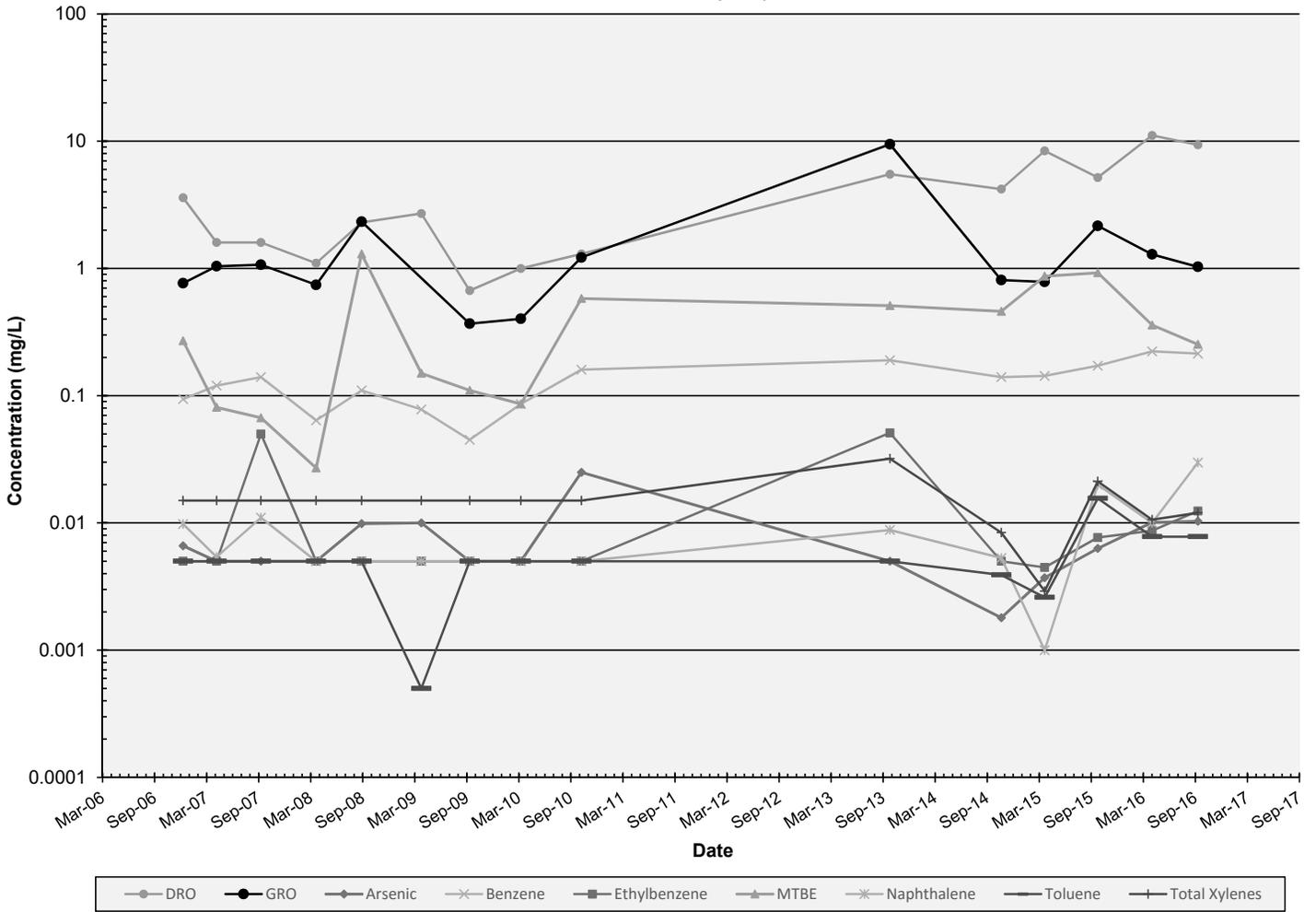
MW-61: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



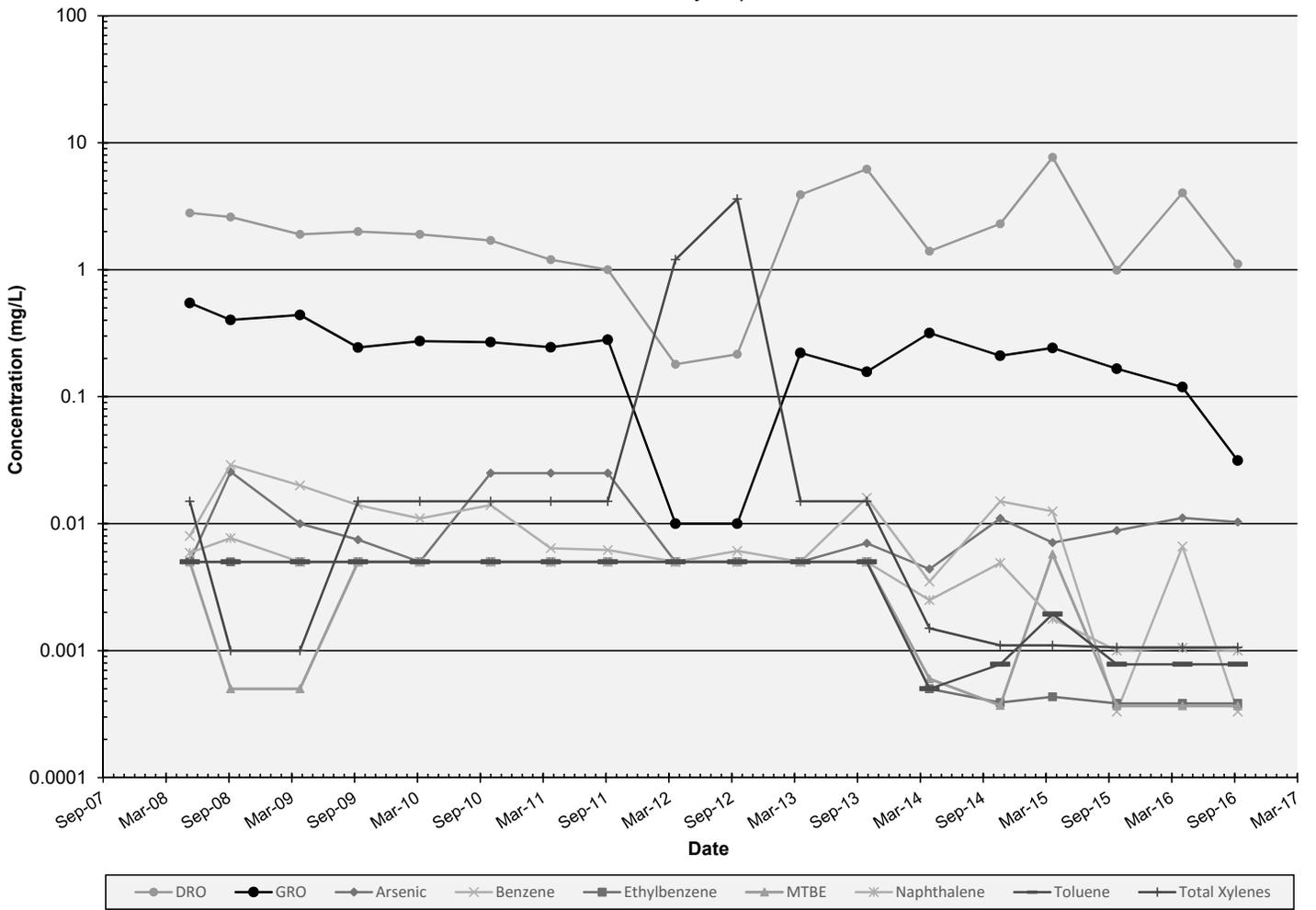
MW-62: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



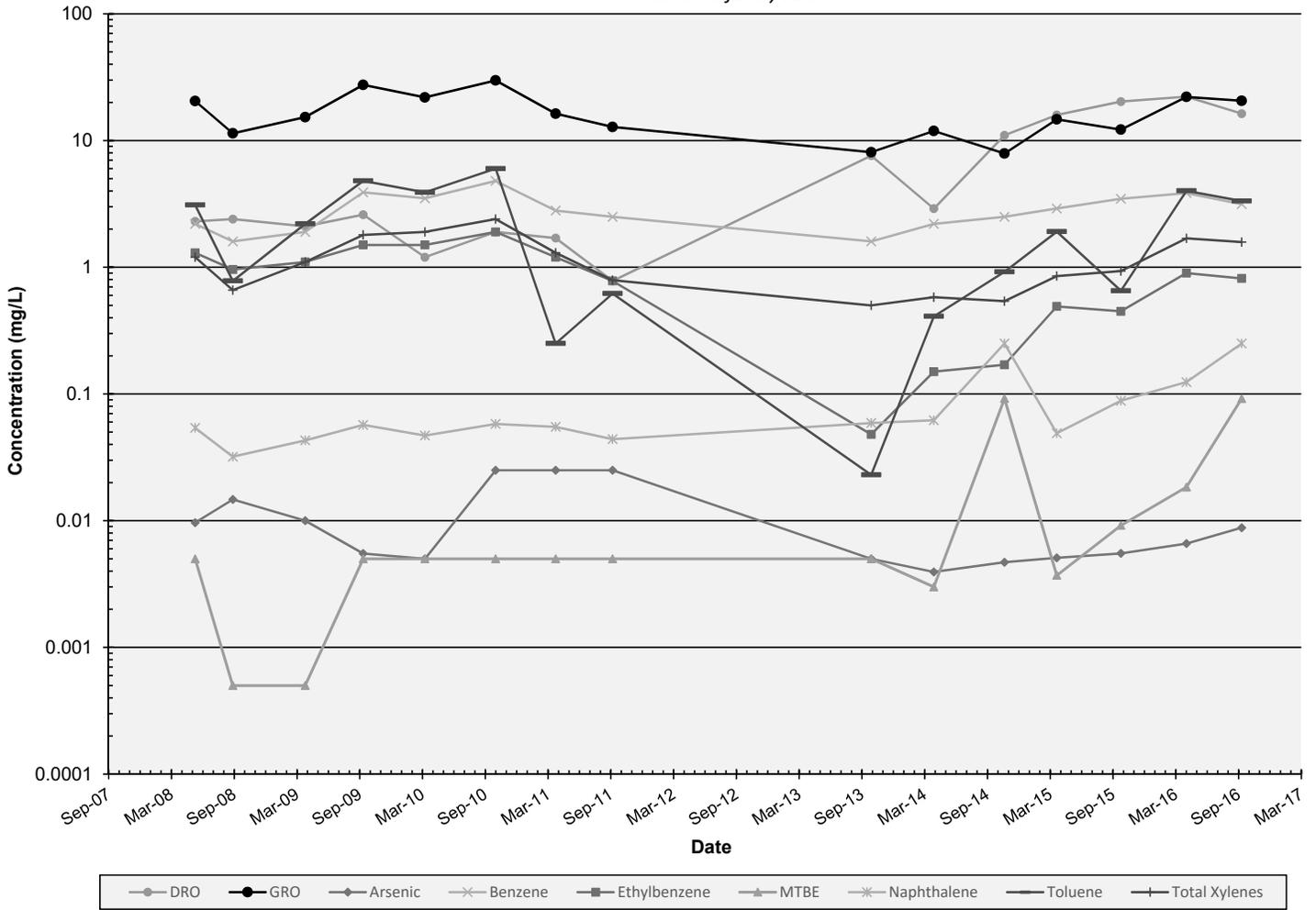
MW-67: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



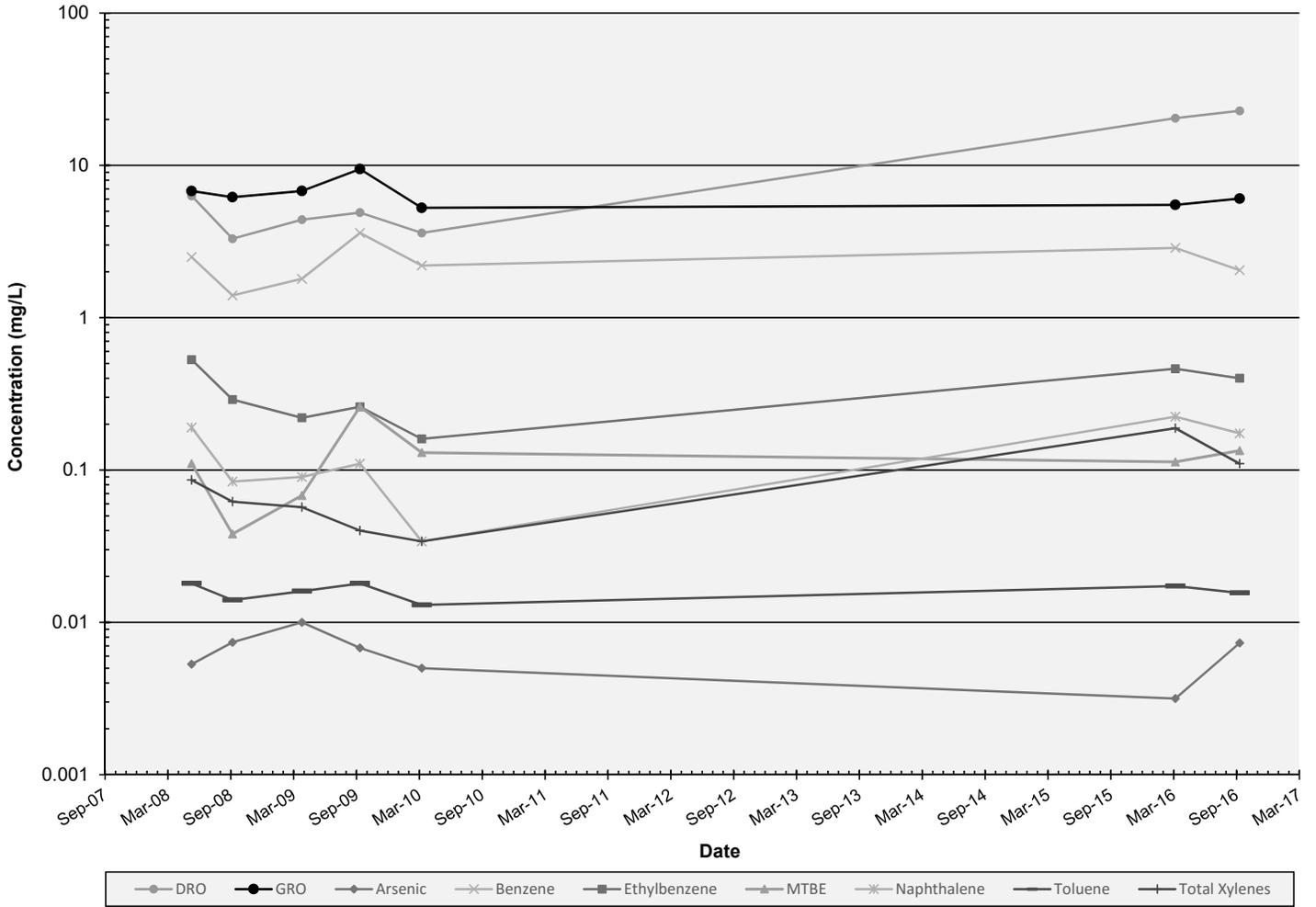
MW-90: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



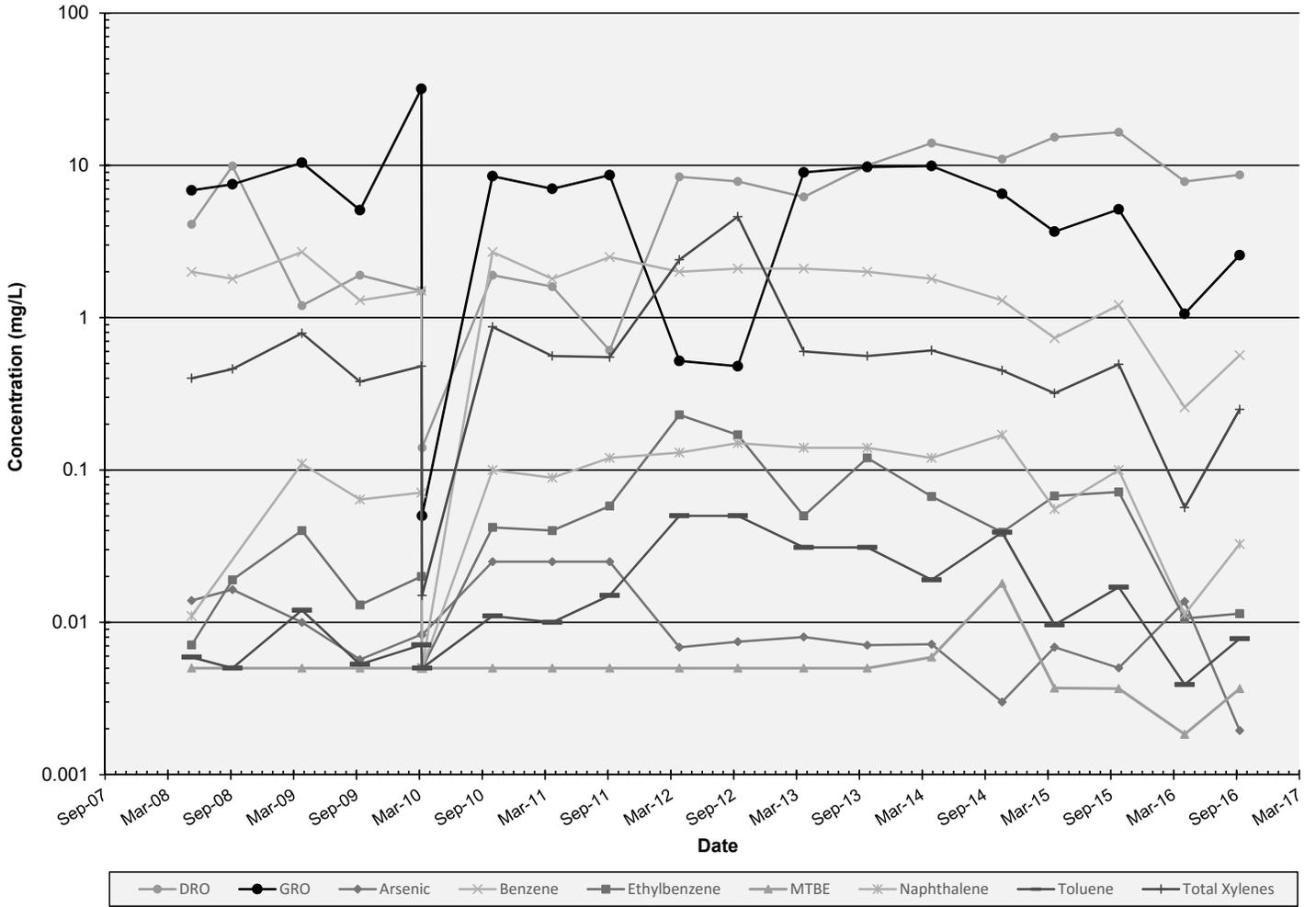
MW-91: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



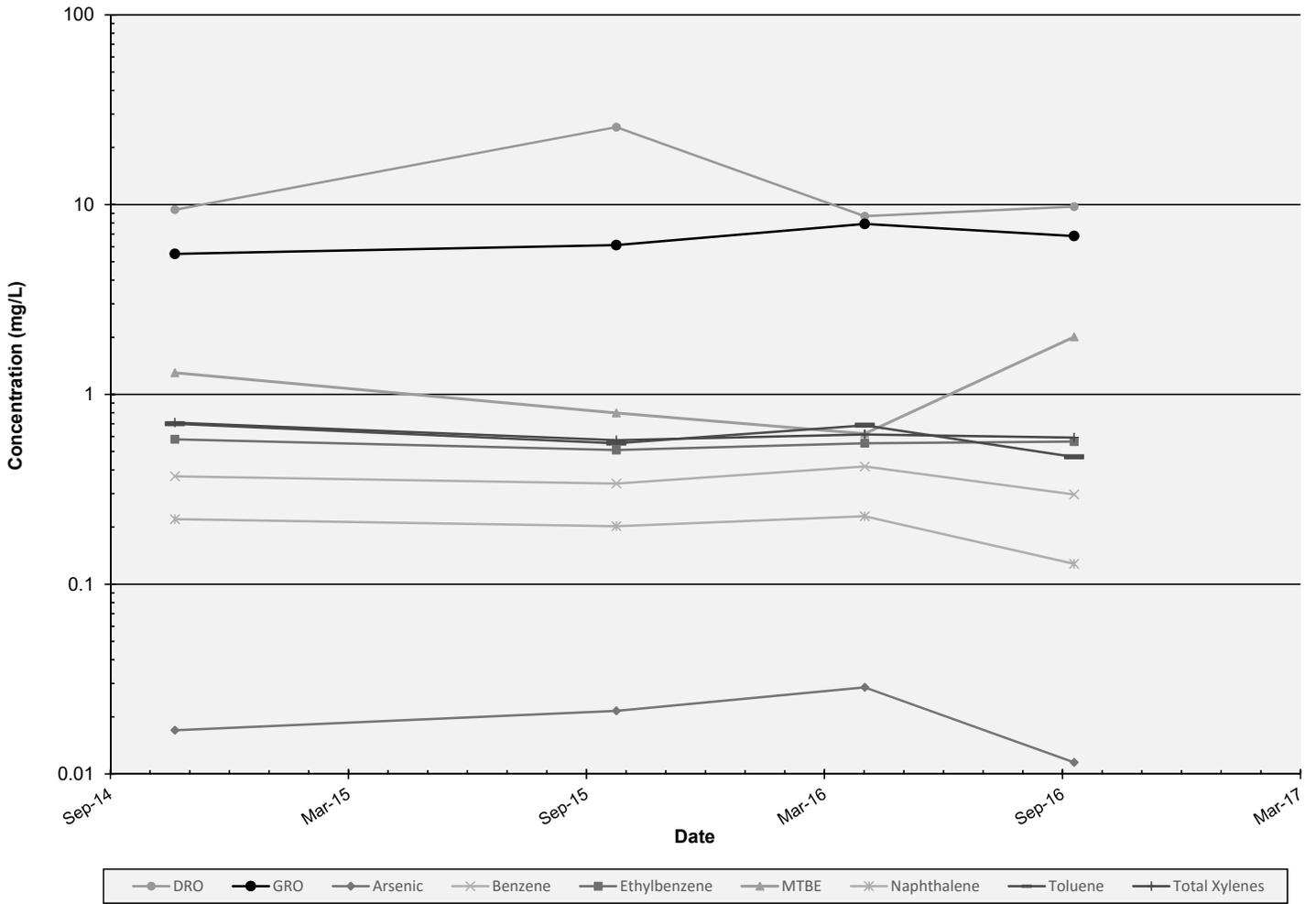
MW-92: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



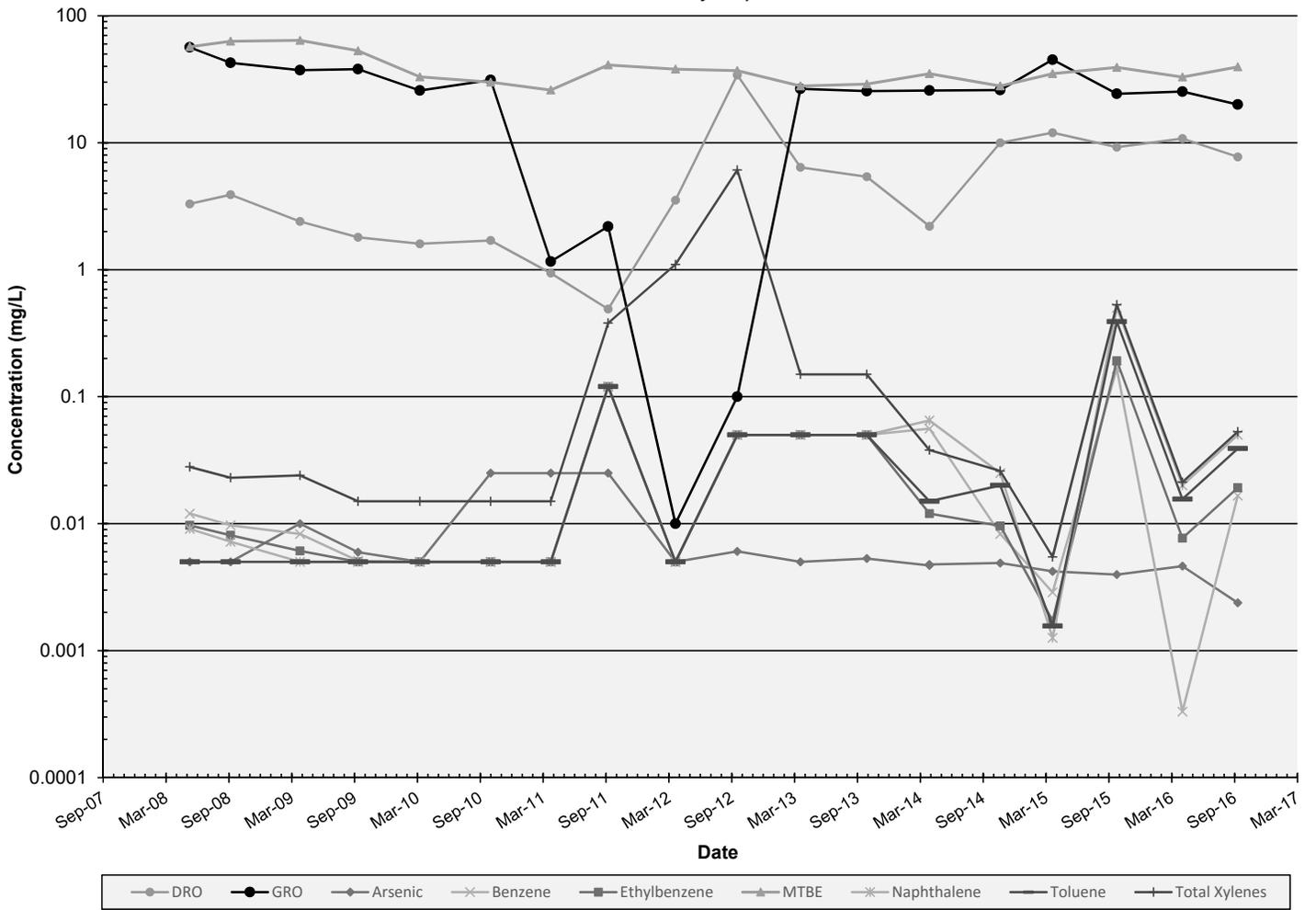
MW-93: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



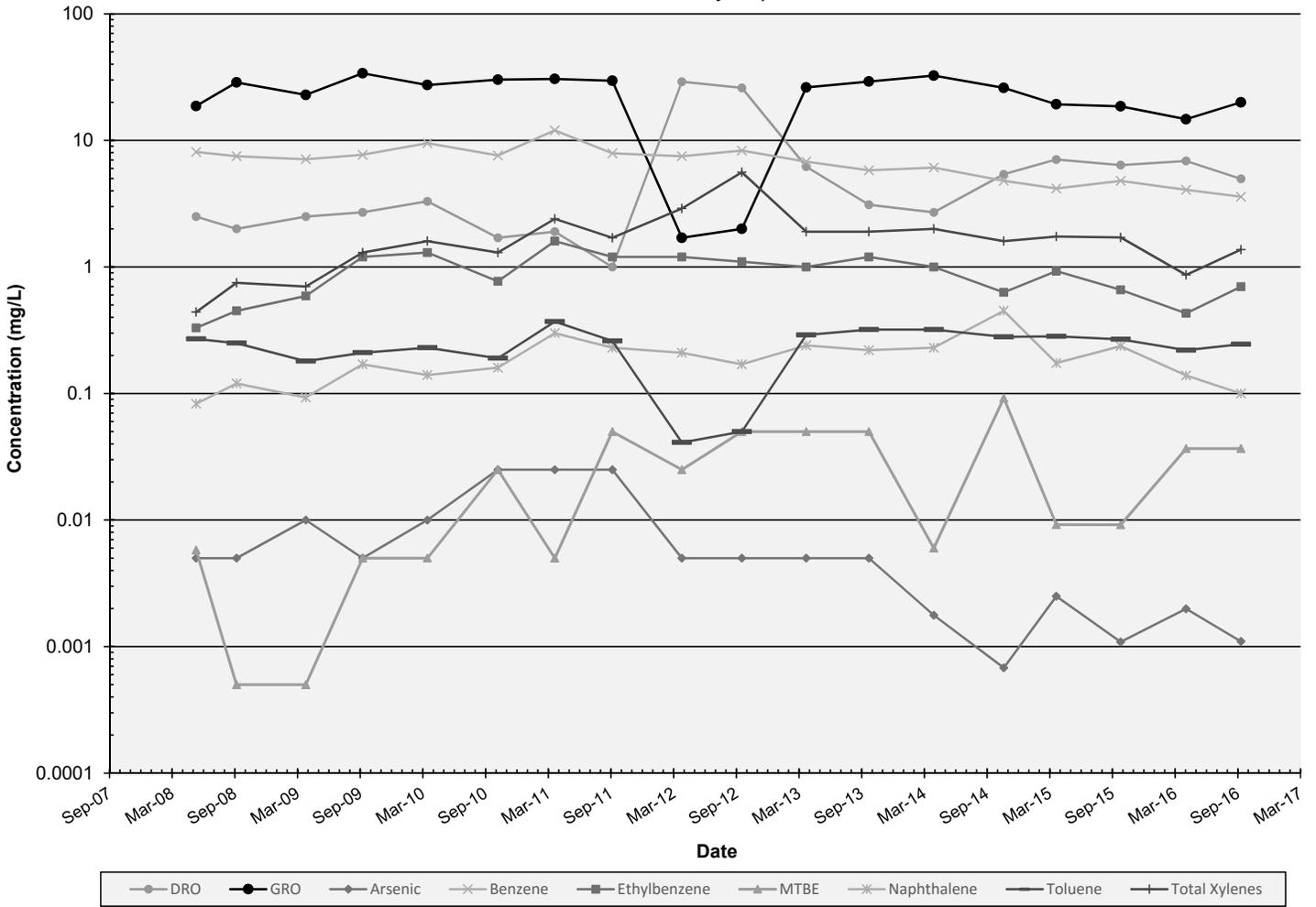
MW-94: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



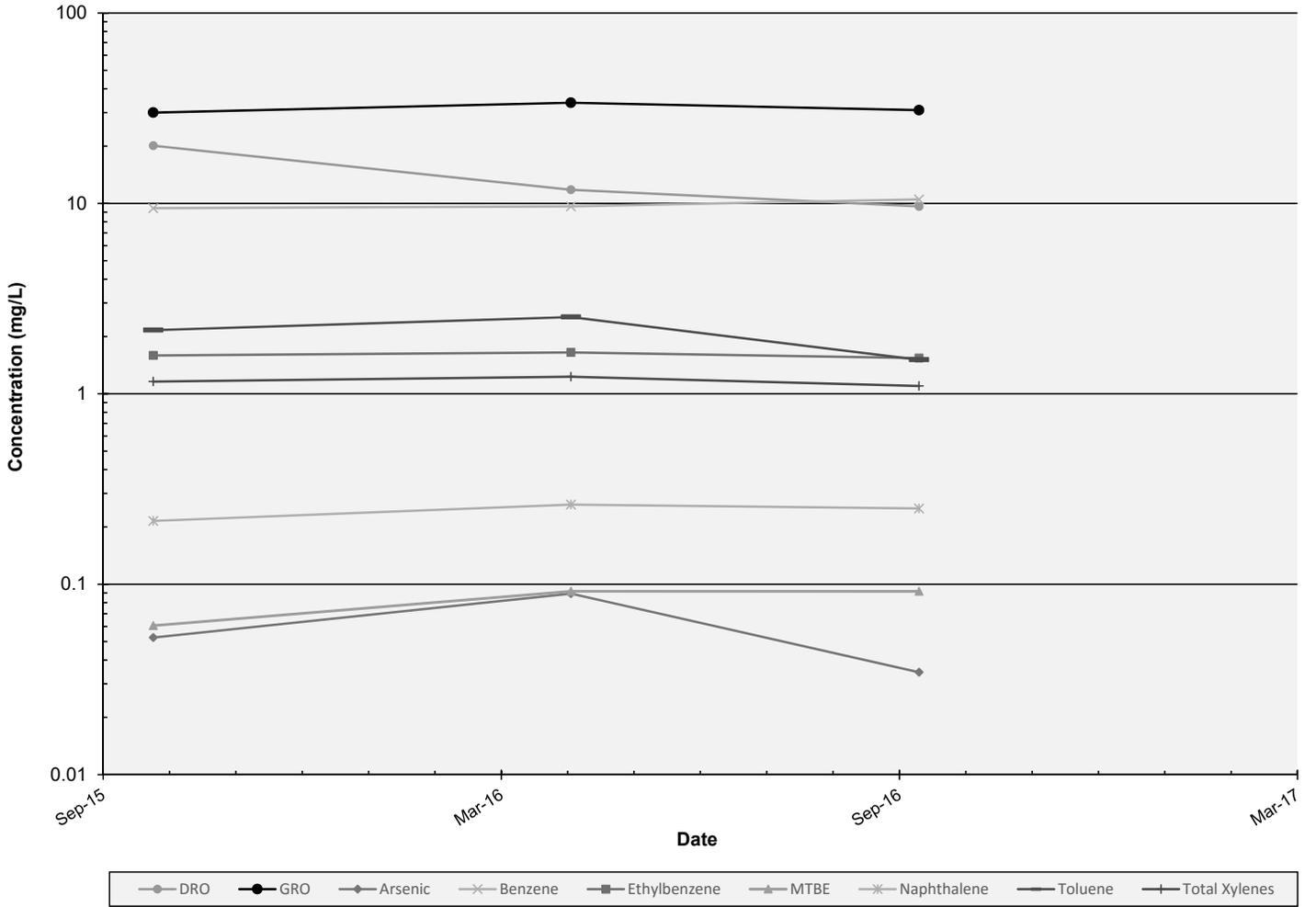
MW-96: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



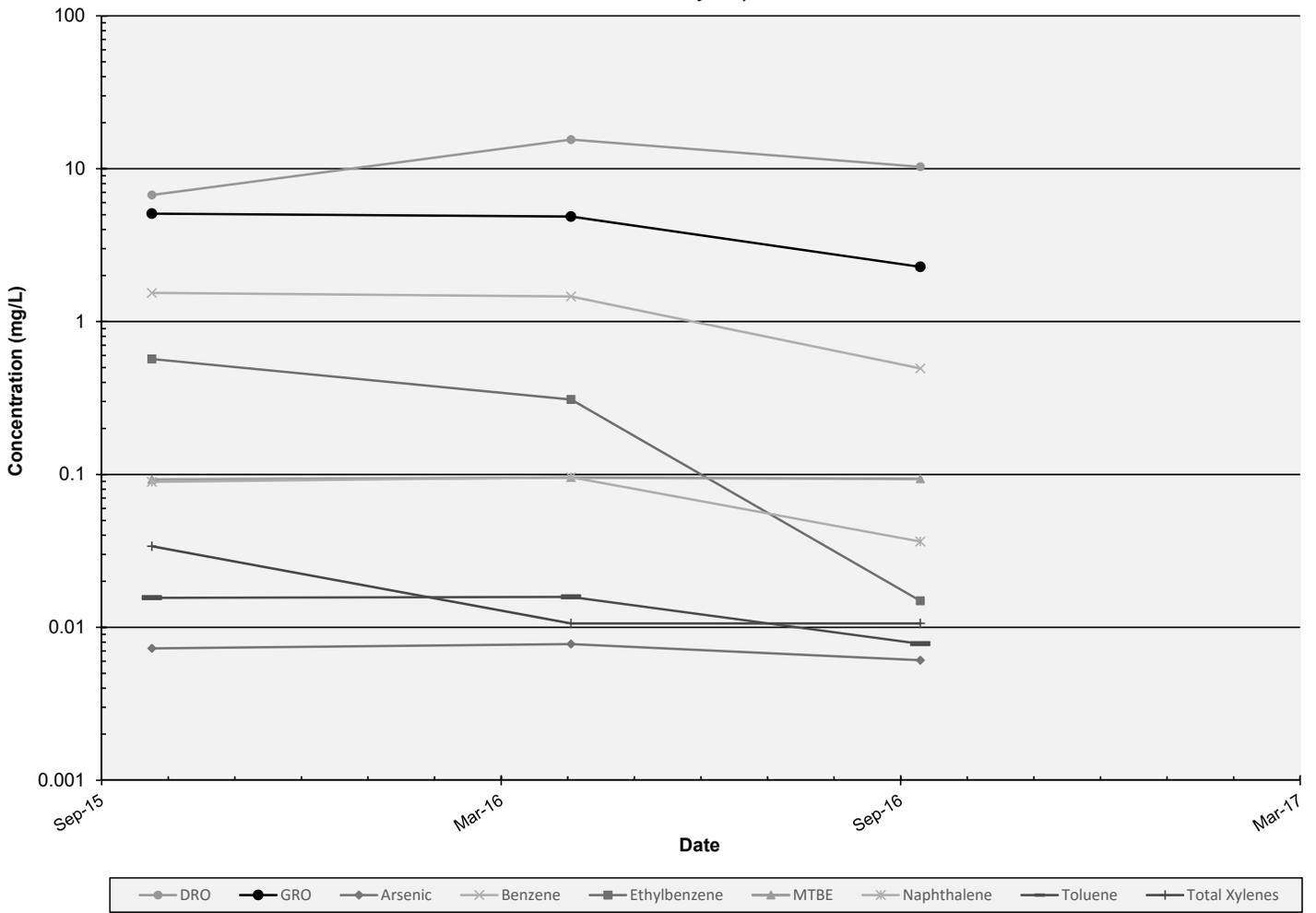
MW-98: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



MW-137: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area

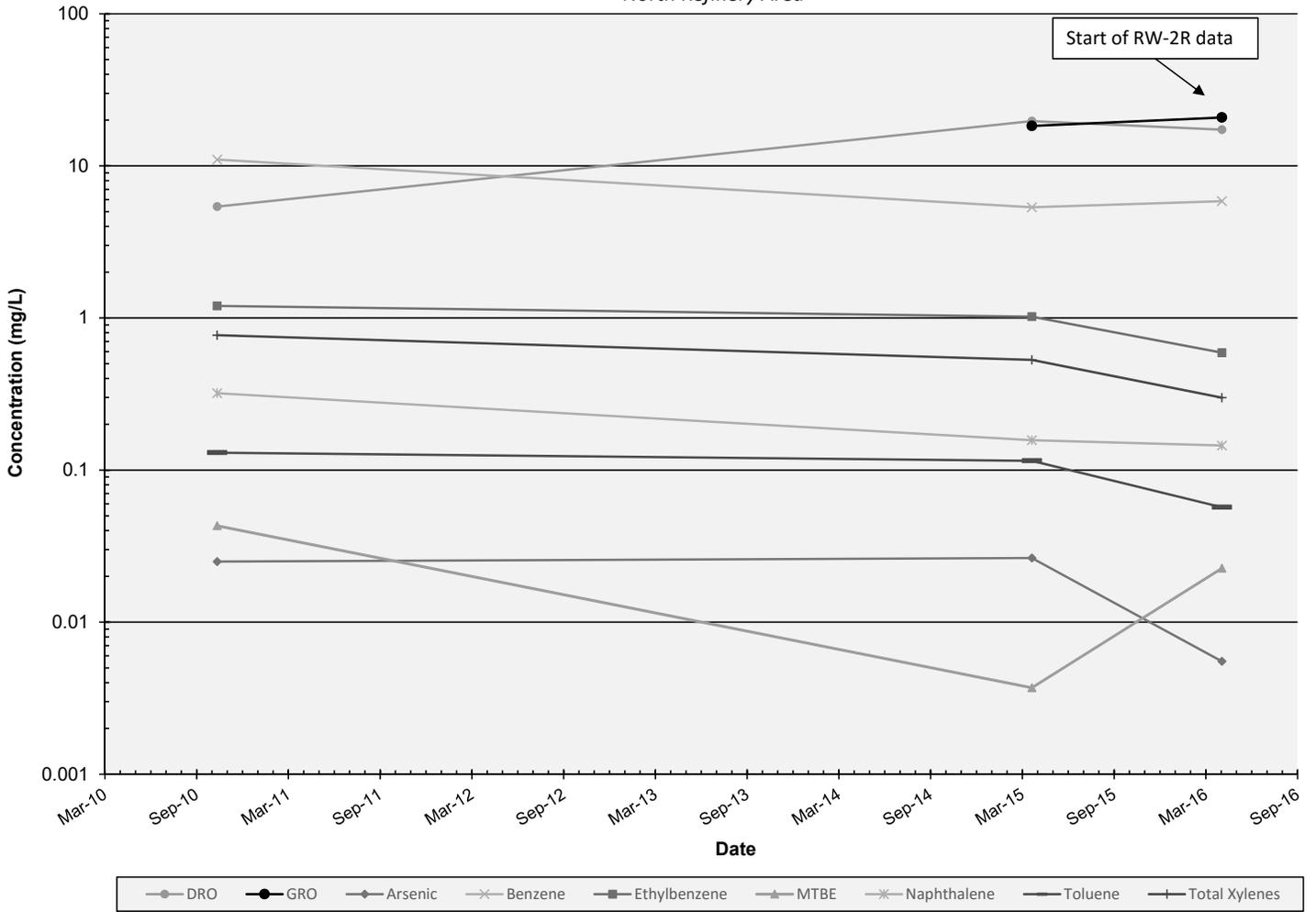


MW-138: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



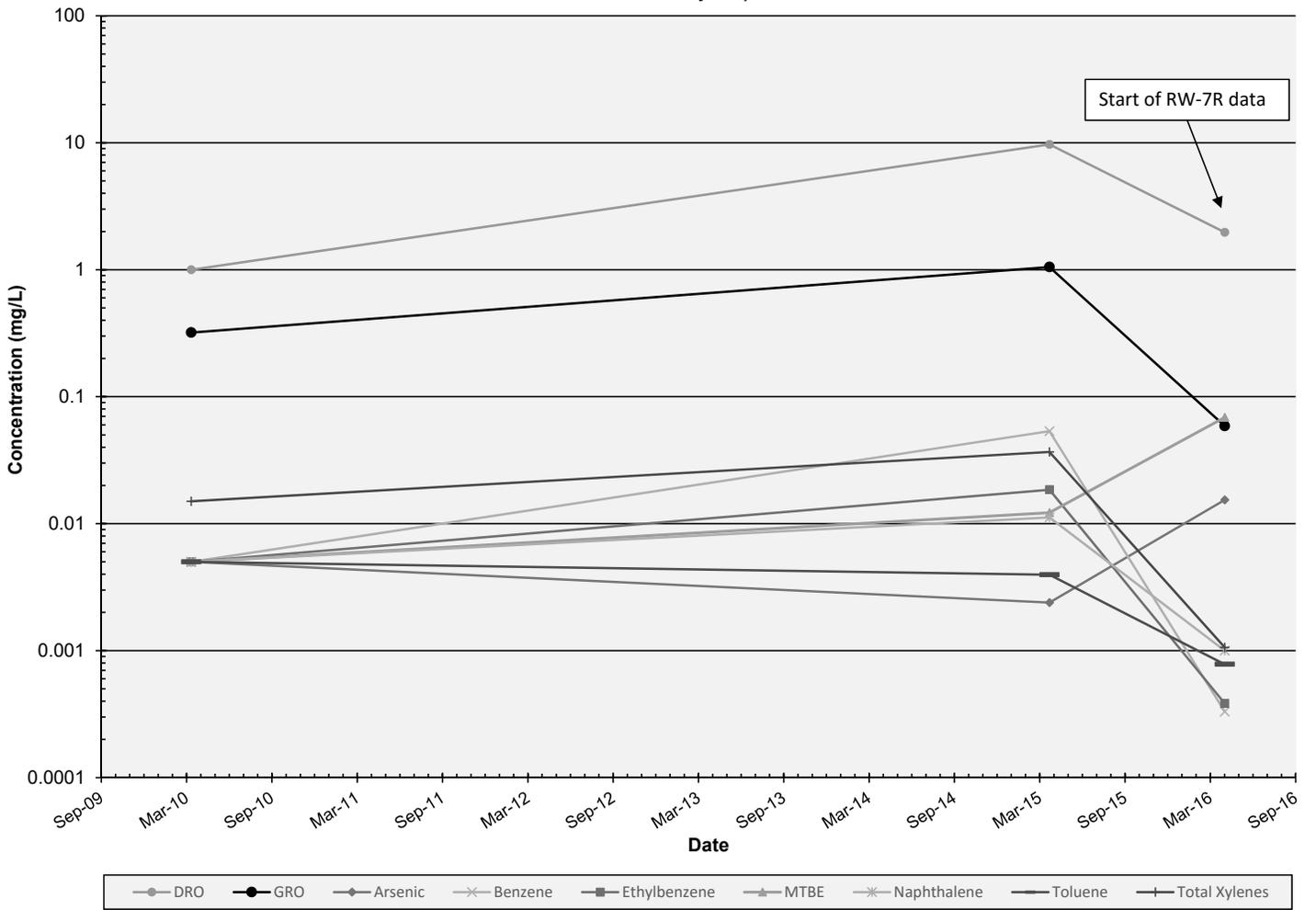
RW-2 and RW-2R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery
North Refinery Area

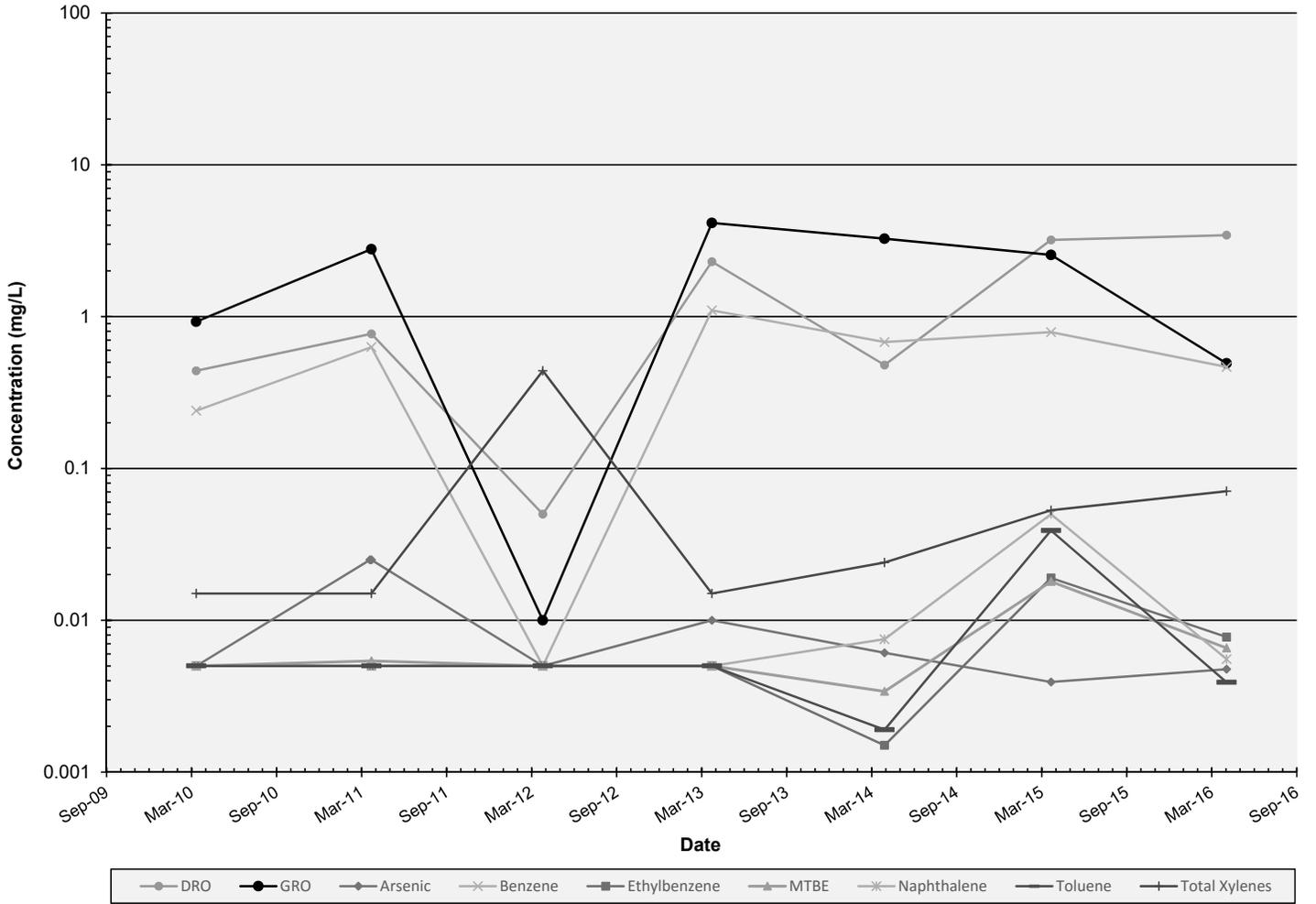


RW-7 and RW-7R: COC Concentrations

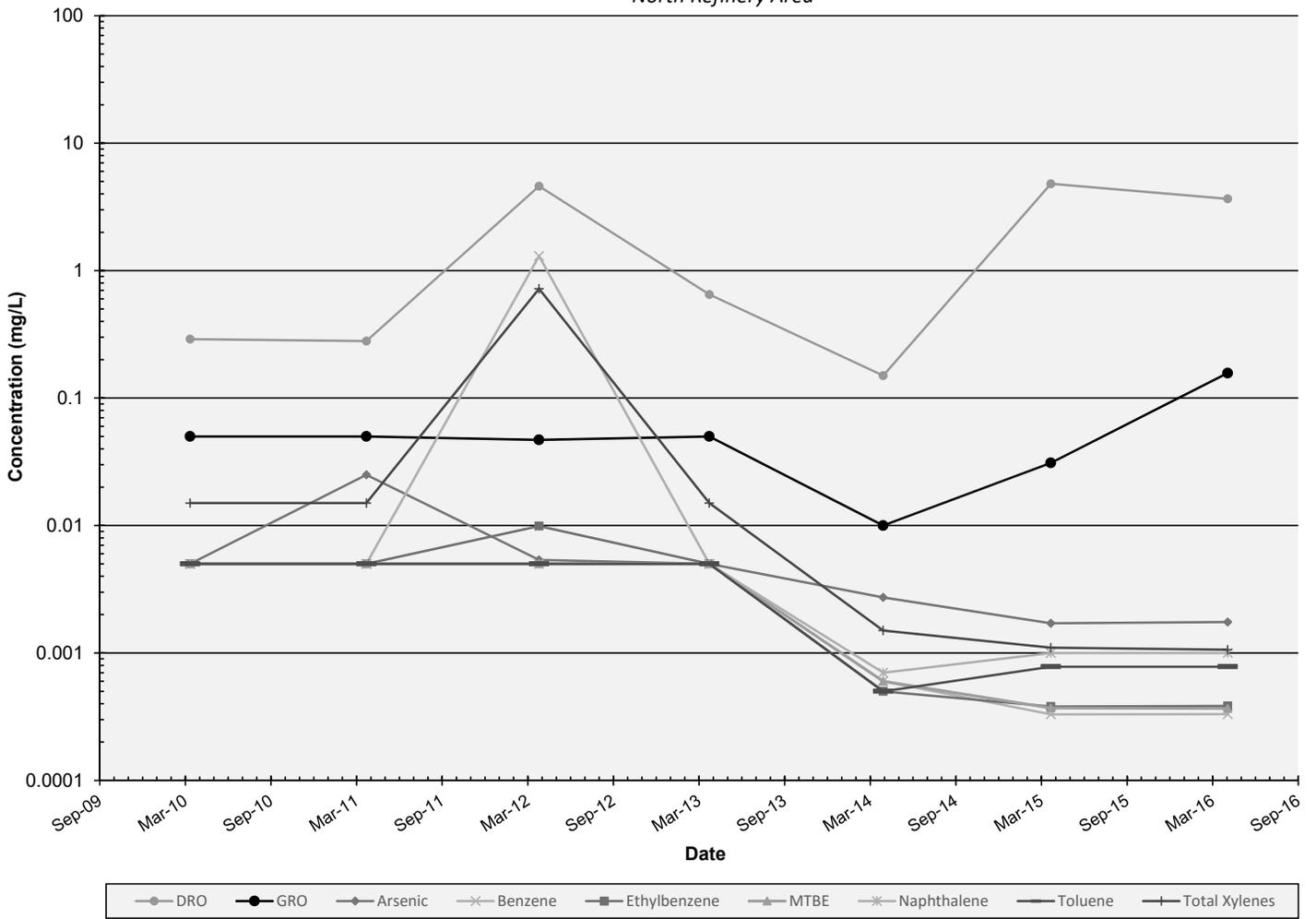
HollyFrontier Navajo Refining LLC - Artesia Refinery
North Refinery Area



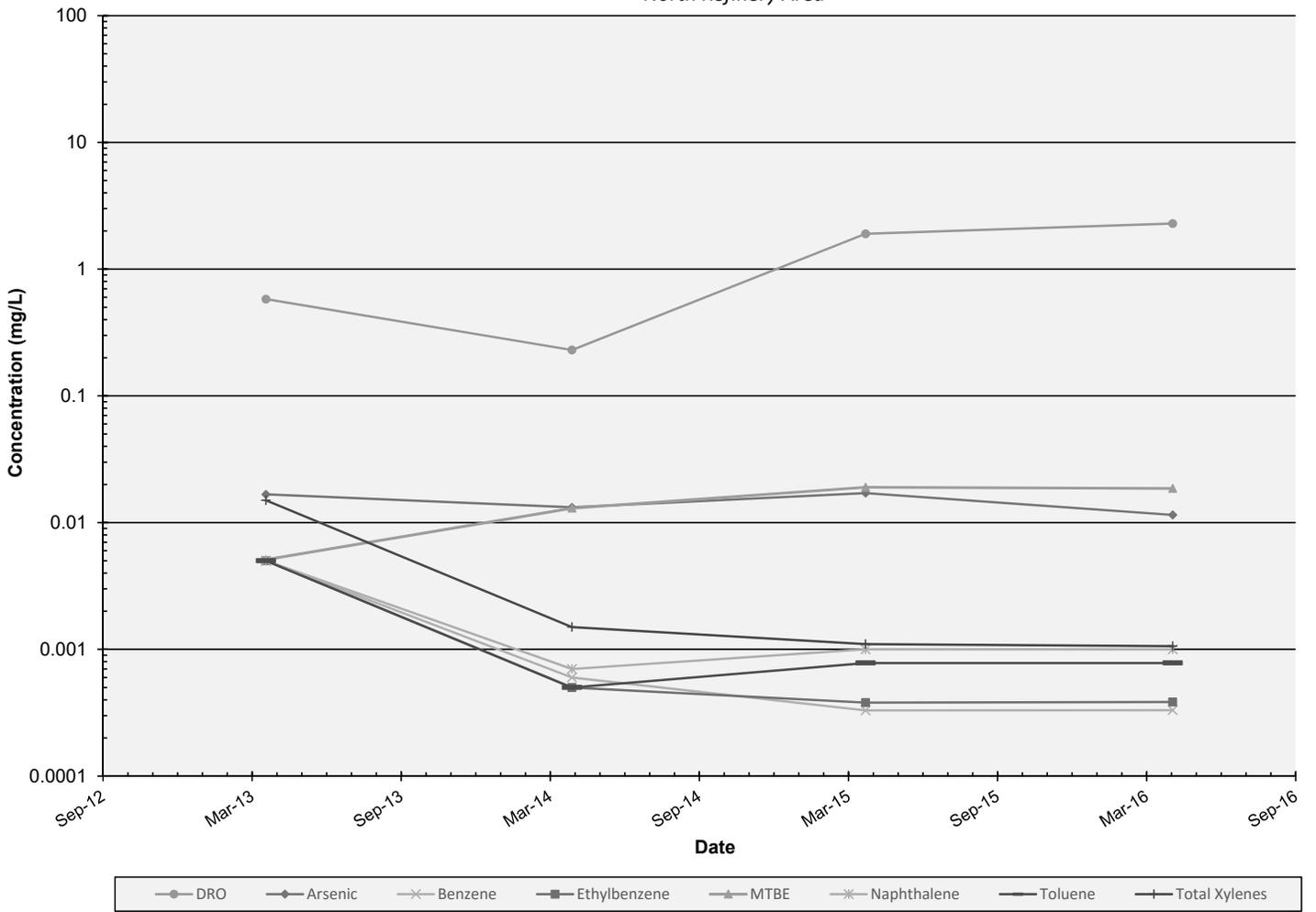
RW-9: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



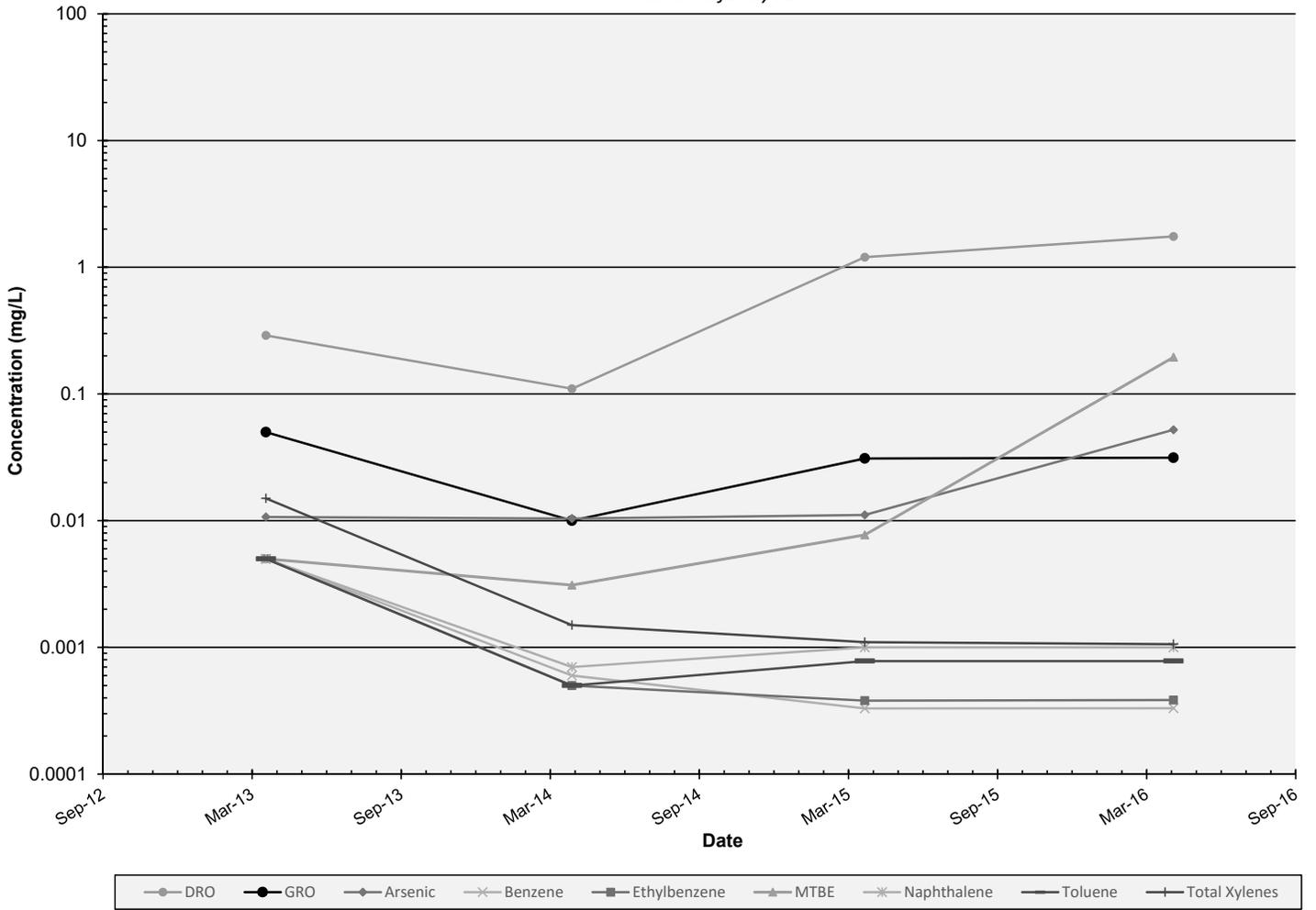
RW-10: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



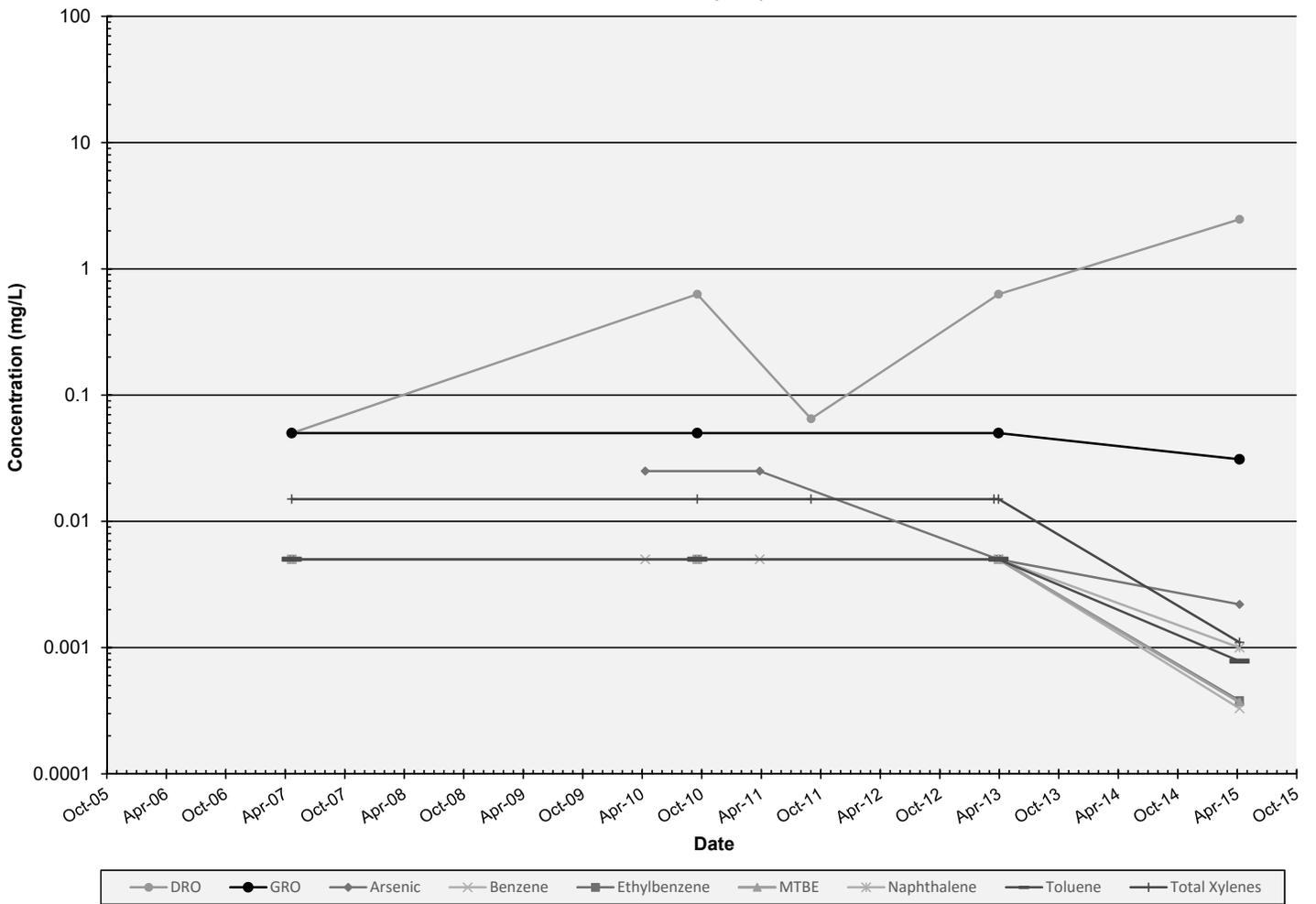
RW-16: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



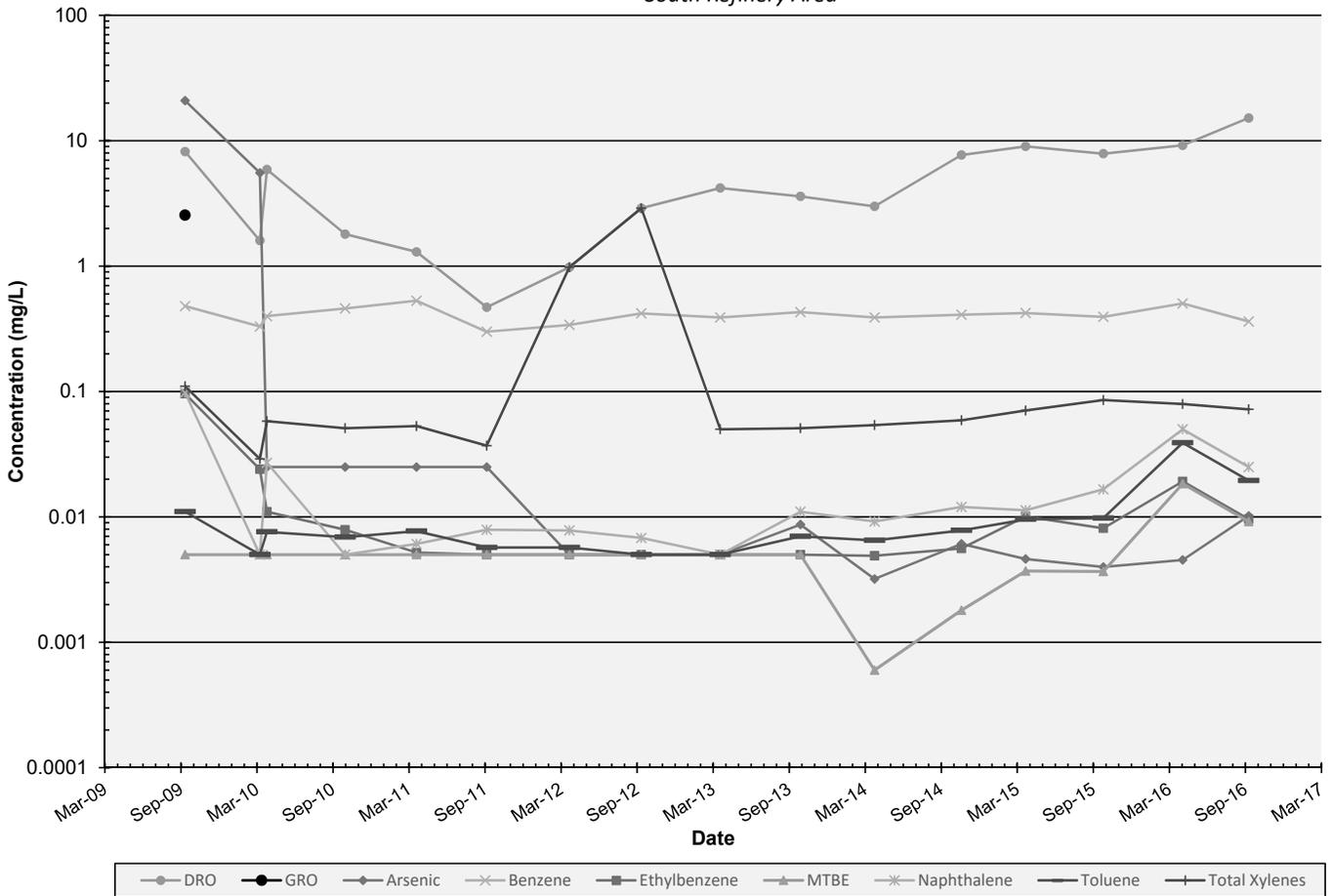
RW-17: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 North Refinery Area



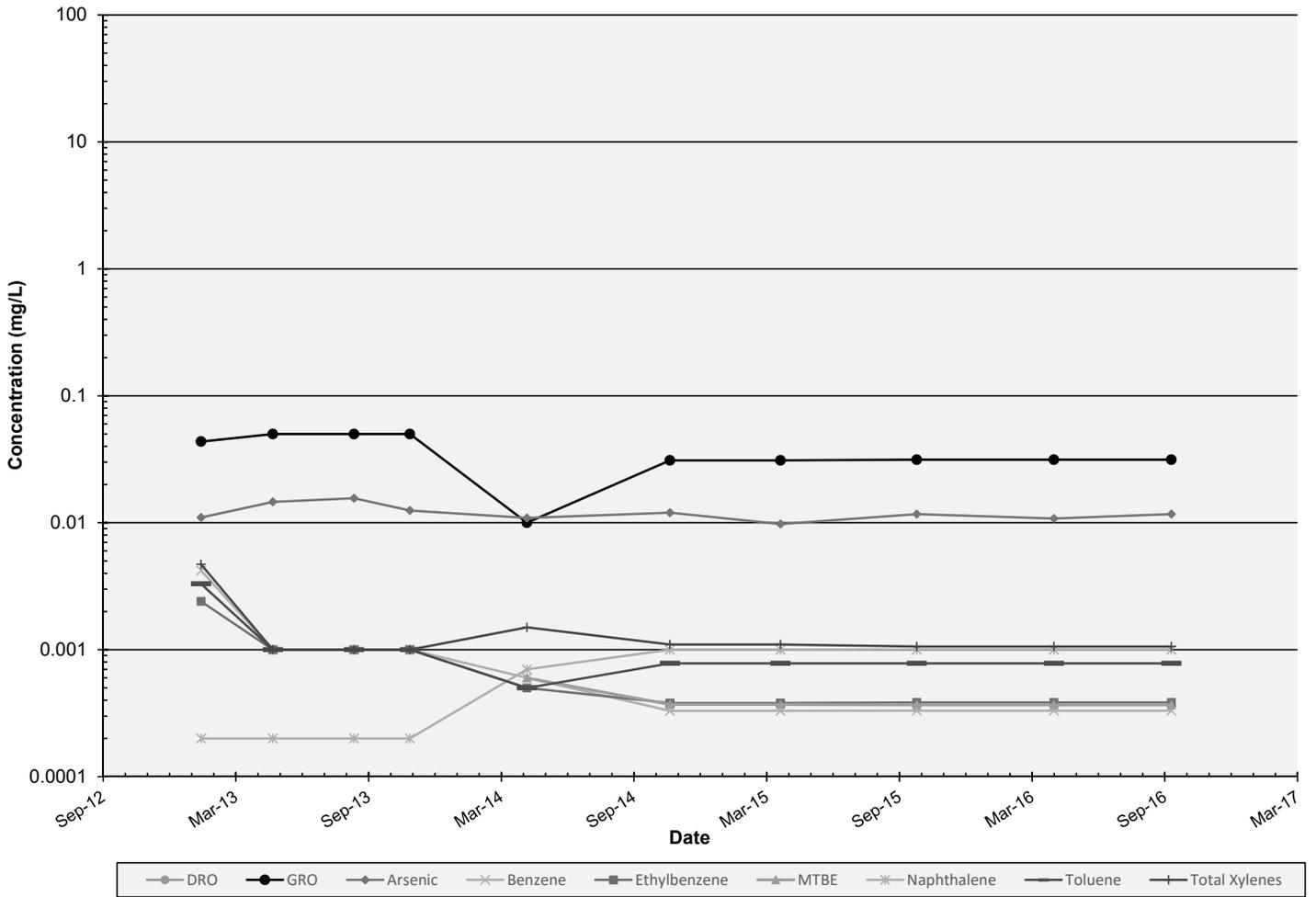
MW-54B: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



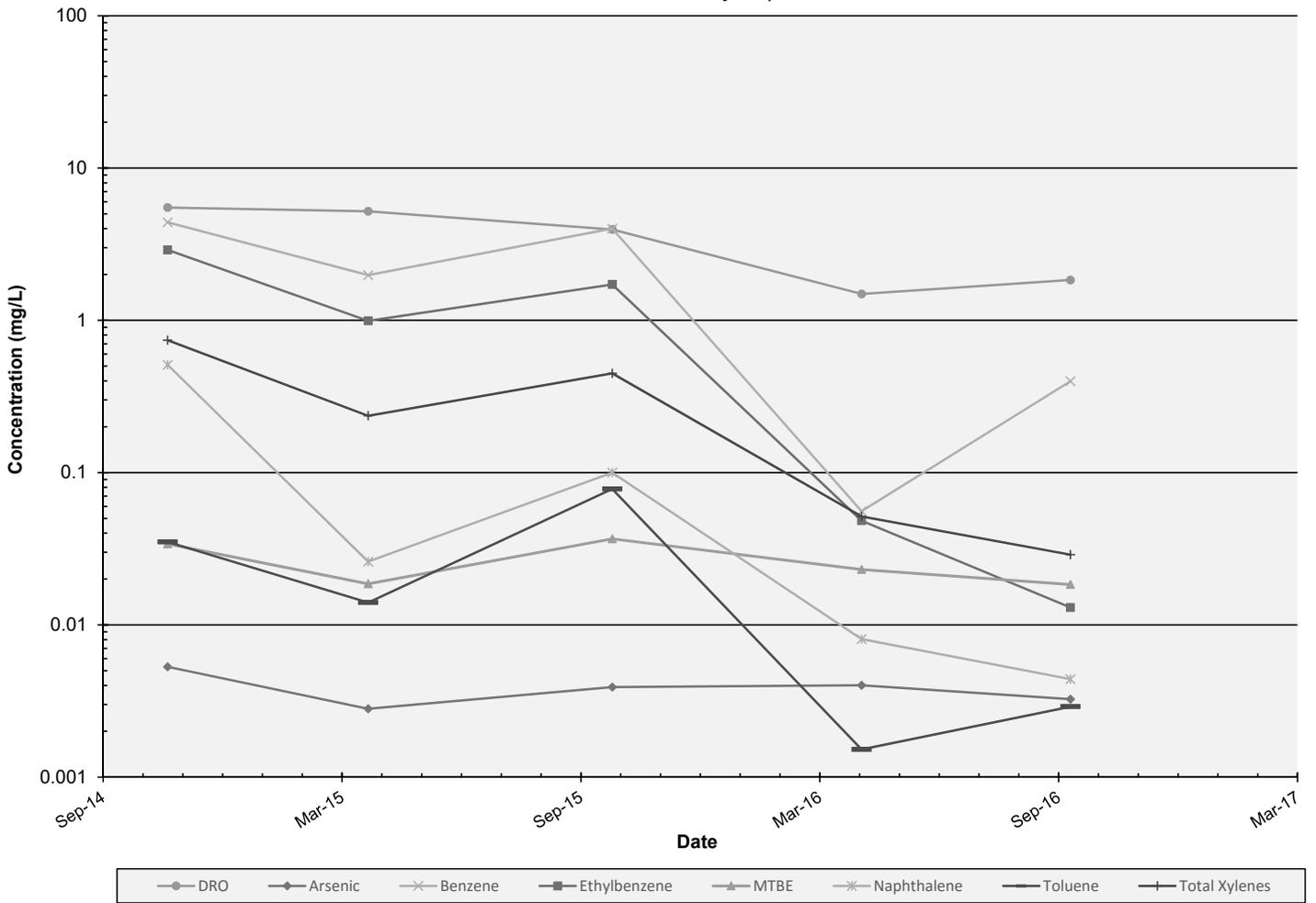
MW-108: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



MW-118: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Reverse Osmosis Reject Fields

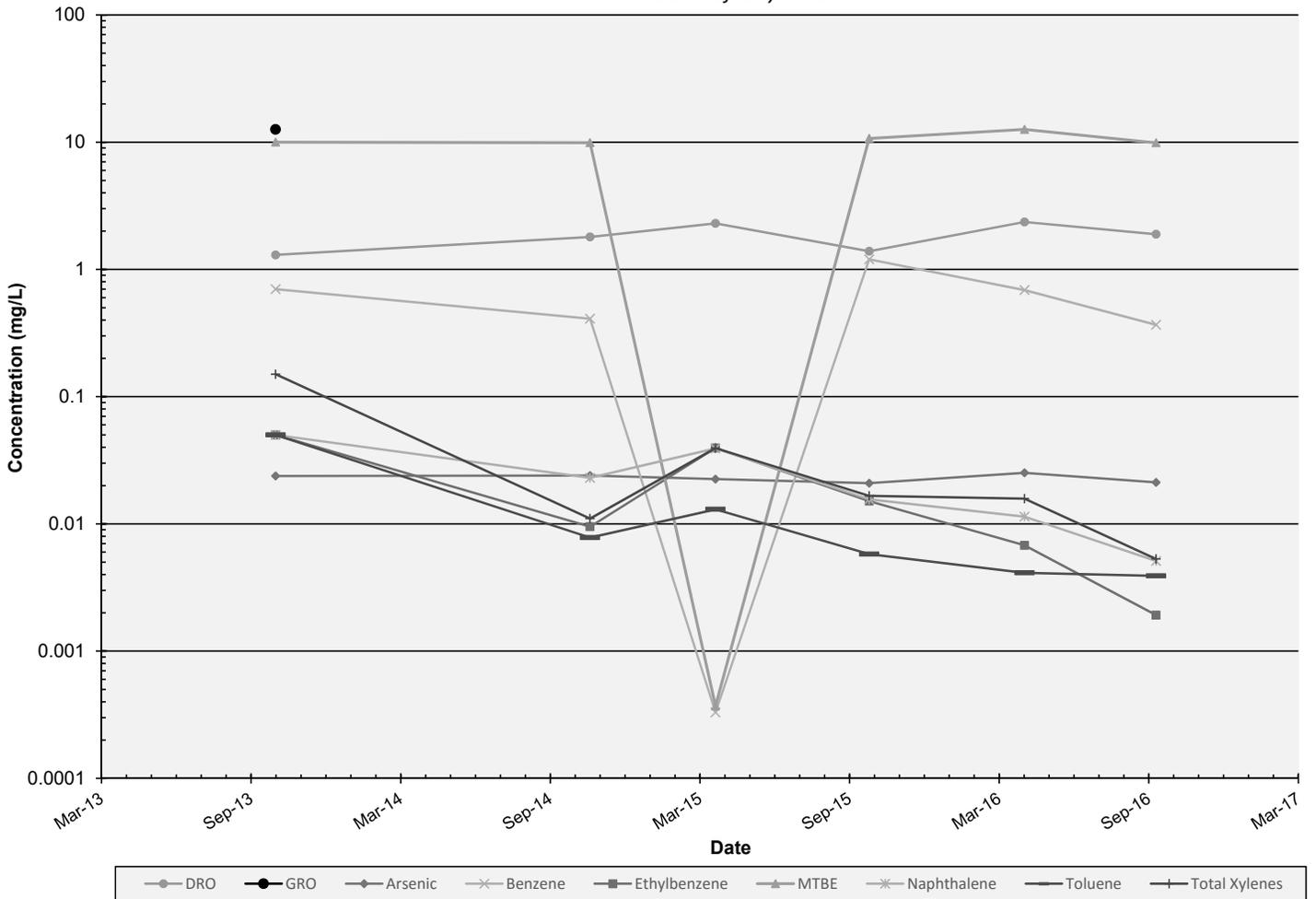


KWB-2R: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area

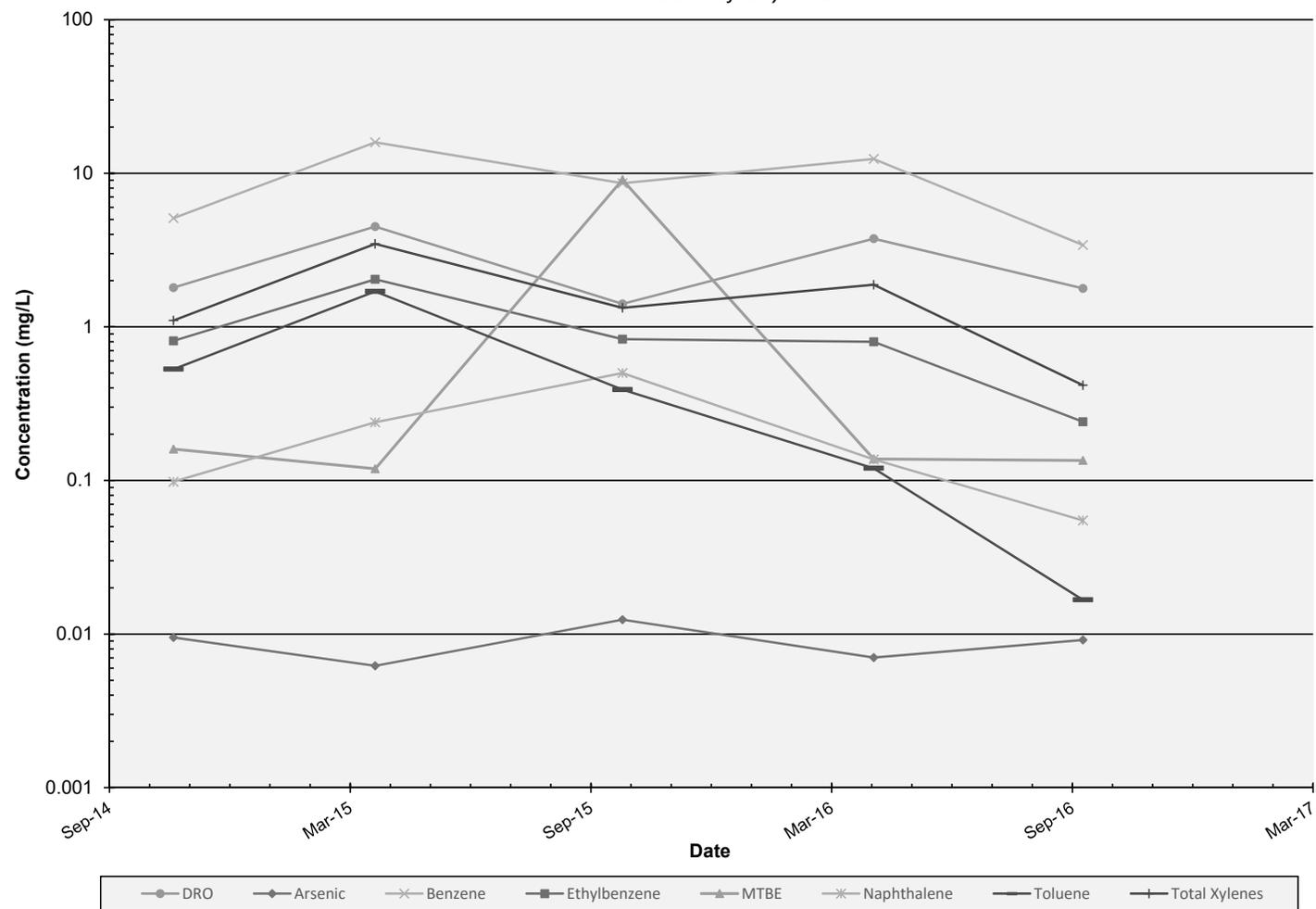


KWB-5: COC Concentrations

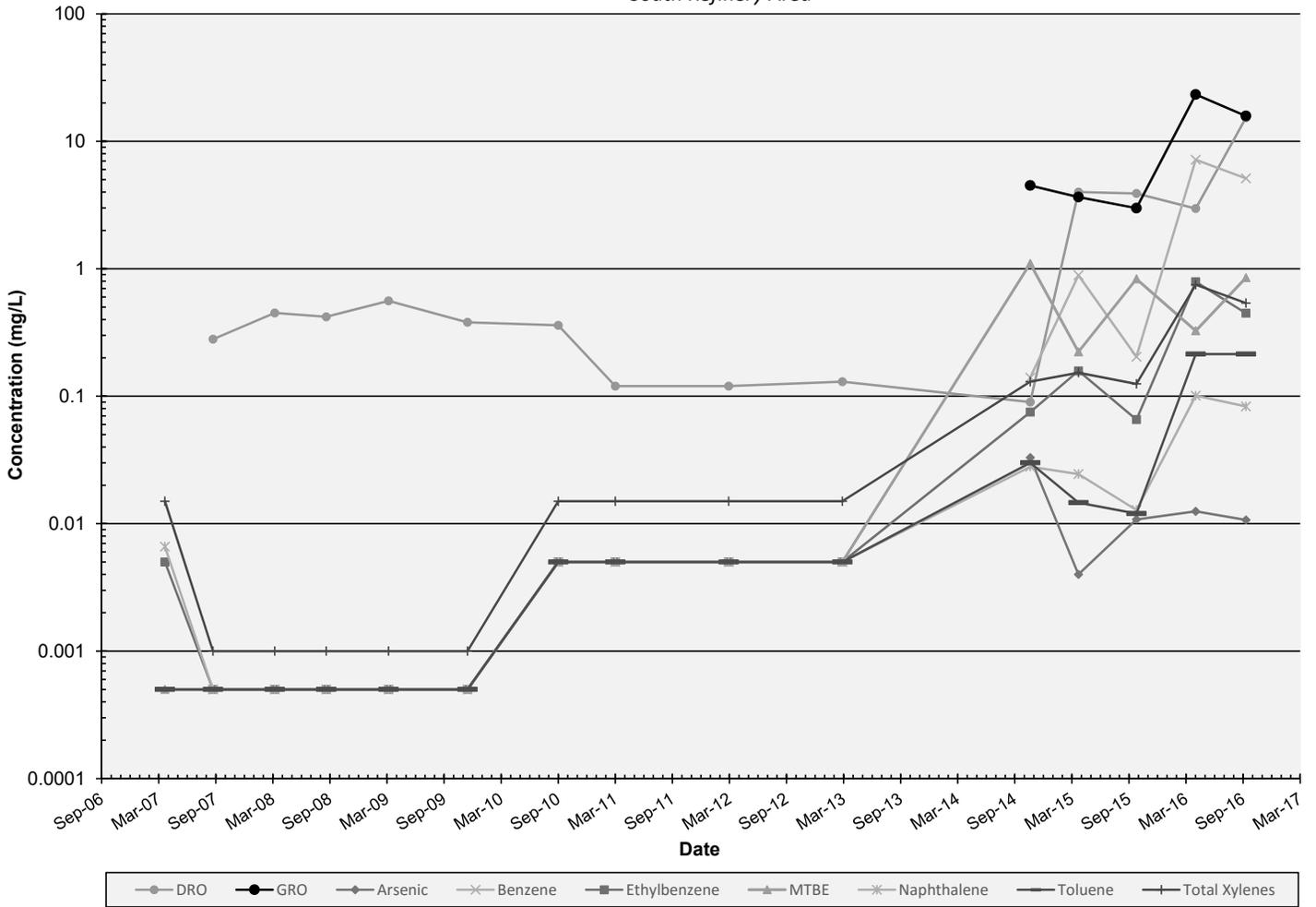
HollyFrontier Navajo Refining LLC - Artesia Refinery
South Refinery Area



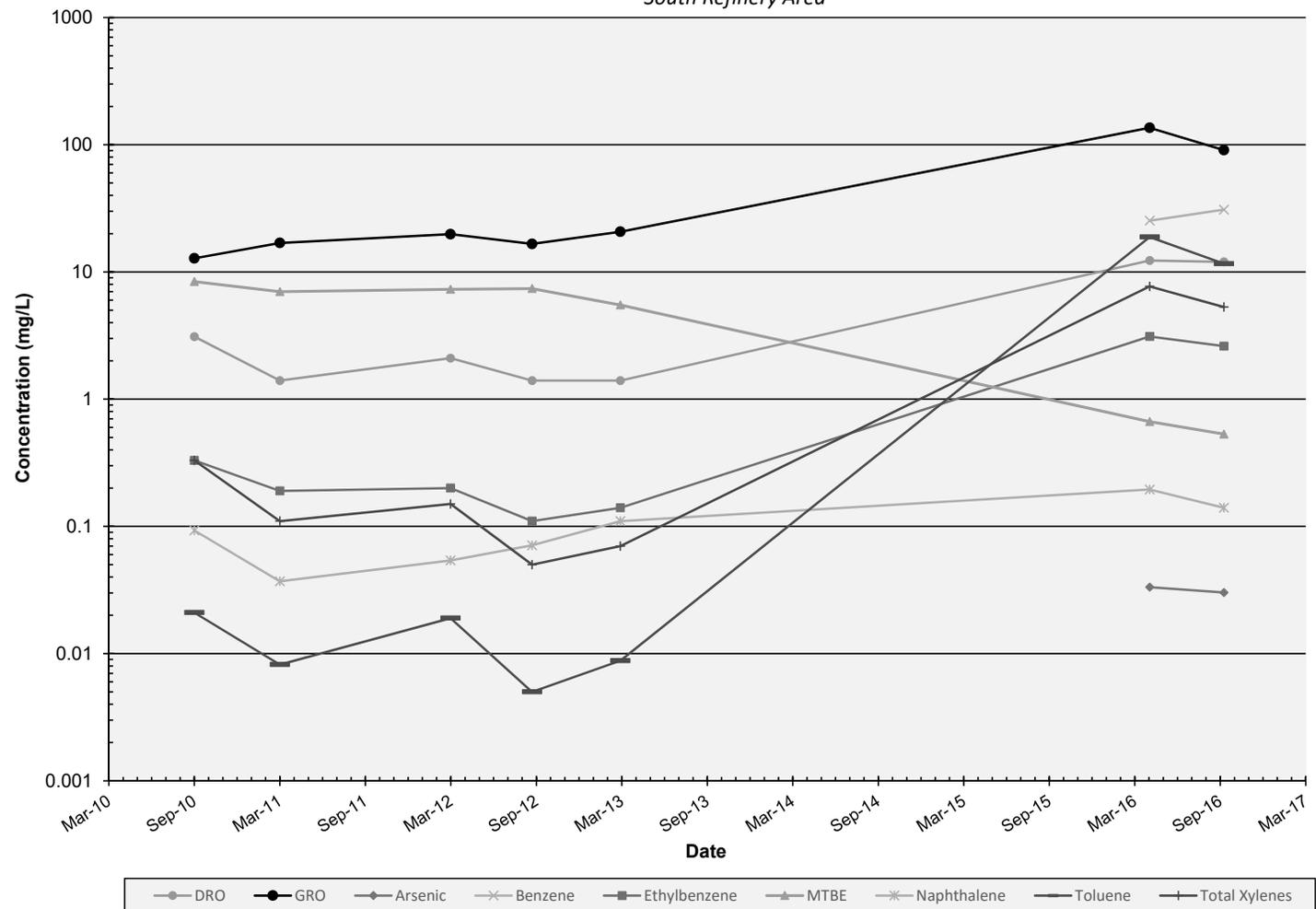
KWB-6: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



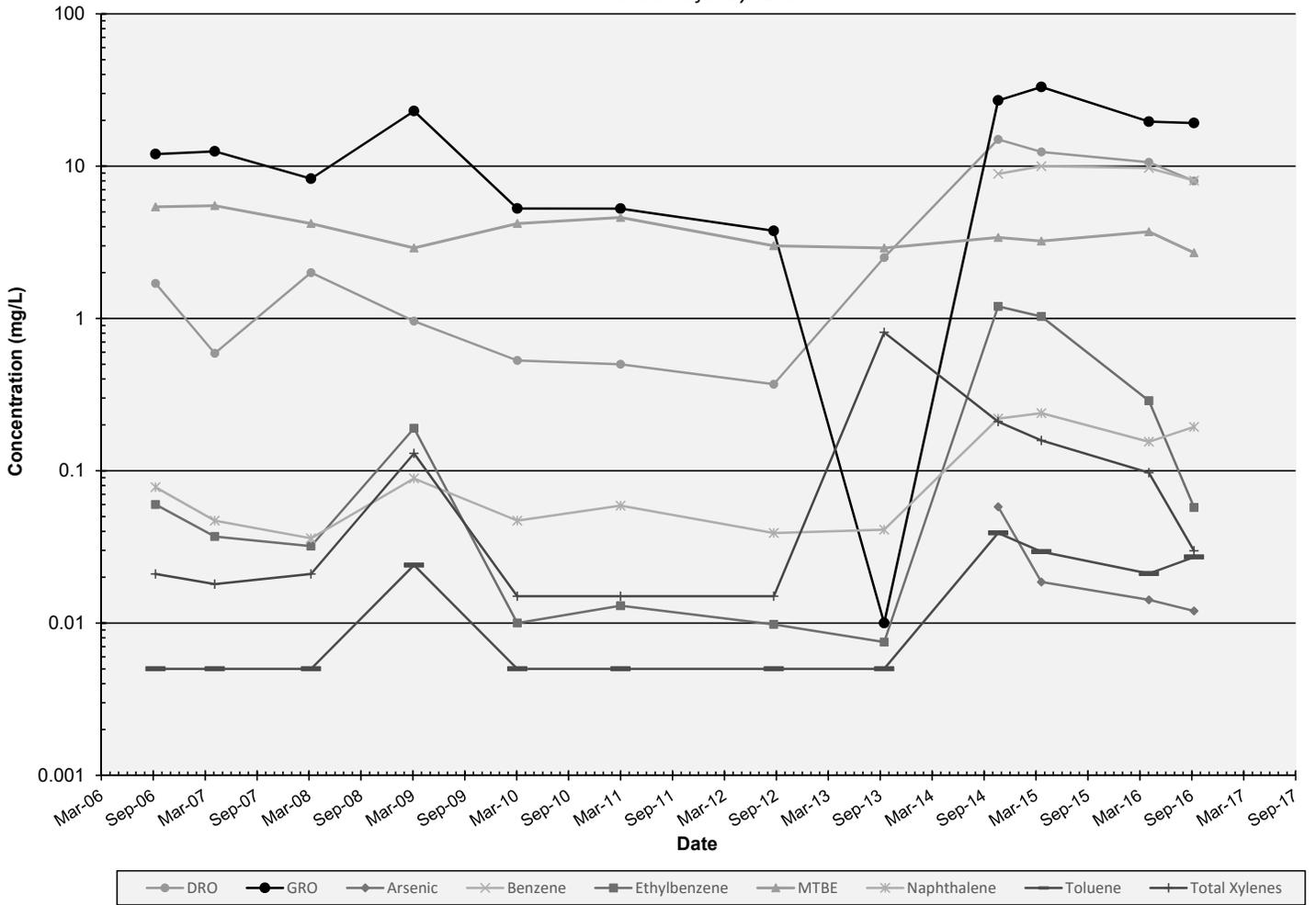
MW-48: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



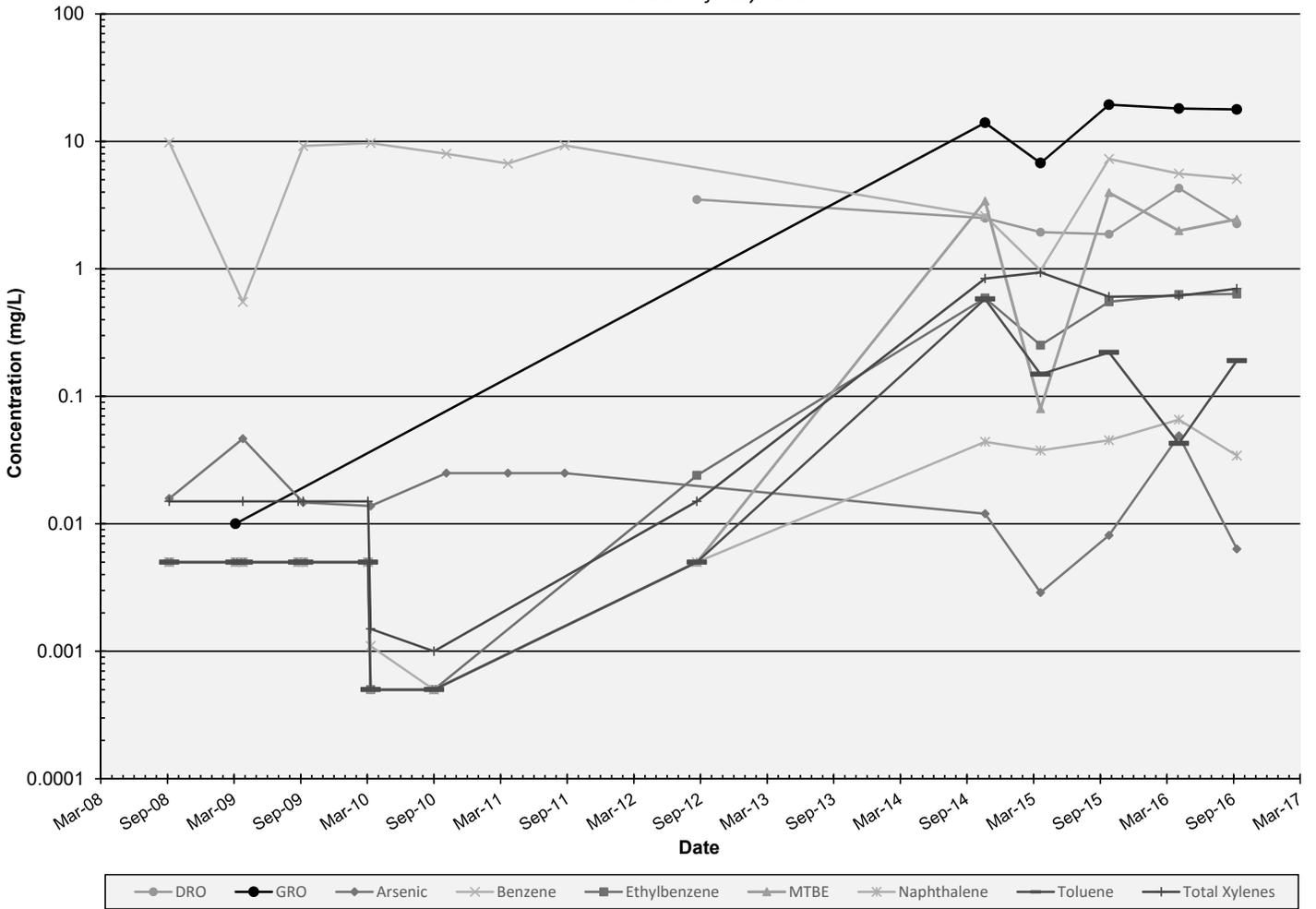
MW-64: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



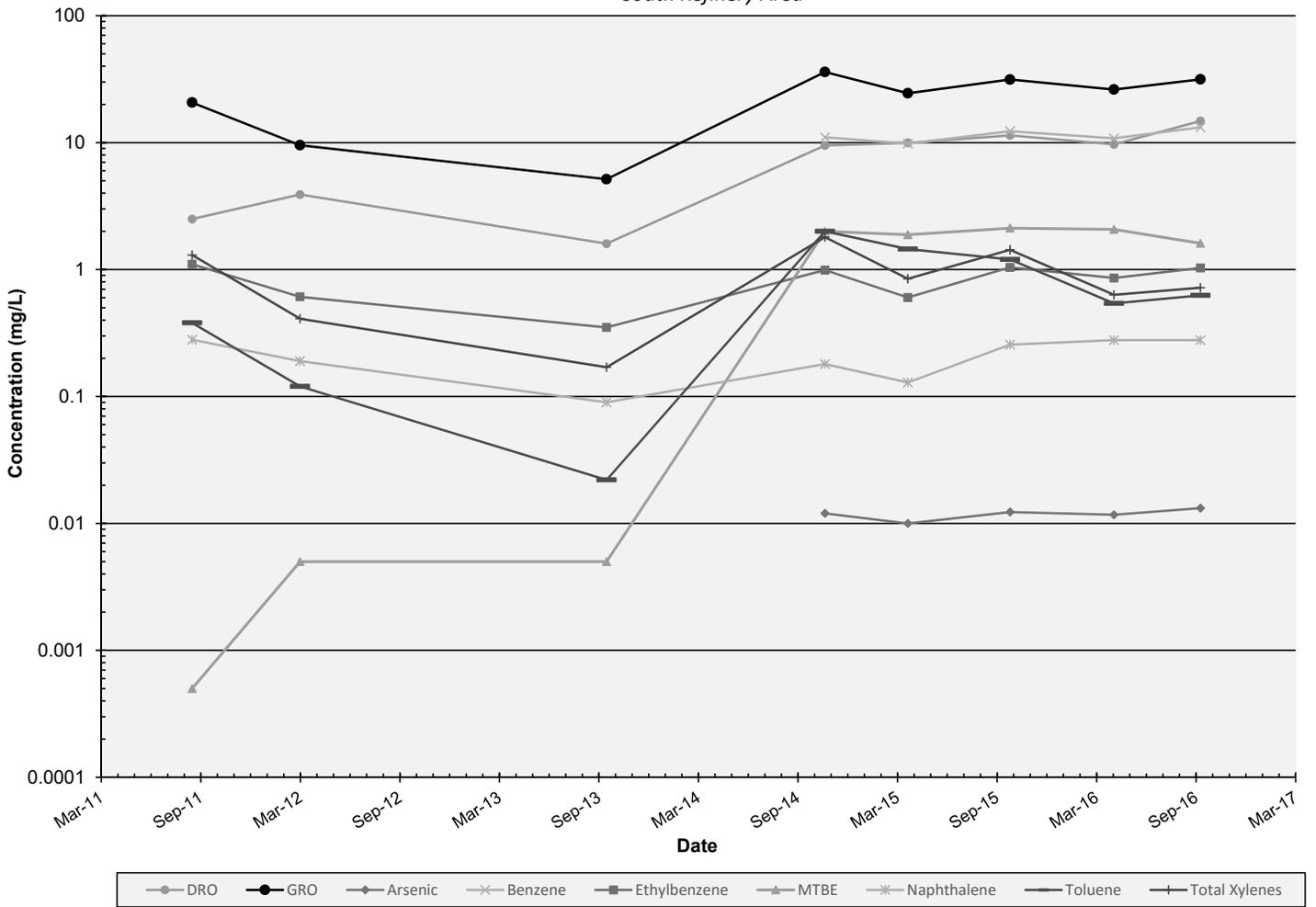
MW-65: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



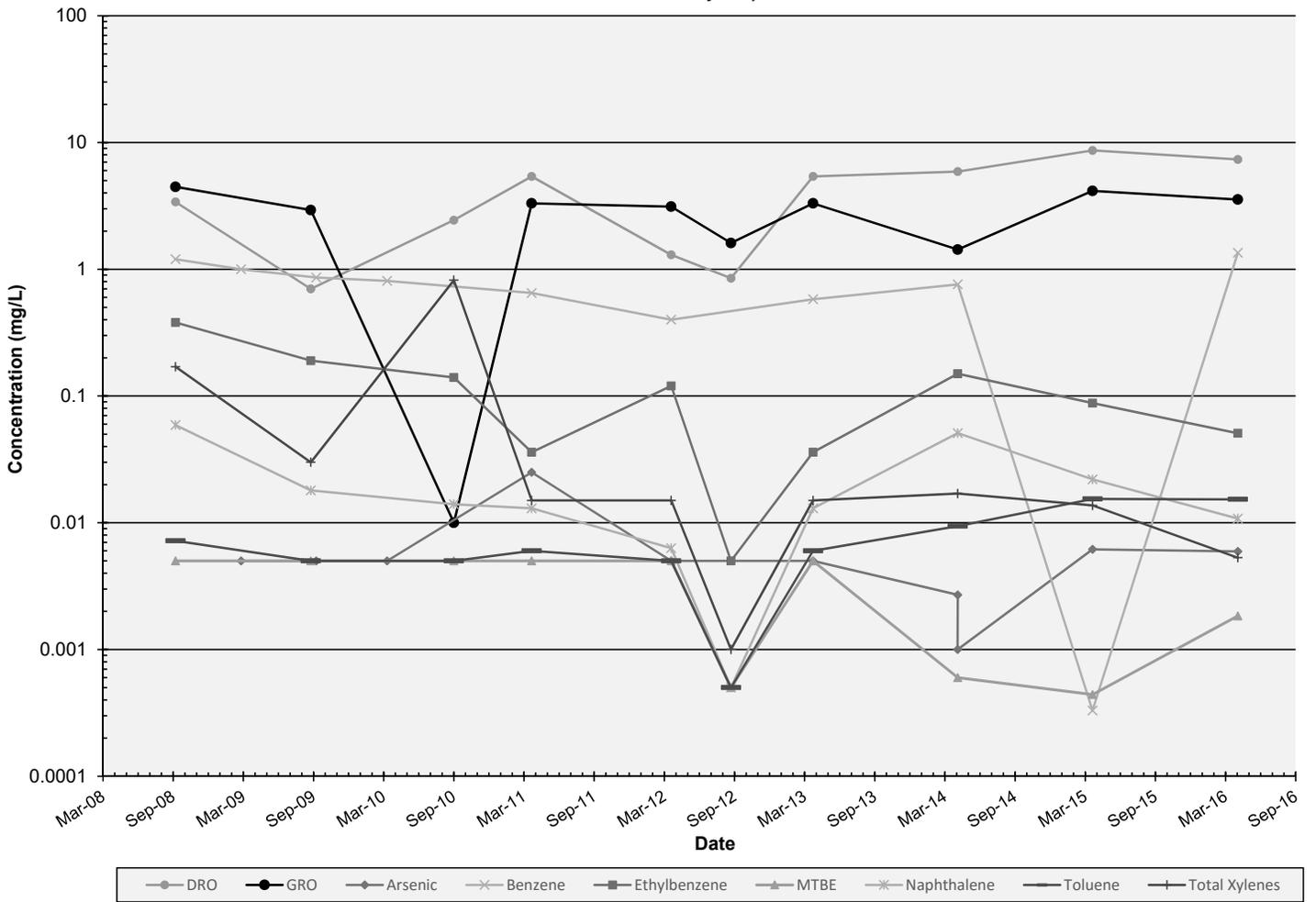
MW-99: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



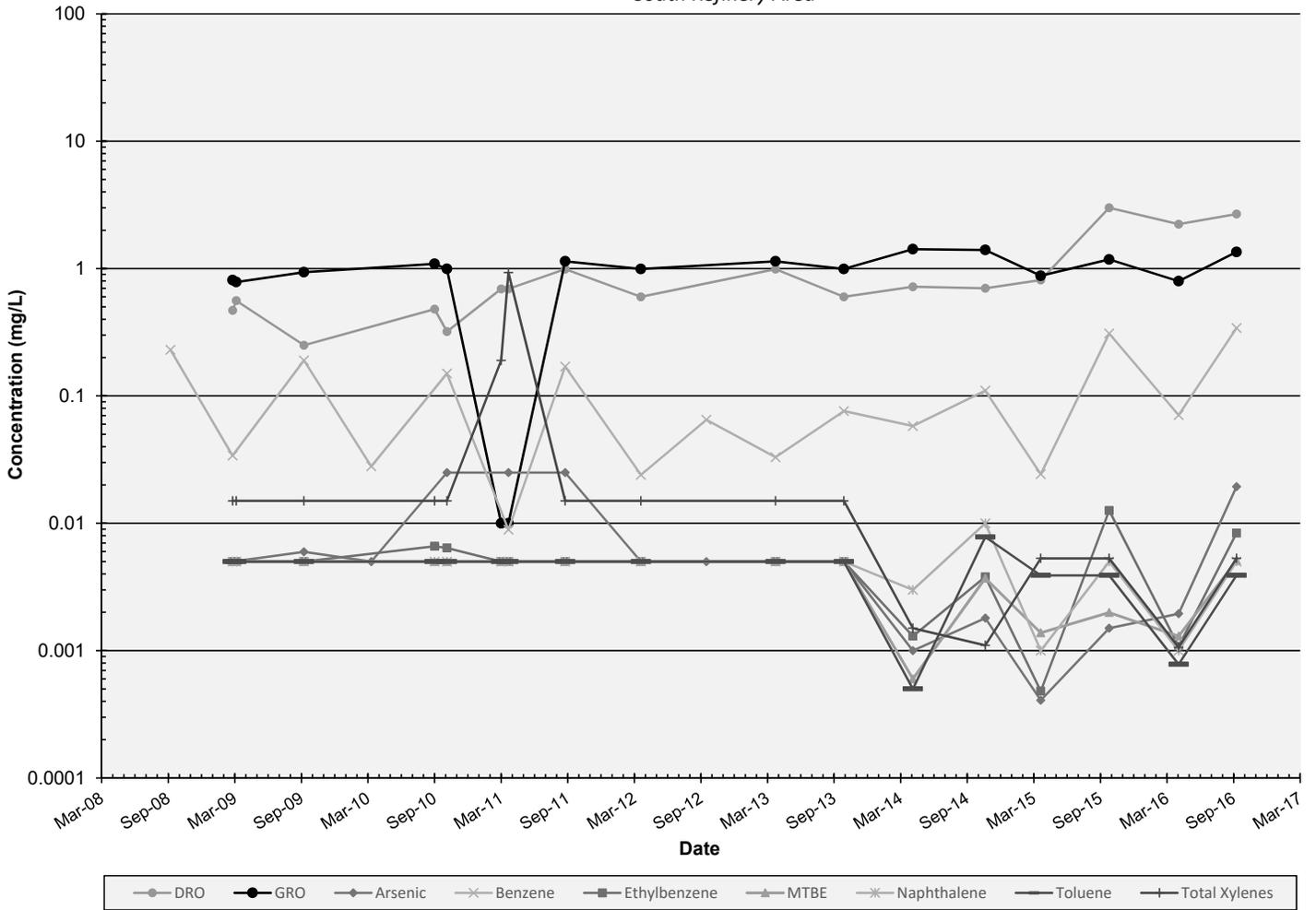
MW-102: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



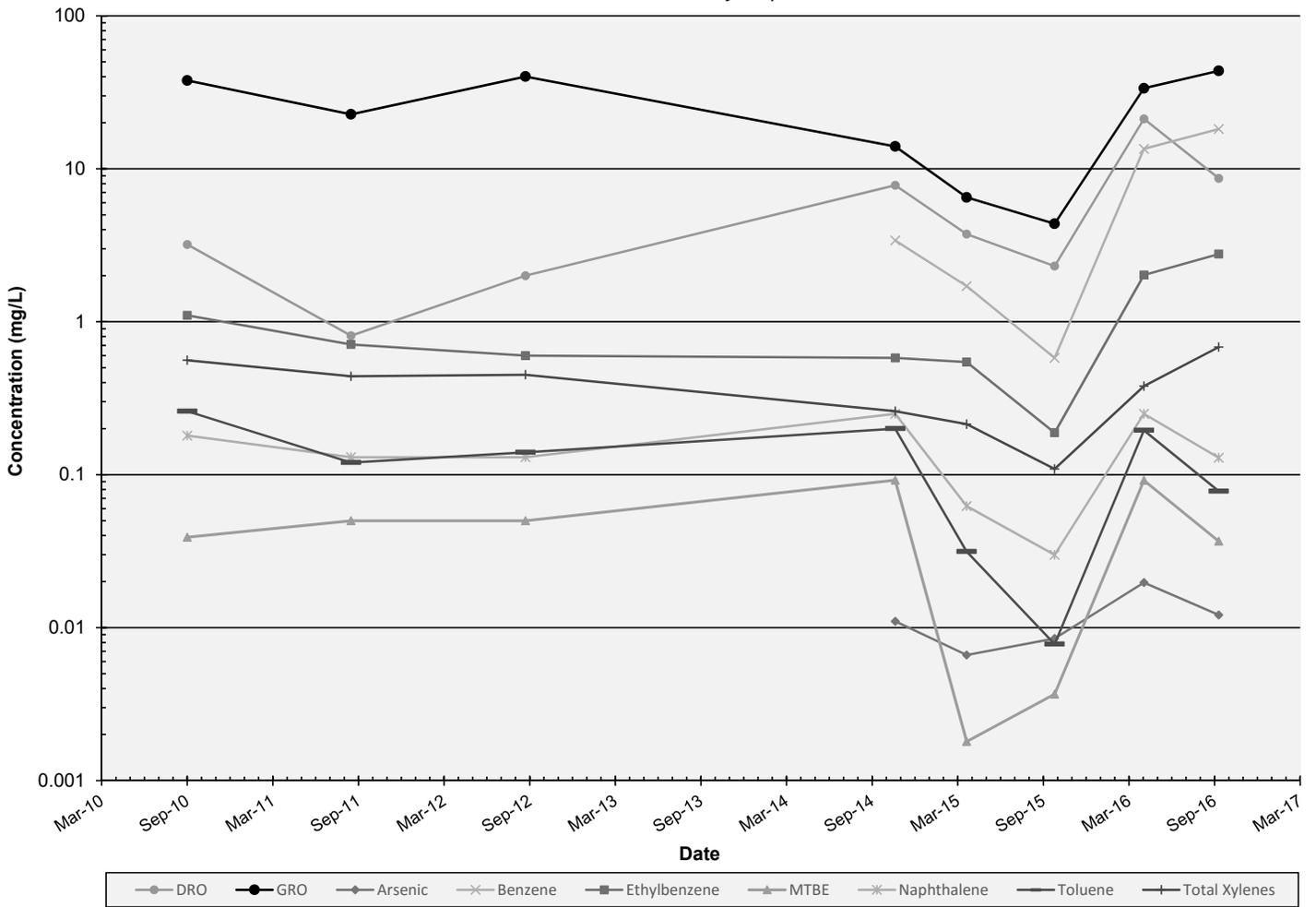
MW-103: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



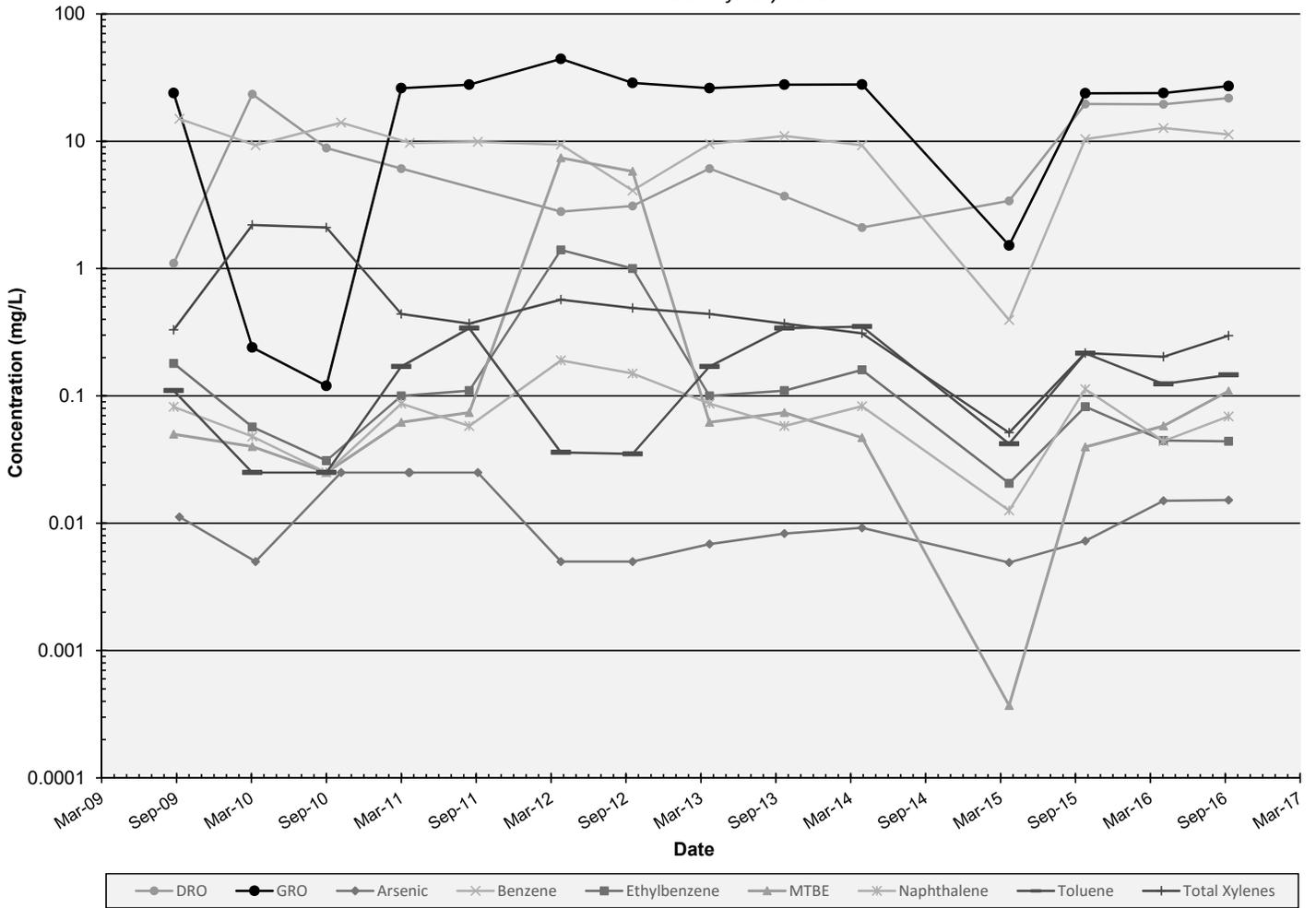
MW-104: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



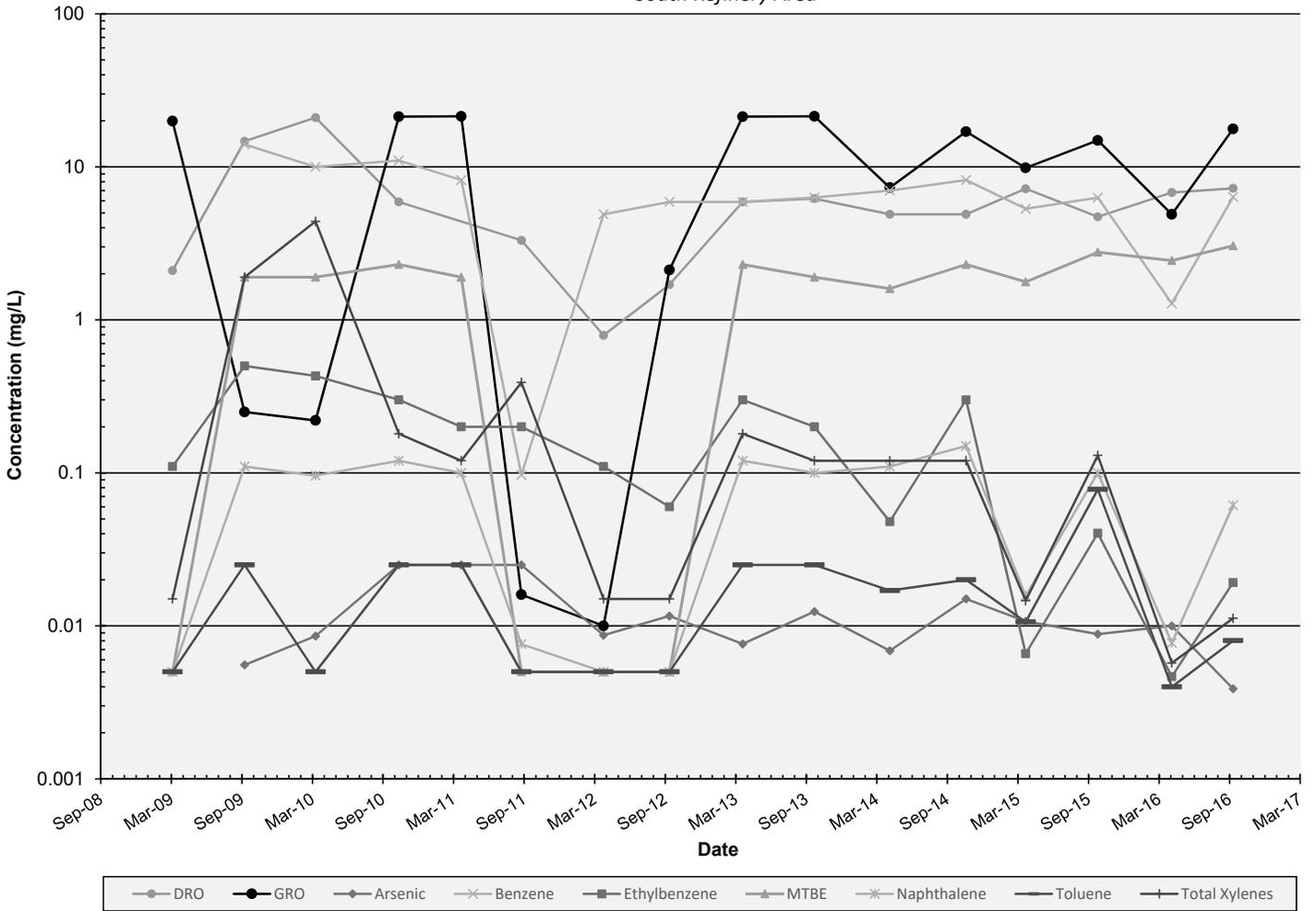
MW-105: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



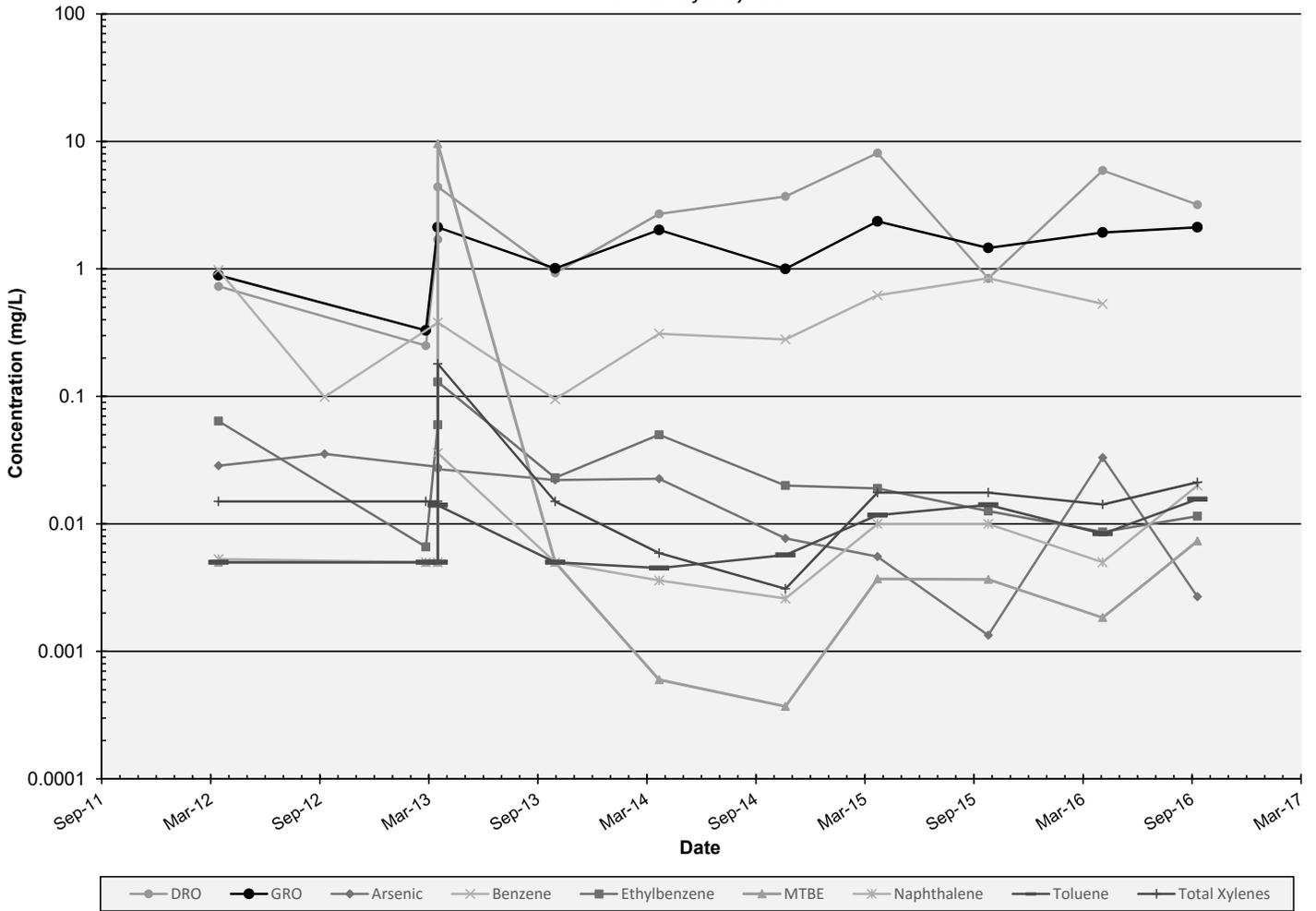
MW-106: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



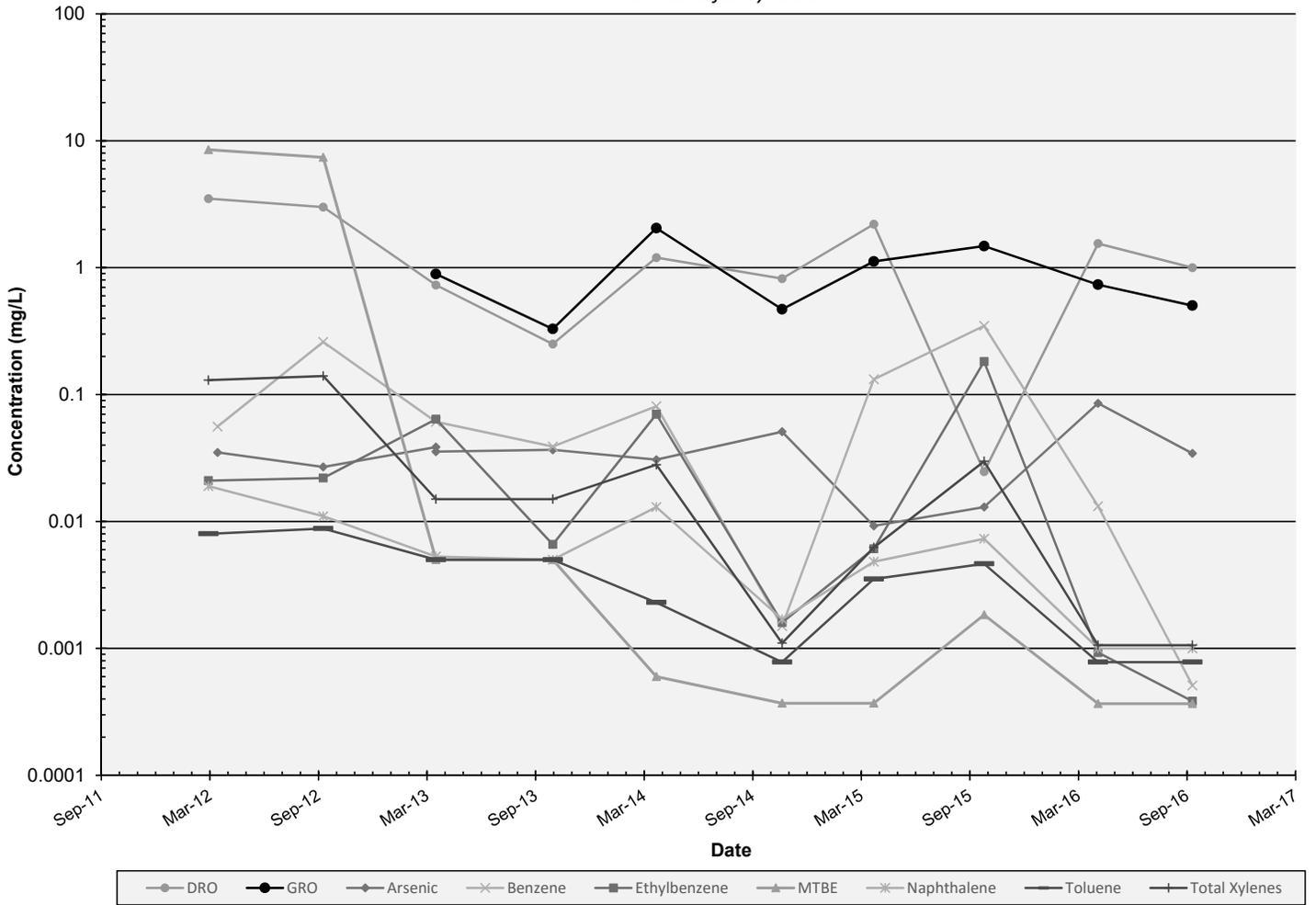
MW-107: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



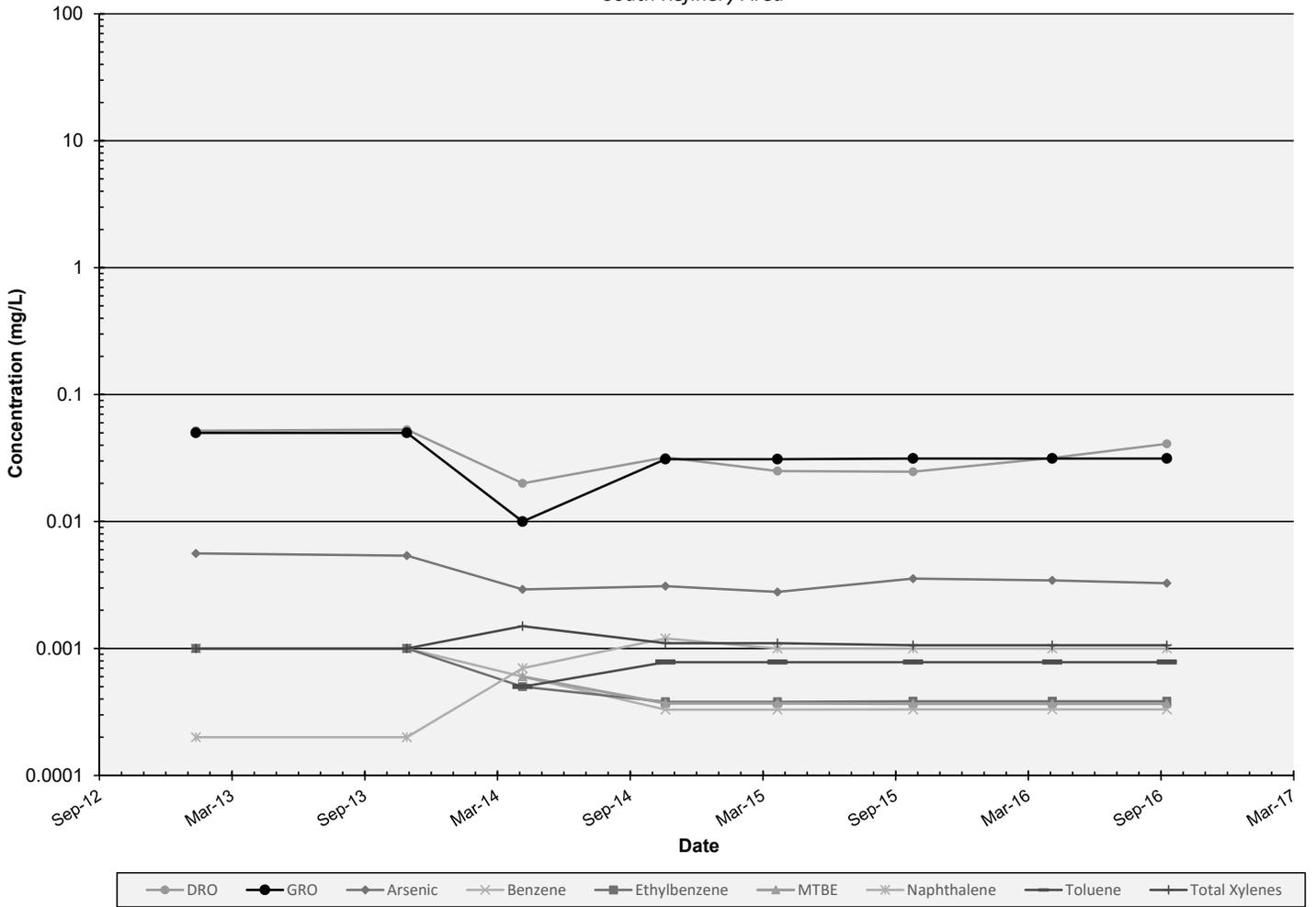
MW-109: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



MW-110: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area

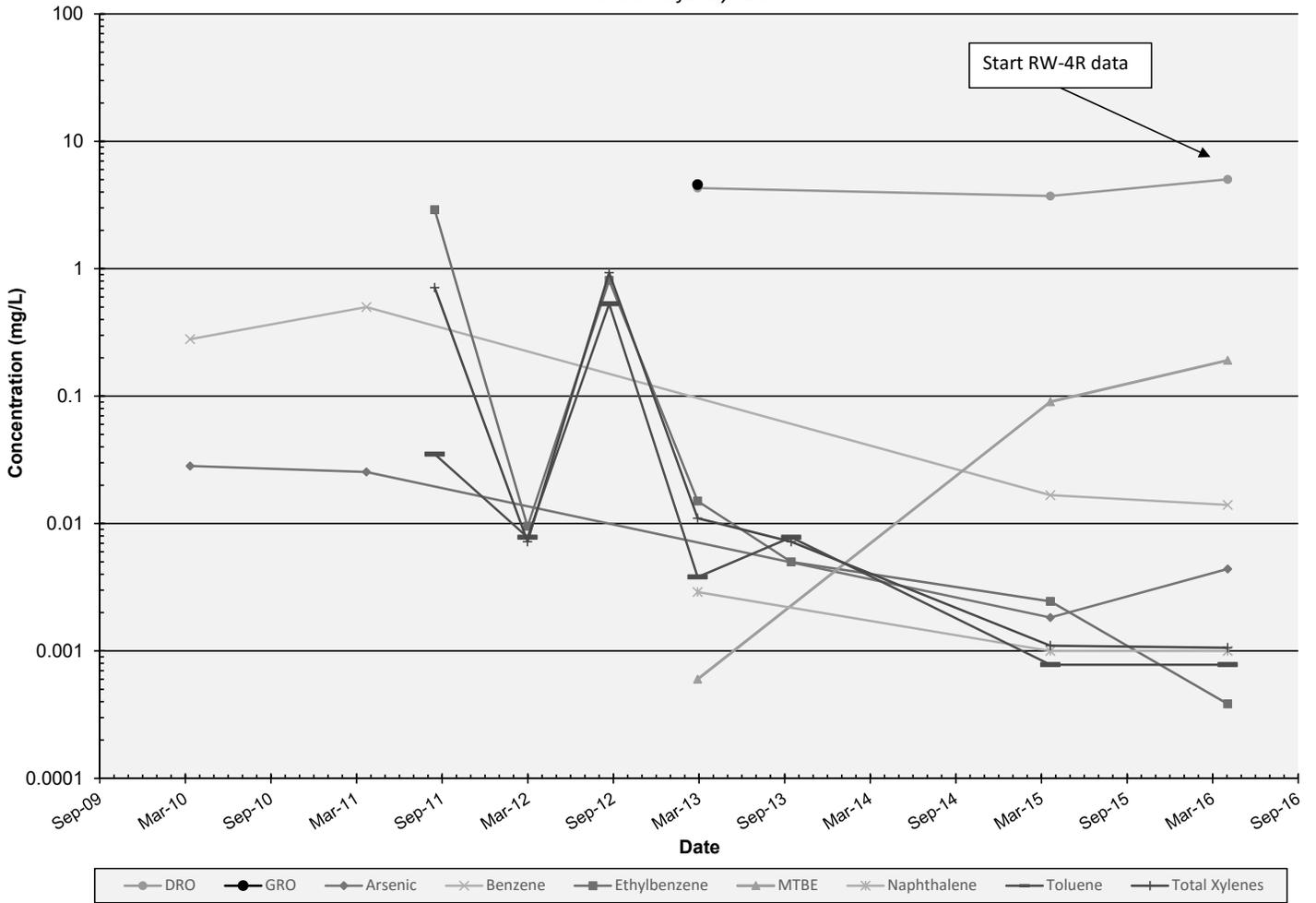


MW-114: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 South Refinery Area



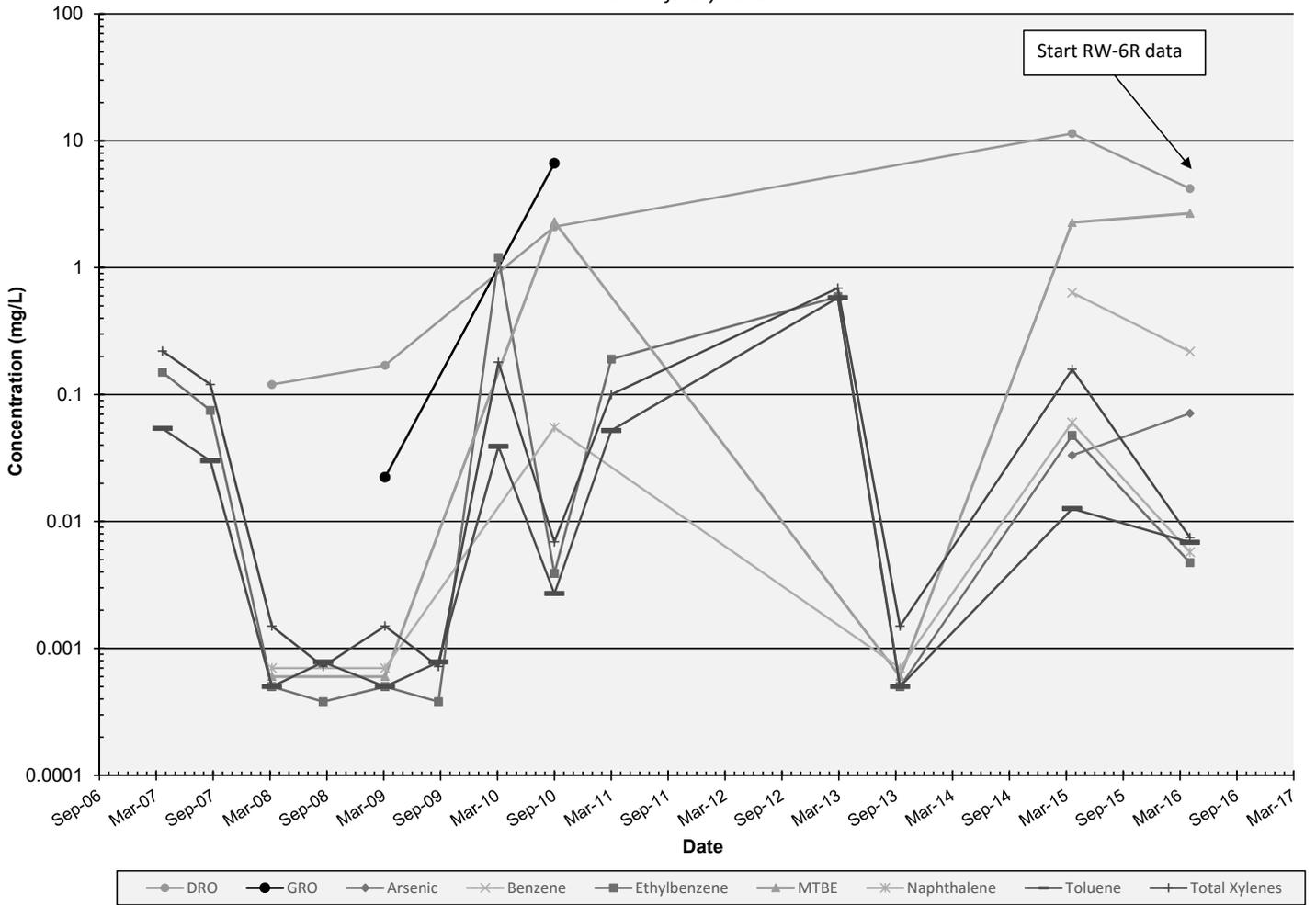
RW-4 and RW-4R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery
South Refinery Area

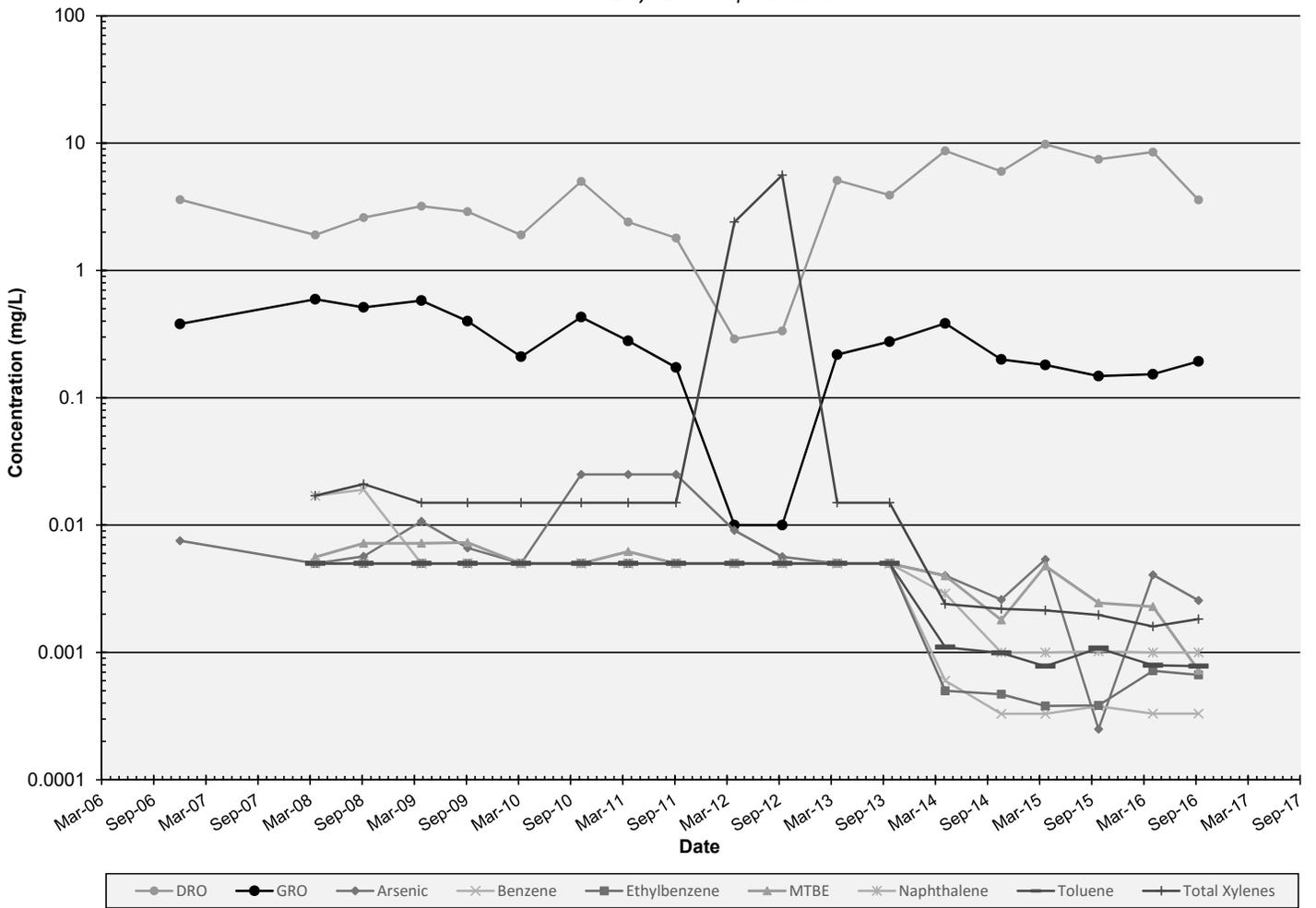


RW-6 and RW-6R: COC Concentrations

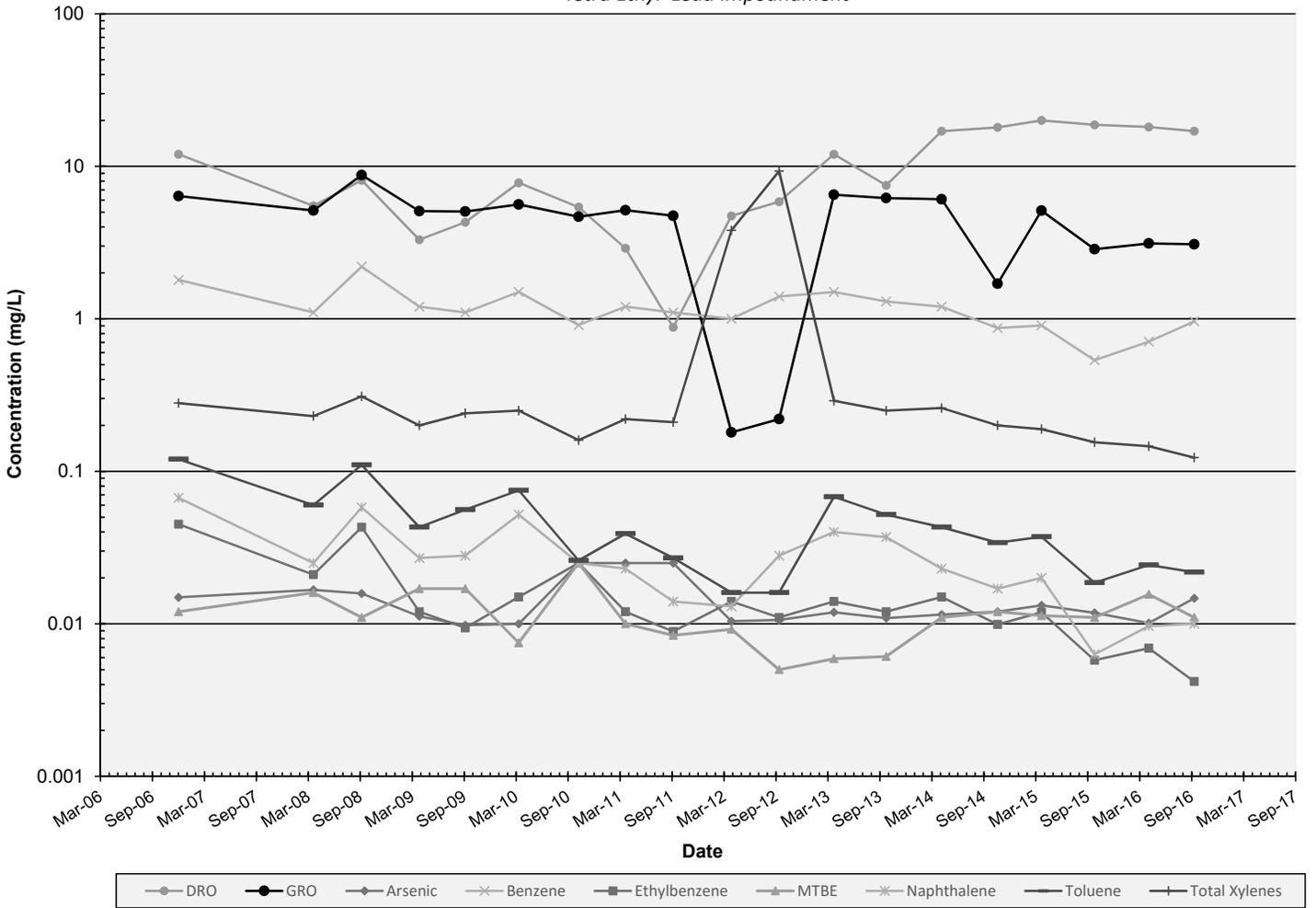
HollyFrontier Navajo Refining LLC - Artesia Refinery
South Refinery Area



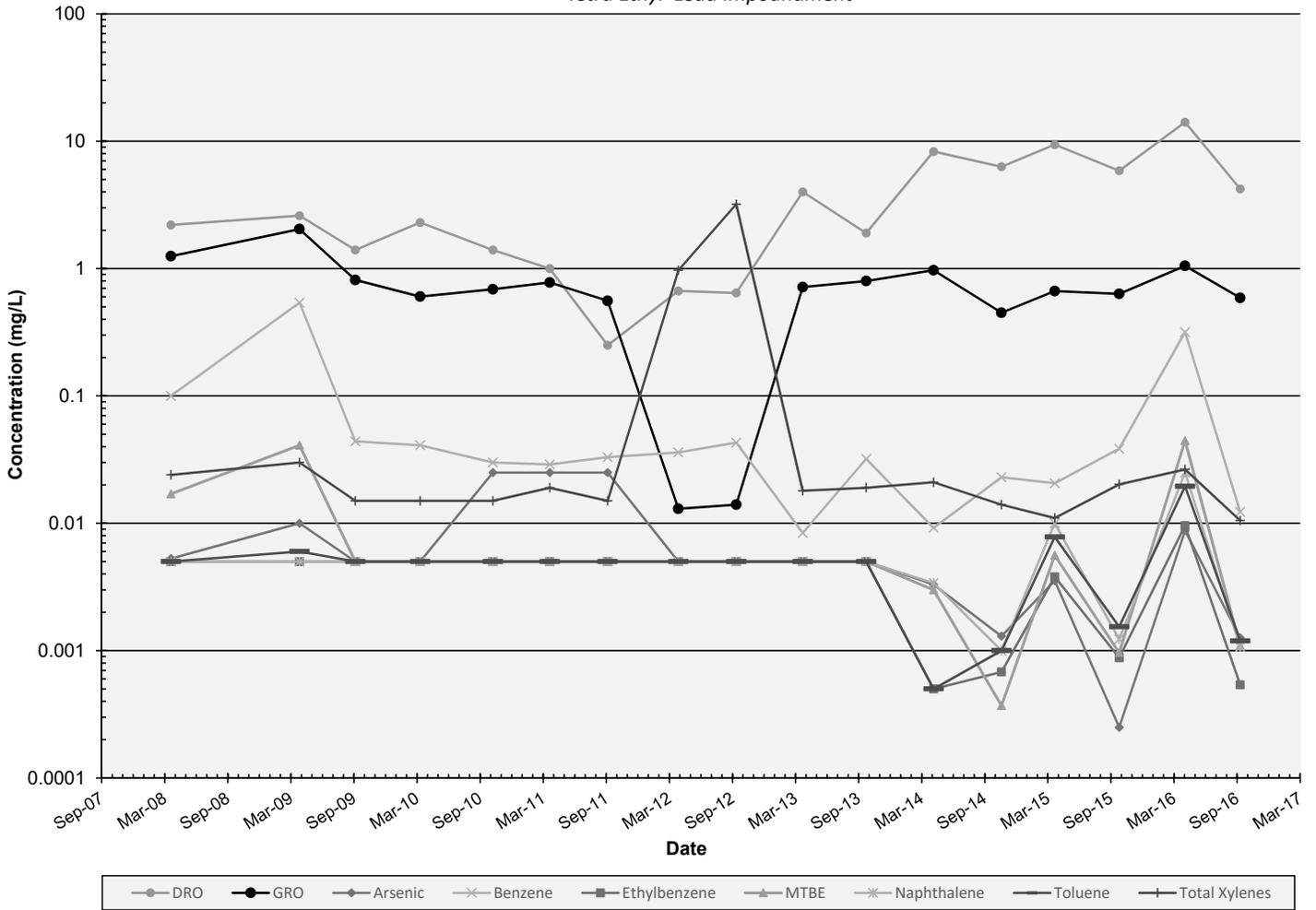
TEL-1: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Tetra Ethyl Lead Impoundment



TEL-2: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Tetra Ethyl Lead Impoundment

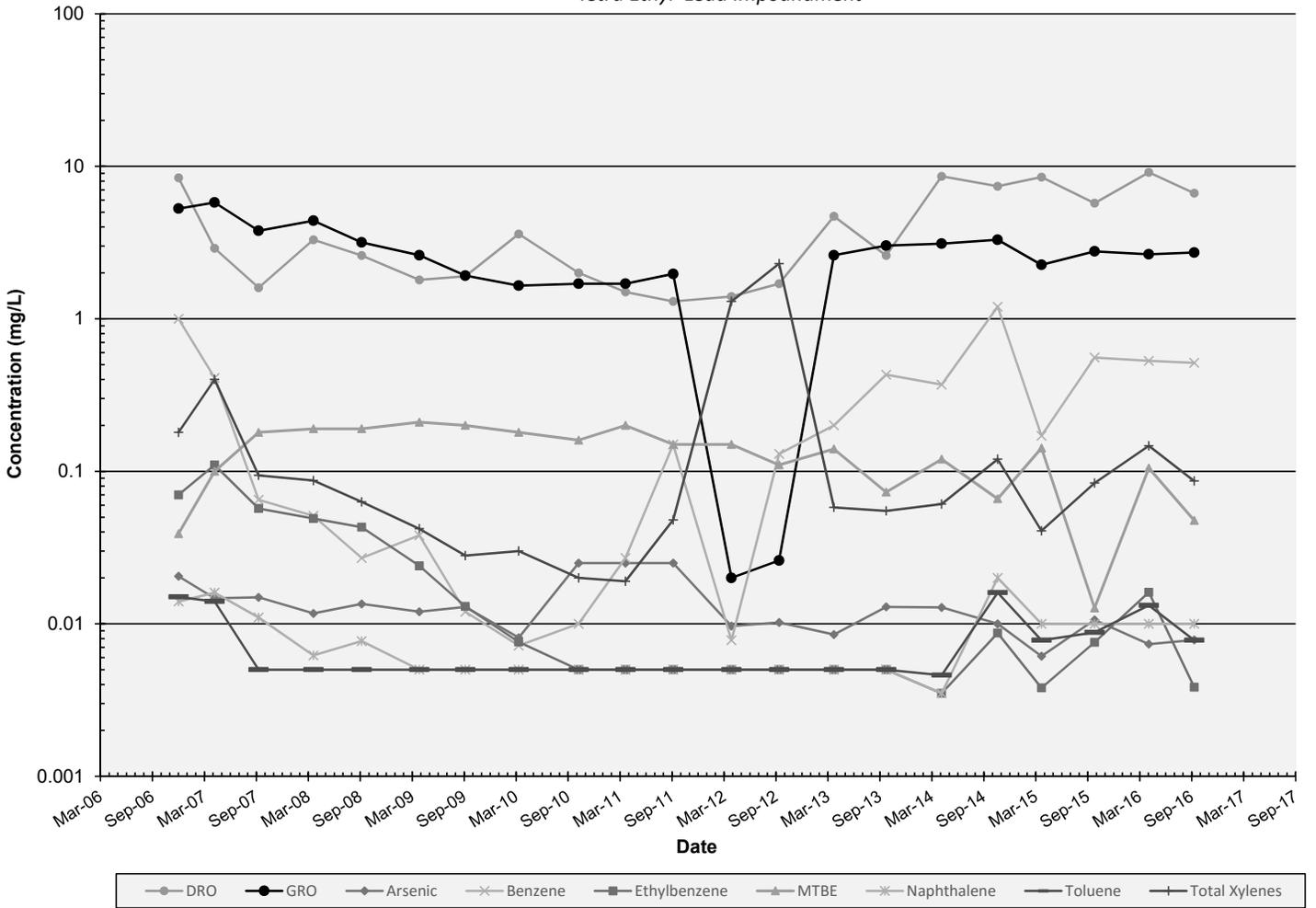


TEL-3: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Tetra Ethyl Lead Impoundment



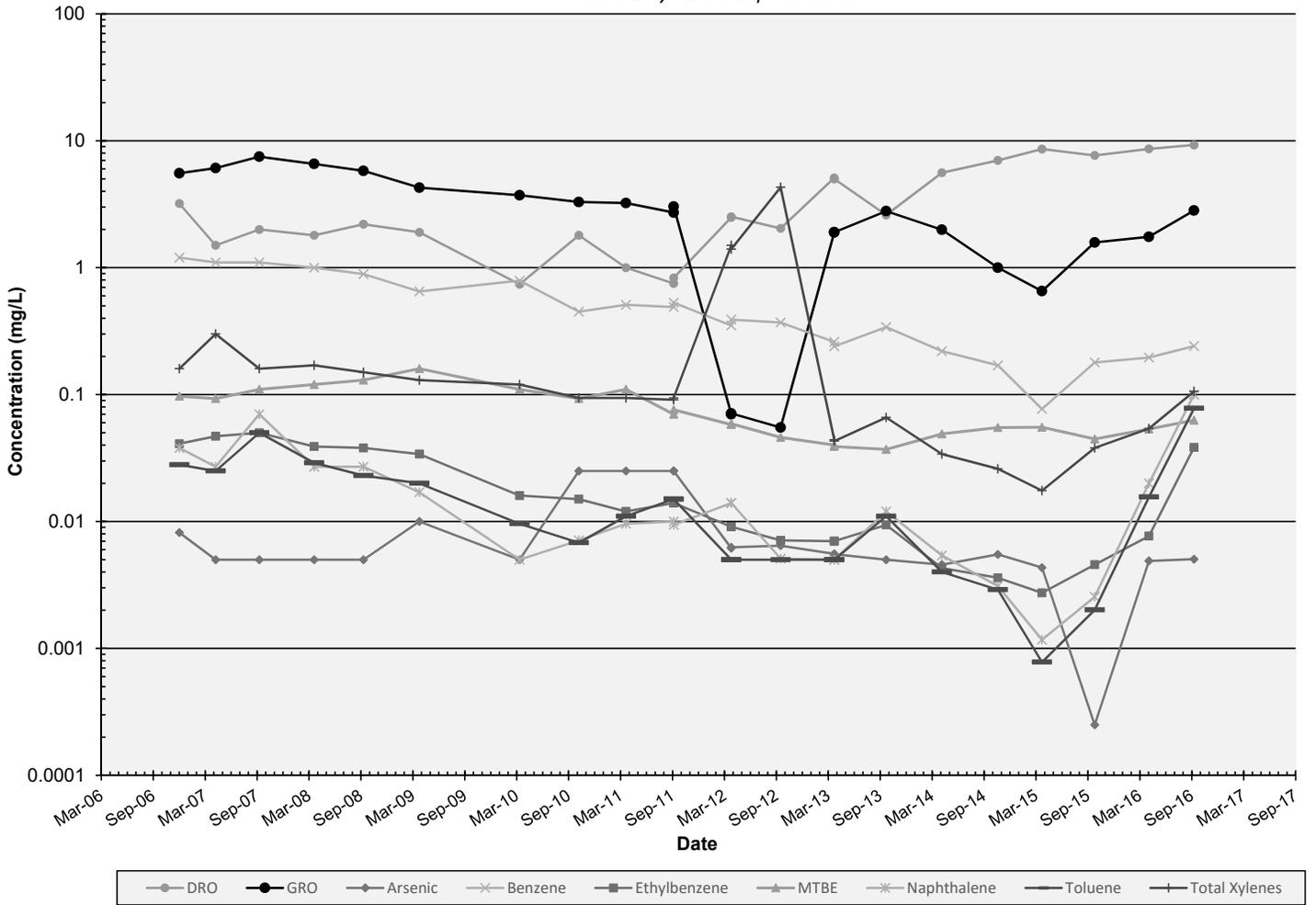
TEL-4: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery
Tetra Ethyl Lead Impoundment

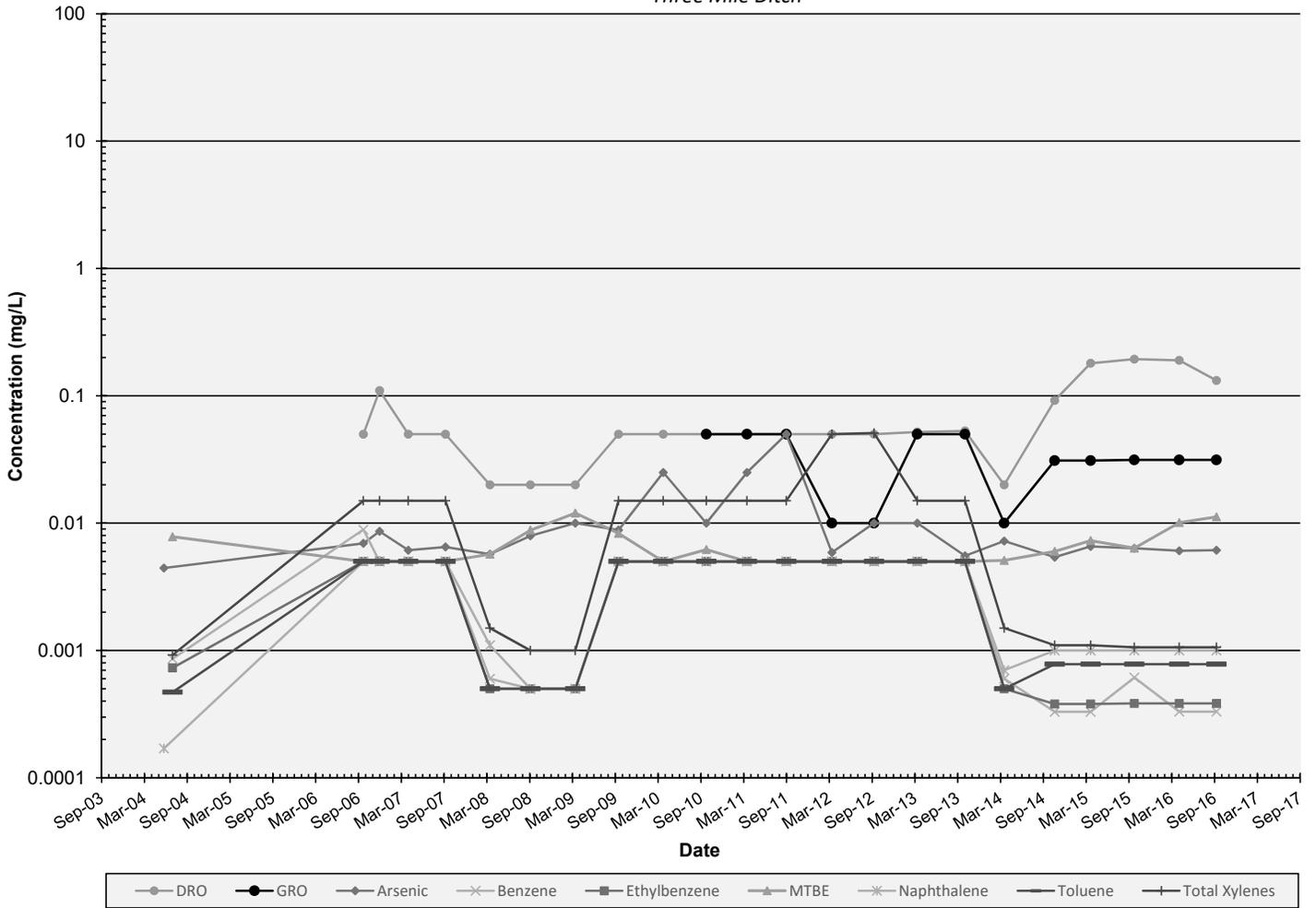


MW-49: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery
Tetra Ethyl Lead Impoundment

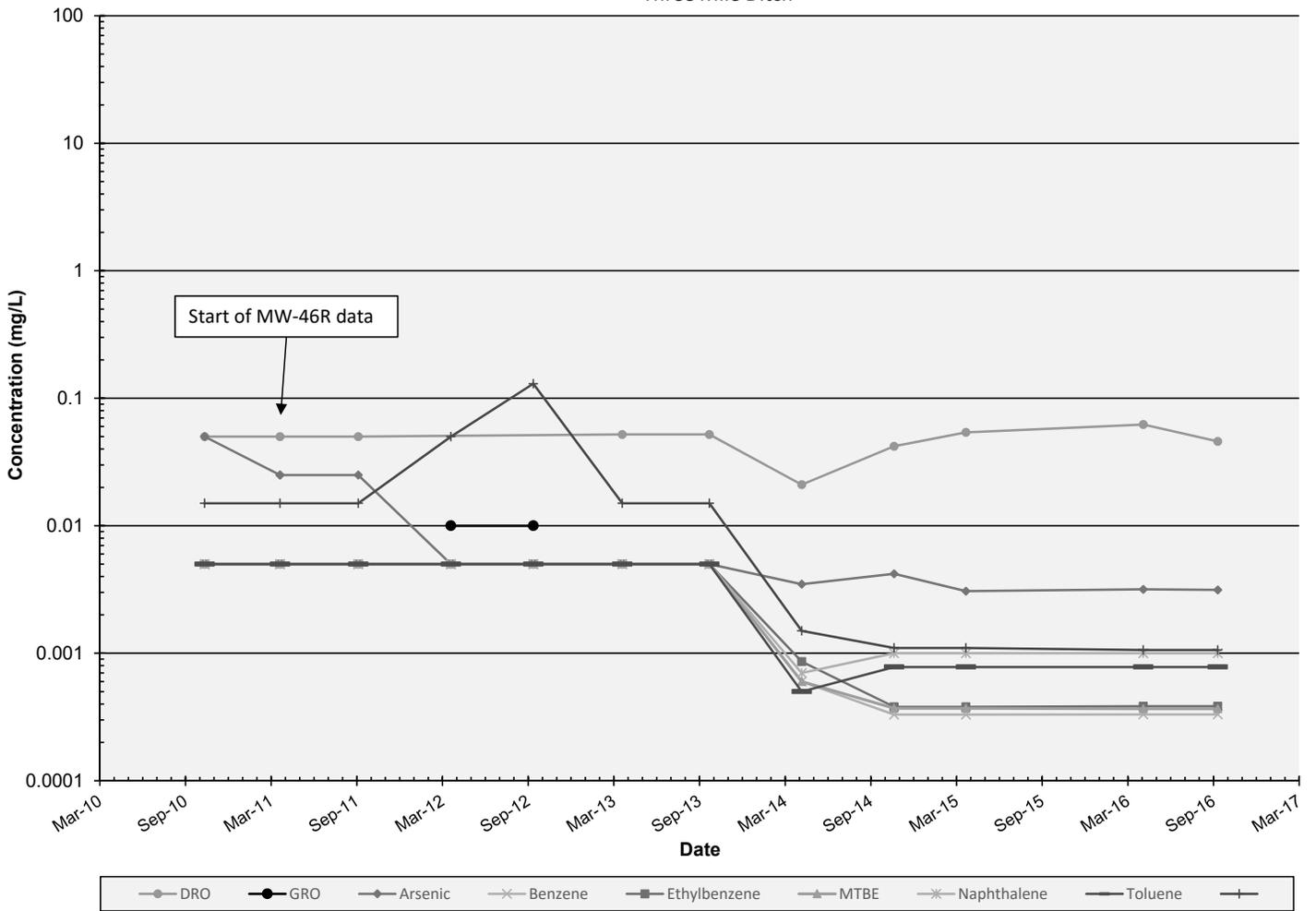


MW-21: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Three Mile Ditch

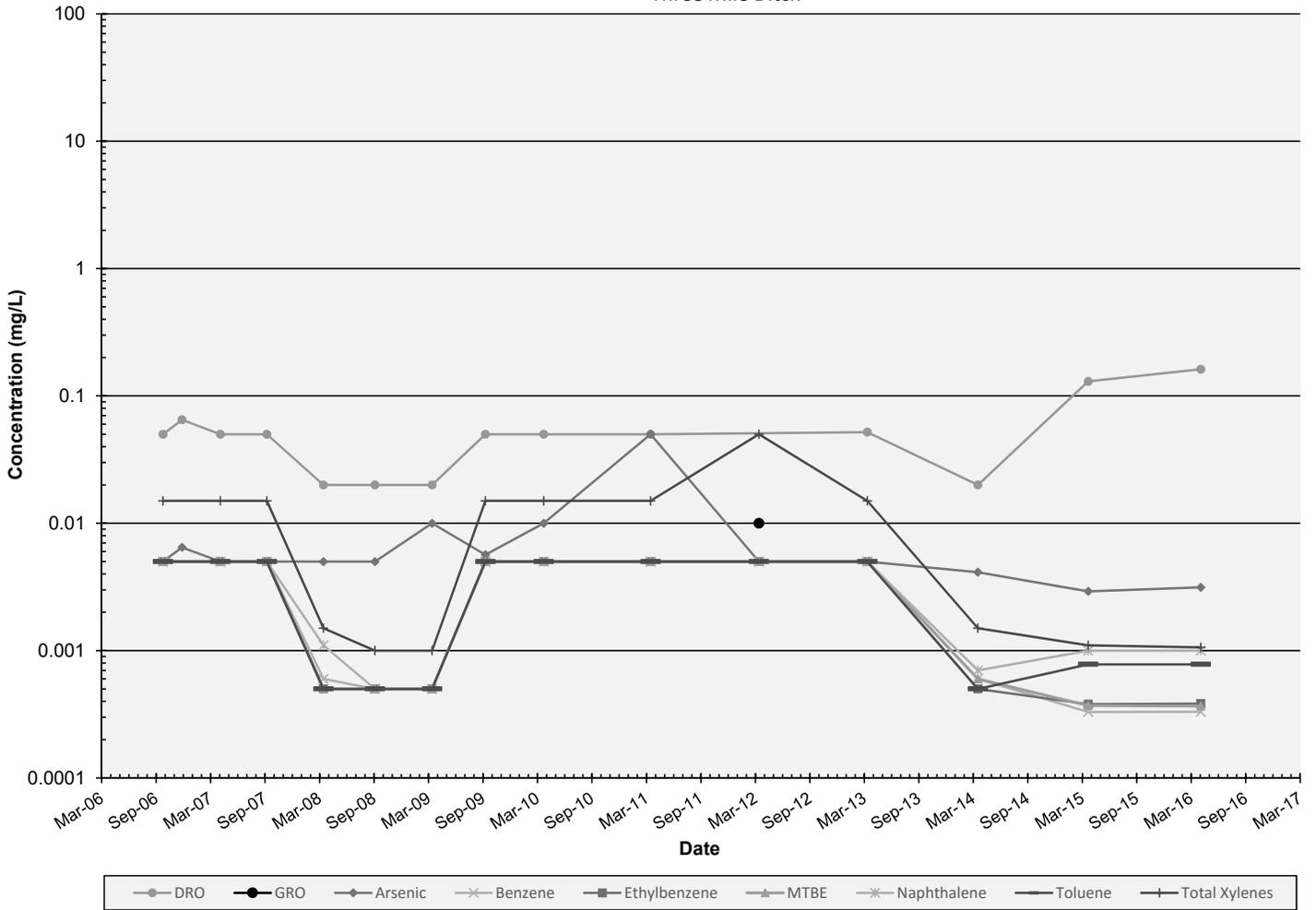


MW-46 & MW-46R: COC Concentrations

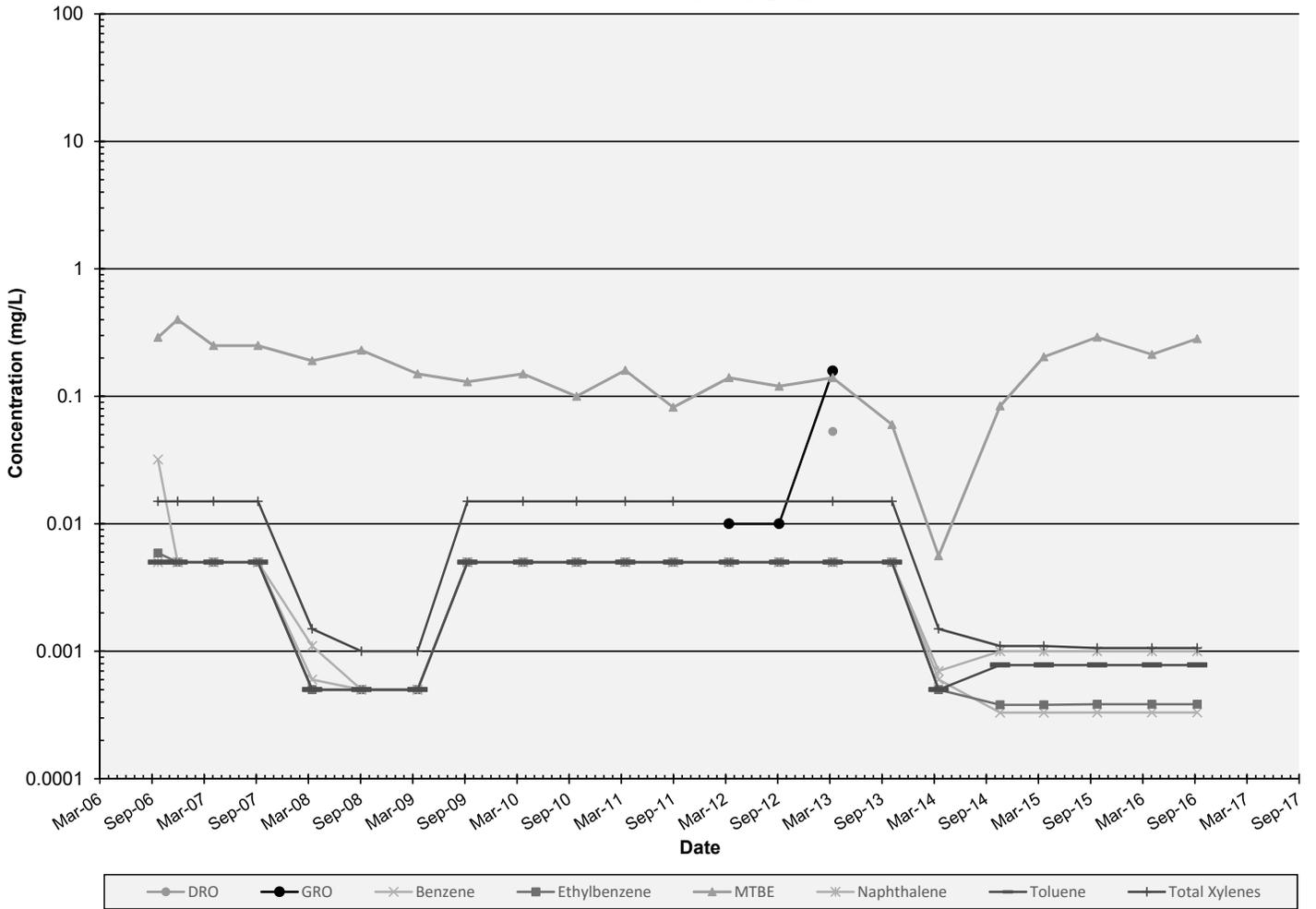
HollyFrontier Navajo Refining LLC - Artesia Refinery
Three Mile Ditch



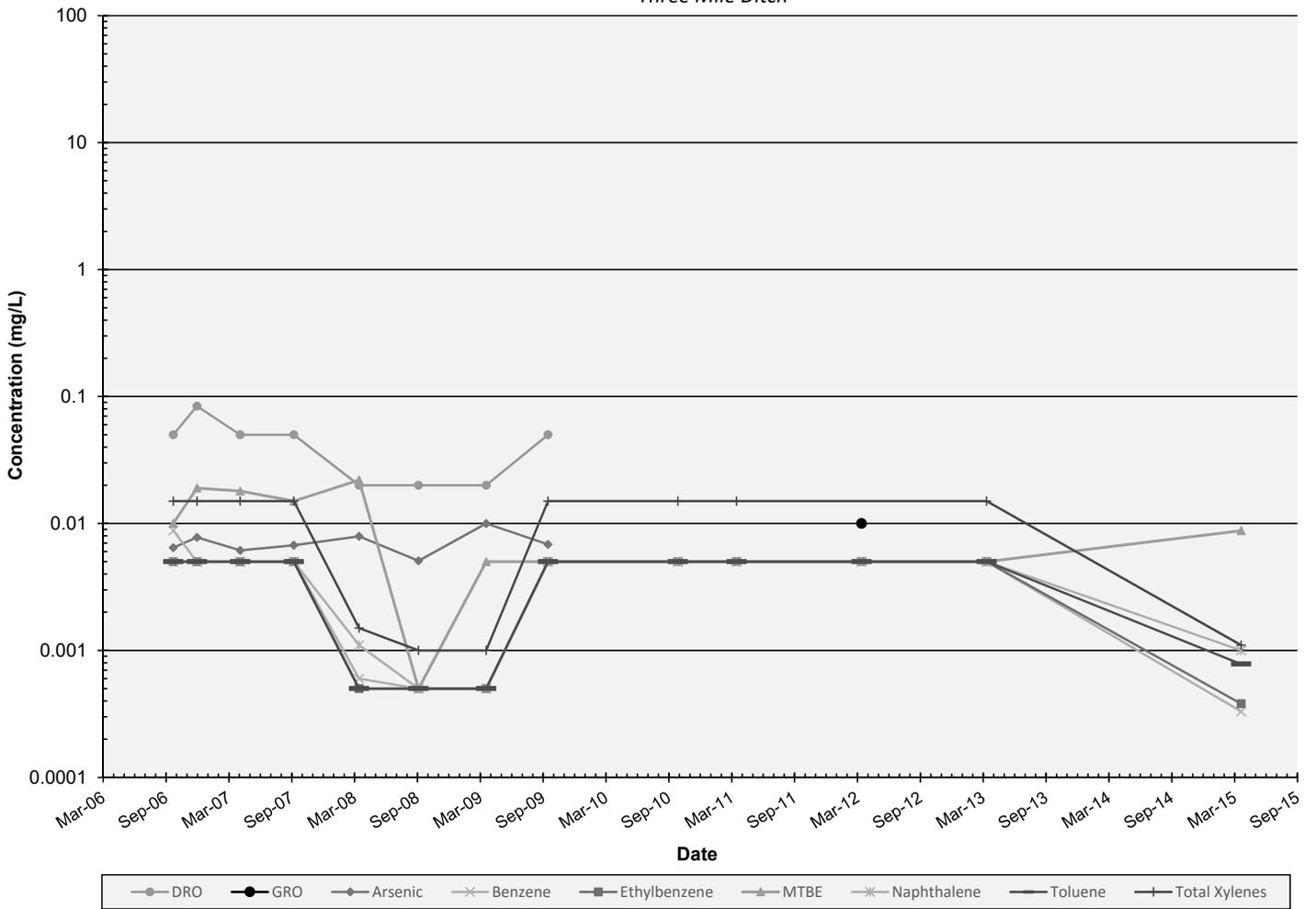
MW-68: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Three Mile Ditch



NP-1: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Three Mile Ditch



NP-6: COC Concentrations
 HollyFrontier Navajo Refining LLC - Artesia Refinery
 Three Mile Ditch



Appendix D: Data Validation

Data reported by ESC Lab Sciences in Nashville, Tennessee for the groundwater samples collected in April and October 2016 were reviewed to ensure that reporting analytical results met the data quality requirements contained in the United States Environmental Protection Agency (EPA) *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, August 2014), *National Functional Guidelines for Superfund Inorganic Methods Data Review* (USEPA, August 2014), and the individual methods, as applicable. It was determined that quality control data associated with analytical results indicate reported concentrations of target analytes are defensible and that measurement data reliability is within the expected limits of sampling and analytical error. Quality control (QC) data indicate that measurement data are sufficient to meet method quality objectives, reported data are defensible, and QC mechanisms were generally effective in ensuring measurement data reliability within the expected limits of sampling and analytical error.

The following section discuss the data QC issues identified during the data review for each of the data reports listed below.

April 2016 Data Packages	October 2016 Data Packages
L832409	L864303
L832422	L864305
L832435	L864320
L832447	L864321
L832450	L864334
L832460	L864567
L832462	L864633
L832468	L864634
L832472	L864646
L832488	L864773
L832603	
L832616	
L832621	

Lab Report L832409

Sample identifiers cross-referenced to laboratory identifications are presented below.

Sample ID	Lab ID
L832409-01	UG-1
L832409-02	UG-2
L832409-03	UG-3R
L832409-04	UG-4
L832409-05	TRIP BLANK-REST-03
L832409-06	MW-117
L832409-07	MW-118
L832409-08	MW-119
L832409-09	MW-57
L832409-10	MW-111
L832409-11	KWB-5
L832409-12	KWB-12A
L832409-13	KWB-12B
L832409-14	DUP-REST-05
L832409-15	EB-REST-05
L832409-16	KWB-11B
L832409-17	KWB-11A
L832409-18	RW-13R
L832409-19	RA-4196
L832409-20	TRIP BLANK-REST-01
L832409-21	RA-4798
L832409-22	MW-50
L832409-23	MW-92
L832409-24	RW-1R*
L832409-25	MW-91
L832409-26	MW-90
L832409-27	MW-96

*Sample ID is listed as RW-1 in corresponding COC

Lab Report L832409 Continued

Data Review Checklist	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?		X	
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any laboratory control sample (LCS) or LCS duplicates (LCSD) % recoveries (%R) out of laboratory defined limits?		X	
Any LCS/LCSD relative percent differences (RPD) above laboratory defined limits?		X	
Any matrix spike (MS) or MS duplicate (MSD) %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?	X		
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?	X		

Holding Time

For KWB-11A, TDS was analyzed out of the recommended holding time due to rerun not confirming the original result.

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved boron: KWB-11B
- Boron: KWB-11B, UG-3R
- Iron: KWB-11B, MW-50
- Dissolved manganese: UG-3R, EB-REST-05

Equipment Blanks

Ten equipment blank detections were identified in EB-REST-05. These compounds were detected in the corresponding samples at concentrations within five times the EB-REST-05 equipment blank concentration. Therefore, they may include measurement contributions from the field.

Lab Report L832409 Continued

- Nitrate-nitrite: KWB-5, MW-111, RA-4196, RW-13R
- Dissolved nickel: UG-1, EB-REST-05
- Dissolved vanadium: EB-REST-05

MS/MSDs

Dissolved arsenic in batch WG869123 was below the recovery limit for both MS and MSD %R. Therefore, samples in this batch with a detection in the corresponding analyte may be biased low.

The following analytes were above the recovery limit for both MS and MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased high.

- Dissolved boron in batch WG869425
- Selenium in batch WG869289

The following analytes exceeded their respective RPD. Therefore, any detected analytes in the samples in each of the corresponding batch may be biased high.

- Dissolved arsenic in batch WG869123
- Dissolved selenium in batch WG873946
- Selenium in batch WG869289

Field Duplicates

The duplicate pair KWB-12B and DUP-REST-05 did not meet control limits (20%) for nitrate-nitrite (39.6%) or sulfate (26.5%). These results for KWB-12B may be considered estimated.

Analytical Method

Selenium in sample MW-91 was analyzed by ICP 6020 due to matrix interferences by ICPMS 6020.

Lab Report L832422

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832422-01	MW-103
L832422-02	MW-104
L832422-03	EB-REST-02
L832422-04	DUP-REST-02
L832422-05	MW-126B
L832422-06	KWB-1A
L832422-07	KWB-6
L832422-08	KWB-10R
L832422-09	RW-#18A
L832422-10	TRIP BLANK-REST-02
L832422-11	MW-40
L832422-12	MW-98
L832422-13	MW-93
L832422-14	MW-23
L832422-15	MW-138
L832422-16	MW-137
L832422-17	MW-42
L832422-18	MW-41
L832422-19	MW-106
L832422-20	MW-101
L832422-21	RA-3156

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?	X		
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Lab Report L832422 Continued

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved Lead: KWB-1A, KWB-6, KWB-10R, MW-93, MW-23, EB-REST-02
- Manganese: EB-REST-02
- Dissolved selenium: KWB-6, KWB-10R, MW-23, MW-40, MW-41, MW-42, MW-98, MW-101, MW-137, MW-138, RW-#18A, DUP-REST-02,
- Dissolved vanadium: MW-137, MW-138

Equipment Blanks

Six equipment blank detections were identified in EB-REST-02. Nitrate-nitrite was detected in the corresponding samples DUP-REST-01, MW-103, MW-104, MW-101, and MW-126B at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

The following analytes were below the recovery limit for both MS and MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased low.

- Benzene in batch WG868978
- Dissolved Mercury in batch WG868782
- Nitrate/Nitrite in batch WG870054

Cadmium (WG869264) was above the recovery limit for both MS and MSD %R. Therefore, samples in this batch with a cadmium detection may be biased high.

The following analytes exceeded their respective RPD. Therefore, any detected analytes in the samples in each of the corresponding batch may be biased high.

- Acetone in batch WG870074
- Selenium in batch WG869264

Lab Duplicates

The RPD in sample L832422-20 (WG870054) exceeded the laboratory-defined control limit for nitrate-nitrite. Therefore, the nitrate-nitrite result in this sample may be biased high.

Field Duplicates

The duplicate pair MW-104 and DUP-REST-02 did not meet control limits (20%) for dissolved selenium (191.2%). the selenium result for MW-104 may be considered estimated.

Lab Report L832435

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832435-01	MW-48
L832435-02	MW-130
L832435-03	MW-67
L832435-04	MW-94
L832435-05	MW-95
L832435-06	RW-7R*
L832435-07	MW-126A
L832435-08	MW-127
L832435-09	MW-129
L832435-10	MW-131
L832435-11	MW-134
L832435-12	EB-REST-03
L832435-13	DUP-REST-03
L832435-14	KWB-7
L832435-15	RA-313
L832435-16	MW-64**

*Sample ID is listed as RW-7 in corresponding COC

**Sample not listed in corresponding COC, but added later per TRC

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?		X	
Any analyte analyzed by different method than planned?		X	

Lab Report L832435 Continued

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved lead: MW-48
- Manganese: EB-REST-03

Equipment Blanks

Eight equipment blank detections were identified in EB-REST-03. Lead was detected in the corresponding samples MW-67 and MW-134 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batch WG870054 was below the recovery limit for both MS and MSD %R, therefore samples in batch WG870054 with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-94 is below the laboratory limits, therefore the result for TPH High Fraction may be biased low.

Lab Duplicates

The RPD in MW-64 (WG871518) exceeded the laboratory-defined control limit for cyanide, therefore the cyanide result in this sample may be biased high.

Lab Report L832447

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832447-01	MW-25
L832447-02	MW-27
L832447-03	MW-89
L832447-04	MW-26

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?	X		
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?		X	
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Four method blank detections were identified in the QC summary. There was no data interpretation for associated samples because they are either non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

LCS/LCSDs

Individual LCS or LCSD recoveries were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each LCS/LCSD recoveries were outside the laboratory-defined limits.

Lab Duplicates

The RPD in MW-25 (WG870055) exceeded the laboratory-defined control limit for nitrate-nitrite, therefore the nitrate-nitrite result in this sample may be biased high.

Lab Report L832450

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832450-01	MW-20
L832450-02	NP-1
L832450-03	MW-68
L832450-04	MW-71
L832450-05	TRIP BLANK-TMD-01

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?	X		
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Ten method blank detections were identified in the QC summary. There was no data interpretation for associated samples because they are either non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

LCS/LCSDs

Individual LCS or LCSD recoveries were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each LCS/LCSD recoveries were outside the laboratory-defined limits.

MS/MSDs

The analytes outside the recovery limits for the MS/MSD %R were not qualified because each original result was greater than four times the corresponding spiked amount. The sample concentrations are too high to evaluate accurate spike recoveries.

Lab Report L832460

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832460-01	TEL-3
L832460-02	EB-TEL-01
L832460-03	TEL-2
L832460-04	TRIP BLANK-TEL-01
L832460-05	TEL-1
L832460-06	TEL-4
L832460-07	DUP-TEL-01
L832460-08	MW-49

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?	X		
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?		X	
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Iron: MW-49
- Dissolved manganese: EB-TEL-01
- Vanadium: MW-49

Lab Report L832460 Continued

Equipment Blanks

Six equipment blank detections were identified in EB-TEL-01. Lead was detected in the corresponding samples TEL-1, TEL-2, TEL-3, TEL-4, MW-49, and DUP-TEL-01 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batch WG870055 was below the recovery limit range for the MS/MSD %R, therefore samples in batch WG870055 with a nitrate-nitrite detection may be biased low.

All of the analytes listed in the MS/MSD analysis for batch WG868987 were above the laboratory RPD limits. With the exception of chloroform, all the original results were non-detect, so there was no data interpretation issues for the organic analysis. Samples in batch WG868987 with a chloroform detection may be biased high.

Lab Report L832462

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832462-01	MW-56
L832462-02	NCL-34A
L832462-03	MW-108
L832462-04	NCL-31
L832462-05	NCL-32
L832462-06	EB-NCL-01
L832462-07	NCL-44

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved iron: MW-56
- Dissolved lead: MW-56, MW-108, EB-NCL-01
- Manganese: EB-NCL-01

Equipment Blanks

Seven equipment blank detections were identified in EB-NCL-01. TPH High Fraction was detected in the corresponding sample MW-56 at a concentration within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

Lab Report L832462 Continued

MS/MSDs

The recovery limit of calcium in batch WG869321 was outside the recovery limits for the MS/MSD %R, but there was no data interpretation for the related samples. The original result was greater than four times the spiked amount, so the sample concentration is too high to evaluate accurate spike recoveries.

Lab Report L832468

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832468-01	MW-45
L832468-02	TRIP BLANK-NCL-01
L832468-03	NCL-49
L832468-04	DUP-NCL-01
L832468-05	MW-54A
L832468-06	MW-53

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?		X	
Any detection in equipment blanks?			X
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?		X	
Any analyte analyzed by different method than planned?		X	

MS/MSDs

Nitrate-nitrite in batch WG870056 was below the recovery limit range for the MS %R (no MSD reported), therefore samples in batch WG870056 with a nitrate-nitrite detection may be biased low.

Lab Report L832472

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832472-01	MW-83
L832472-02	TRIP BLANK-EP-02
L832472-03	MW-4A
L832472-04	MW-123
L832472-05	MW-10
L832472-06	MW-22A
L832472-07	DUP-EP-02
L832472-08	MW-88
L832472-09	MW-5A
L832472-10	EB-EP-03
L832472-11	MW-7A
L832472-12	DUP-EP-01
L832472-13	OCD-8A
L832472-14	MW-73
L832472-15	TRIP BLANK-EP-01
L832472-16	MW-74
L832472-17	EB-EP-01
L832472-18	MW-79
L832472-19	EB-EP-04
L832472-20	MW-6A
L832472-21	OCD-7AR
L832472-22	OCD-6
L832472-23	MW-72
L832472-24	MW-2A
L832472-25	MW-122
L832472-26	MW-121
L832472-27	MW-124
L832472-28	EB-EP-02
L832472-29	MW-18A
L832472-30	MW-70
L832472-31	OCD-1R
L832472-32	OCD-2A
L832472-33	OCD-3
L832472-34	OCD-4
L832472-35	OCD-5
L832472-36	MW-11A
L832472-37	MW-15

Lab Report L832472 Continued

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?	X		
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

The inorganic compounds were detected in the following associated samples at concentrations within five times the method blank concentration and the TPH Low Fraction was detected in the following associated sample at a concentration within ten times the method blank concentration. Therefore, these samples may include measurement contributions from laboratory sources.

- Dissolved iron: MW-121, OCD-3
- Dissolved lead: EB-EP-04
- Dissolved manganese: EB-EP-01, EB-EP-02, EB-EP-03, EB-EP-04
- TPH Low Fraction: MW-15

Equipment Blanks

Equipment blank detections were identified in EB-EP-01 (8 total), EB-EP-02 (6 total), EB-EP-03 (7 total), and EB-EP-04 (10 total).

Dissolved arsenic was detected in sample OCD-5 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in the corresponding samples MW-2A, MW-5A, MW-6A, MW-18A, MW-70, MW-72, MW-73, MW-74, MW-79, MW-121, MW-122, OCD-1R, OCD-2A, OCD-5, OCD-6, and OCD-7AR at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Lab Report L832472 Continued

TPH High Fraction was detected in the corresponding samples MW-2A, MW-15, MW-18A, MW-121, MW-122, OCD-1R, OCD-2A, and OCD-5 at concentrations within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

The following analytes were below the recovery limits for the MS/MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased low.

- Nitrate-nitrite in batch WG870056 and WG870059
- Fluoride in batch WG869689 (no MSD reported)

Fluoride in batch WG869689 exceeded its respective RPD. However, samples with fluoride detections in batch WG869689 are already determined above as possibly biased low.

Surrogate Recoveries

Analytes with surrogate recoveries out of range could be qualified if more than half of the surrogates are outside the laboratory limits. Only one surrogate is out of the laboratory limits for total xylenes in samples DUP-EP-02, MW-5A, and MW-22A, so no data interpretation was needed.

Lab Duplicates

The RPD in MW-73 and OCD-3 (WG870057) exceeded the laboratory-defined control limit for nitrate-nitrite, but the RPD value is not applicable because the original samples are less than five times the reporting limit. Therefore, no data interpretation was needed.

Field Duplicates

The duplicate pair MW-7A and DUP-EP-01 did not meet the control limit (20%) for iron (35.6%). The iron result for MW-7A may be considered estimated.

Lab Report L832488

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832488-01	MW-120
L832488-02	MW-81
L832488-03	MW-80
L832488-04	MW-84
L832488-05	MW-82
L832488-06	MW-78
L832488-07	MW-77
L832488-08	MW-76
L832488-09	MW-3
L832488-10	DUP-EP-03
L832488-11	MW-75
L832488-12	MW-87
L832488-13	TRIP BLANK-EP-03
L832488-14	MW-1R

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

TPH Low Fraction was detected in samples for MW-78, MW-81, MW-87, and MW-120 at concentrations within ten times the method blank concentration and therefore may include measurement contributions from laboratory sources.

Lab Report L832488 Continued

MS/MSDs

The analytes outside the recovery limits for the MS/MSD %R were not qualified because each original result was greater than four times the corresponding spiked amount. The sample concentrations are too high to evaluate accurate spike recoveries.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-77, MW-78, and MW-84 is below the laboratory limits, therefore the result for TPH High Fraction may be biased low for each of the samples listed.

Lab Duplicates

The RPD in sample MW-1R (WG870882) was below the laboratory-defined control limit for fluoride, therefore the fluoride result in this sample may be biased low.

Field Duplicates

The duplicate pair MW-3 and DUP-EP-03 did not meet the control limit (20%) for nitrate-nitrite (54.5%) and dissolved selenium (35.6%). The nitrate-nitrite and dissolved selenium result for MW-3 may be considered estimated.

Lab Report L832603

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832603-01	MW-65
L832603-02	RW-5R
L832603-03	MW-102
L832603-04	RW-6R*
L832603-05	RW-4R**
L832603-06	RW-2R***
L832603-07	MW-62
L832603-08	MW-43
L832603-09	RW-10
L832603-10	MW-39
L832603-11	MW-29
L832603-12	MW-61
L832603-13	MW-105
L832603-14	RW-#16B
L832603-15	RW-9
L832603-16	MW-58
L832603-17	MW-136
L832603-18	KWB-2R
L832603-19	KWB-13
L832603-20	RW-12R
L832603-21	MW-113
L832603-22	EB-REST-01
L832603-23	DUP-REST-01
L832603-24	MW-60
L832603-25	EB-REST-04
L832603-26	DUP-REST-04
L832603-27	MW-107
L832603-28	MW-59
L832603-29	MW-52
L832603-30	MW-109
L832603-31	MW-110
L832603-32	MW-128
L832603-33	MW-28
L832603-34	MW-66
L832603-35	TRIP BLANK-REST-04
L832603-36	MW-99
L832603-37	RW-#17A
L832603-38	MW-135
L832603-39	MW-115
L832603-40	MW-114
L832603-41	MW-125
L832603-42	MW-116

*Sample ID is listed as RW-6 in corresponding COC

**Sample ID is listed as RW-4 in corresponding COC

***Sample ID is listed as RW-2 in corresponding COC

Lab Report L832603 Continued

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?	X		

Laboratory Method Blanks

These compounds were detected in the following associate samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Iron: DUP-REST-04, MW-52, MW-60, MW-115, RW-#17A
- Lead: MW-39, MW-43, MW-65, MW-105, RW-12R
- Manganese: EB-REST-01, EB-REST-04
- Nitrate-Nitrite: MW-65
- Dissolved vanadium: EB-REST-04
- Vanadium: EB-REST-04, MW-60

Equipment Blanks

Equipment blank detections were identified in EB-REST-01 (6 total) and EB-REST-04 (11 total).

Boron was detected in sample KWB-14 at concentrations within five times the equipment blank concentrations and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in samples KWB-2R, MW-29, MW-43, MW-59, MW-60, MW-62, MW-65, MW-66, MW-99, MW-102, MW-107, MW-109, MW-115, RW-2R, RW-4R, RW-12R, DUP-REST-01, and DUP-REST-04 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Lab Report L832603 Continued

TPH High Fraction was detected in samples MW-114, MW-115, MW-125, MW-135, MW-136, AND DUP-REST-01 at concentrations within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batches WG870062 and WG870500 were below the recovery limits for MS/MSD %R (only MS analyzed in WG870500). Therefore, samples in the batches with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in RW-2R is above the laboratory limits, therefore the result for TPH High Fraction may be biased high.

Lab Duplicates

The RPD in sample L832603-21 exceeded the laboratory-defined control limit for fluoride, therefore the fluoride result in this sample may be biased high.

Field Duplicates

The duplicate pair MW-113 and DUP-REST-01 did not meet the control limit (20%) for nitrate-nitrite (156.5%). The nitrate-nitrite result for MW-113 may be considered estimated.

The duplicate pair MW-60 and DUP-REST-04 did not meet the control limit (20%) for dissolved solids (21.7%), TPH Low Fraction (36.9%), and fluoride (55.1%). The dissolved solids, TPH Low Fraction, and fluoride results for MW-60 may be considered estimated.

Analytical Methods

Selenium (L832603-20) was analyzed by ICP 6010 due to matrix interference by ICPMS 6020.

Lab Report L832616

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832616-01	MW-21
L832616-02	MW-8
L832616-03	MW-46R

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Method Blanks

Two method blank detections were identified in the QC summary. There was no data interpretation for associated samples that are either non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

MS/MSDs

Nitrate-nitrite in batch WG870500 was below the recovery limit range for both MS and MSD %R. Therefore, any detection of nitrate-nitrite in the samples in batch WG870500 may be biased low.

Lab Report L832621

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832621-01	MW-55
L832621-02	MW-18
L832621-03	NCL-33

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Iron was detected in well MW-55 at a concentration within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

MS/MSDs

Dissolved mercury in batch WG869862 was below the recovery limit range for both MS and MSD %R. Therefore, any detection of dissolved mercury in the samples in batch WG869862 may be biased low.

Lab Report L864303

Sample identifiers cross-referenced to laboratory identifications are presented below.

Sample ID	Lab ID
L864303-01	MW-49

Data Review Checklist	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?	X		
Any LCS/LCSD RPD above laboratory defined limits?	X		
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?			X
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Nitrate-nitrite and chromium were detected in MW-49 at concentrations within five times the method blank concentrations and therefore may include measurement contributions from laboratory sources.

LCS/LCSDs

Individual LCS or LCSD recoveries were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each LCS/LCSD recoveries were outside the laboratory-defined limits.

Acetone, bromomethane, chloroethane, and 2-butanone (MEK) exceeded their respective RPD in batch WG917623. However, all of these analytes were non-detect in MW-49, so there was no data interpretation.

MS/MSDs

Nitrate-nitrite in batch WG915231 was below the recovery limit for MS %R (no MSD %R reported). Therefore, the nitrate-nitrite detected result in MW-49 may be biased low.

Lab Report L864305

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864305-01	NP-1
L864305-02	MW-21
L864305-03	TRIP BLANK-TMD-01

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?	X		
Any LCS/LCSD %R out of laboratory defined limits?	X		
Any LCS/LCSD RPD above laboratory defined limits?	X		
Any MS/MSD %R outside of laboratory defined limits?			X
Any MS/MSD RPD above laboratory defined limits?			X
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?			X
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Chloromethane was detected in MW-21 and TRIP BLANK-TMD-01 at concentrations within ten times the method blank concentrations and therefore may include measurement contributions from laboratory sources.

Trip Blanks

The detection of chloromethane in TRIP BLANK-TMD-01 was already concluded to contain measurement contributions from laboratory sources, so there is no further data interpretation needed.

LCS/LCSDs

An individual LCSD recovery was below the laboratory-defined limits. However, there was no data interpretation since only one of the LCS/LCSD recoveries was outside the laboratory-defined limits.

Lab Report L864305 Continued

Acetone, bromomethane, chloroethane, and 2-butanone (MEK) exceeded their respective RPD in batch WG917623. However, all of these analytes were non-detect in NP-1, MW-21, and TRIP BLANK-TMD-01, so there was no data interpretation.

Surrogate Recoveries

Analytes with surrogate recoveries out of range could be qualified if more than half of the surrogates are outside the laboratory limits. Only one surrogate is out of the laboratory limits for total xylenes in TRIP BLANK-TMD-01, so no data interpretation was needed.

Lab Report L864320

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864320-01	MW-45
L864320-02	NCL-44
L864320-03	MW-108
L864320-04	NCL-31
L864320-05	TRIP BLANK-NCL-01

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?	X		
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Chromium: NCL-31, NCL-44
- Nitrate-nitrite: MW-108, NCL-31, NCL-44

MS/MSDs

An individual MSD recovery was below the laboratory-defined limits. However, there was no data interpretation since only one of the MS/MSD recoveries was outside the laboratory-defined limits.

Fluoride exceeded the laboratory-defined RPD in batch WG915510, so sample MW-45 may be biased high.

Lab Report L864321

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864321-01	MW-64
L864321-02	MW-65
L864321-03	MW-102
L864321-04	MW-28
L864321-05	MW-60
L864321-06	MW-134
L864321-07	MW-104
L864321-08	DUP-REST-02
L864321-09	EB-REST-02
L864321-10	DUP-REST-04
L864321-11	EB-REST-04
L864321-12	MW-101
L864321-13	KWB-1A
L864321-14	KWB-10R
L864321-15	MW-111
L864321-16	KWB-6
L864321-17	MW-115
L864321-18	MW-114
L864321-19	DUP-REST-03
L864321-20	EB-REST-03
L864321-21	MW-136
L864321-22	MW-106
L864321-23	TRIP BLANK-REST-01
L864321-24	TRIP BLANK-REST-02

Lab Report L864321 Continued

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X	
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Sample Condition

The VOC pH for samples MW-28, MW-64, and MW-102 were outside the method requirement. The samples were all analyzed within their holding times, so according to the EPA document referenced above, detected and non-detected results will not be qualified.

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Chromium: KWB-1A, KWB-6, KWB-10R, MW-28, MW-60, MW-64, MW-65, MW-101, MW-102, MW-104, MW-106, MW-111, MW-114, MW-115, MW-134, MW-136, DUP-REST-02, DUP-REST-03, DUP-REST-04, EB-REST-02, EB-REST-03, EB-REST-04
- Iron: KWB-1A, MW-64, MW-104, MW-106, MW-134, MW-136, DUP-REST-02, DUP-REST-03
- Lead: MW-106, MW-136
- Manganese: MW-106, MW-136
- Nickel: MW-60, MW-136, DUP-REST-04, EB-REST-04
- Nitrate-nitrite: KWB-10R, KWB-1A, KWB-6, MW-101, MW-106, MW-111, MW-114, MW-115, MW-136, DUP-REST-02, DUP-REST-03, DUP-REST-04, EB-REST-02, EB-REST-03, EB-REST-04
- Potassium: EB-REST-02

Lab Report L864321 Continued

Equipment Blanks

Equipment blank detections were identified in EB-REST-02 (12 total), EB-REST-03 (9 total), EB-REST-04 (9 total), and EB-EP-04 (10 total).

Lead was detected in the corresponding samples KWB-1A, KWB-6, KWB-10R, MW-60, MW-64, MW-65, MW-101, MW-102, MW-106, MW-111, MW-114, MW-115, MW-136, DUP-REST-03, and DUP-REST-04 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in samples KWB-6, MW-111, MW-115, DUP-REST-02, and DUP-REST-04 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Sulfate was detected in samples MW-64 and MW-65 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

TPH High Fraction was detected in samples KWB-1A, MW-114, MW-115, MW-134, MW-136, and DUP-REST-03 at concentrations within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batch WG915231 was below the recovery limit for the MS/MSD %R. Therefore, samples in the batch with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-102 is above the laboratory limits, therefore the result for TPH high Fraction may be biased high.

Lab Duplicates

The RPD in EB-REST-02 (WG915225) exceeded the laboratory-defined control limit for chloride, therefore the chloride result in this sample may be biased high.

Field Duplicates

The duplicate pair MW-134 and DUP-REST-03 did not meet the control limit (20%) for selenium (43.5%). The selenium result for MW-134 may be considered estimated.

The duplicate pair MW-60 and DUP-REST-04 did not meet the control limit (20%) for benzene (44.0%) or n-propylbenzene. The benzene and n-propylbenzene results for MW-60 may be considered estimated.

Lab Report L864334

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864334-01	MW-10
L864334-02	MW-123
L864334-03	MW-4A
L864334-04	MW-5A
L864334-05	MW-7A
L864334-06	OCD-8A
L864334-07	DUP-EP-01
L864334-08	DUP-EP-03
L864334-09	EB-EP-03
L864334-10	OCD-7AR
L864334-11	MW-83
L864334-12	MW-3
L864334-13	MW-87
L864334-14	MW-18A
L864334-15	MW-70
L864334-16	MW-124
L864334-17	MW-120
L864334-18	MW-121
L864334-19	MW-122
L864334-20	MW-2A
L864334-21	OCD-6
L864334-22	EB-EP-02
L864334-23	TRIP BLANK-EP-01

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?		X	
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?	X		
Any LCS/LCSD RPD above laboratory defined limits?	X		
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Lab Report L864334 Continued

Holding Time

For MW-7A, TDS was prepared and/or analyzed out of the recommended holding time, so the concentrations should be considered minimum values.

Laboratory Method Blanks

The inorganic compounds were detected in the following associated samples at concentrations within five times the method blank concentration and the TPH Low Fraction was detected in the following associated sample at a concentration within ten times the method blank concentration. Therefore, these samples may include measurement contributions from laboratory sources.

- Calcium: EB-EP-02
- Chromium: OCD-6, EB-EP-02
- Iron: EB-EP-02
- Lead: MW-3, MW-4A, MW-5A, MW-7A, MW-10, MW-83, MW-123, MW-124, OCD-8A, OCD-6, DUP-EP-01, DUP-EP-03, EB-EP-02
- Manganese: EB-EP-02, EB-EP-03
- Potassium: EB-EP-02
- TPH Low Fraction: MW-121

Equipment Blanks

Equipment blank detections were identified in EB-EP-02 (13 total) and EB-EP-03 (12 total).

Chromium was detected in the corresponding samples MW-2A, MW-3, MW-4A, MW-7A, MW-83, MW-124, OCD-6, OCD-7AR, OCD-8A, DUP-EP-01, and DUP-EP-03 at concentrations within five times the largest equipment blank (EB-EP-03) concentration and therefore may include measurement contributions from the field.

Iron was detected in sample MW-123 at concentrations within five times the equipment blank (EB-EP-03) concentration and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in samples MW-2A, MW-3, MW-4A, MW-5A, MW-7A, MW-10, MW-18A, MW-83, MW-120, MW-121, MW-122, MW-123, MW-124, OCD-6, OCD-7AR, OCD-8A, DUP-EP-01, and DUP-EP-03 at concentrations within five times both equipment blank concentrations and therefore may include measurement contributions from the field.

Carbon disulfide was detected in samples MW-3, MW-4A, MW-5A, MW-7A, MW-18A, MW-70, MW-87, and DUP-EP-03 at concentration within five times both equipment blank concentrations and therefore may include measurement contributions from the field.

TPH High Fraction was detected in sample MW-2A at a concentration within ten times the equipment blank (EB-EP-03) concentration and therefore may include measurement contributions from the field.

Lab Report L864334 Continued

LCS/LCSDs

The LCS/LCSD recovery for bromomethane in batch WG916718 was above the laboratory-defined limits. However, there was no data interpretation since there are no samples with a bromomethane detection.

Acetone exceeded its RPD in batch WG916718. However, acetone were non-detect in all samples, so there was no data interpretation.

MS/MSDs

Nitrate-nitrite in batch WG915643 and WG915644 was below the recovery limit for the MS/MSD %R. Therefore, samples in the batch with a nitrate-nitrite detection may be biased low.

Lab Duplicates

The RPD in MW-18A (WG915644) exceeded the laboratory-defined control limit for nitrate-nitrite. However, there was no data interpretation because the RPD value is not applicable for sample concentrations less than five times the reporting limit.

Field Duplicates

The duplicate pair MW-7A and DUP-EP-01 did not meet the control limit (20%) for chloride (21.9%) and sulfate (20.3%). The chloride and sulfate result for MW-7A may be considered estimated.

Lab Report L864567

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864567-01	MW-84
L864567-02	MW-79
L864567-03	MW-74
L864567-04	EB-EP-01
L864567-05	EB-EP-04
L864567-06	MW-76
L864567-07	MW-77
L864567-08	MW-75
L864567-09	MW-88
L864567-10	MW-22A
L864567-11	DUP-EP-02
L864567-12	OCD-1R
L864567-13	OCD-2A
L864567-14	OCD-3
L864567-15	OCD-4
L864567-16	MW-11A
L864567-17	OCD-5
L864567-18	TRIP BLANK-EP-02
L864567-19	TRIP BLANK-EP-03

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?	X		
Any LCS/LCSD %R out of laboratory defined limits?	X		
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Lab Report L864567 Continued

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Barium: EB-EP-01
- Iron: EB-EP-01, EB-EP-04
- Manganese: EB-EP-01, EB-EP-04
- Nitrate-nitrite: MW-11A, MW-76, MW-77, MW-79, OCD-1R, OCD-5, DUP-EP-02, EB-EP-01, EB-EP-04
- Potassium: EB-EP-01, EB-EP-04
- Sodium: EB-EP-01, EB-EP-04

Equipment Blanks

Equipment blank detections were identified in EB-EP-01 (11 total) and EB-EP-04 (12 total).

Barium was detected in the corresponding sample MW-88 at concentrations within five times the equipment blank (EB-EP-04) concentration and therefore may include measurement contributions from the field.

Chromium was detected in samples MW-22A, MW-74, MW-75, MW-76, MW-88, OCD-1R, OCD-2A, OCD-5, and DUP-EP-02 at concentrations within five times the largest equipment blank (EB-EP-04) concentration and therefore may include measurement contributions from the field.

Trip Blanks

Carbon disulfide, which is an analyte commonly used during laboratory sample preparation and analysis, was detected in TRIP BLANK-EP-02 and TRIP BLANK-EP-03, so the trip blanks may include measurement contributions from laboratory sources. The detections of carbon disulfide in other samples (MW-22A, MW-74, MW-75, MW-76, and MW-79) were within ten times the largest carbon disulfide detection in the trip blanks, so these samples may include measurement contributions from laboratory sources too.

LCS/LCSDs

The LCS/LCSD recovery for acetone in batch WG916794 was above the laboratory-defined limits. Acetone was detected in MW-74, MW-75, and MW-76 of this batch, so the acetone detections in these samples are biased high.

MS/MSDs

Nitrate-nitrite in batch WG915788 was below the recovery limit for the MS/MSD %R. Therefore, samples in the batch with a nitrate-nitrite detection may be biased low.

Lab Report L864567 Continued

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-74, MW-75, MW-76, MW-77, and MW-84 is above the laboratory limits. However, the surrogate recovery cannot be used for control limit evaluation due to the samples large dilution (MW-75, MW-77, and MW-84 diluted 100 times; MW-74 diluted 20 times; MW-76 diluted 50 times). There was no data interpretation for TPH High Fraction in these samples.

Field Duplicates

The duplicate pair MW-22A and DUP-EP-02 did not meet the control limit (20%) for methyl tert-butyl ether (26.0%) and nitrate-nitrite (126.9 %). The methyl tert-butyl ether and nitrate-nitrite result for MW-22A may be considered estimated.

Lab Report L864633

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864633-01	MW-56
L864633-02	NCL-34*
L864633-03	NCL-33
L864633-04	NCL-32
L864633-05	MW-55
L864633-06	MW-54A
L864633-07	NCL-49
L864633-08	DUP-NCL-01
L864633-09	EB-NCL-01

*Sample ID is listed as NCL-34A in corresponding COC

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?	X		
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?		X	
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Iron: MW-55
- Manganese: NCL-49, DUP-NCL-01
- Nitrate-nitrite: MW-54A, MW-56, NCL-33, NCL-34

Lab Report L864633 Continued

Equipment Blanks

Equipment blank detections were identified in EB-NCL-01 (8 total).

Nitrate-nitrite was detected in the corresponding samples MW-54A, MW-56, NCL-33 and NCL-34 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Chromium was detected in samples MW-55 and NCL-33 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Lead was detected in samples MW-55, MW-56, and NCL-33 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

The nitrate-nitrite MS %R in batch WG915789 was below laboratory-defined limits. Therefore, samples in this batch with nitrate-nitrite detections may be biased low.

The RPD for bromomethane in batch WG916858 was above the laboratory RPD limits. All of the original results of samples in this batch were non-detect, so there was no data interpretation issues for the bromomethane.

Lab Report L864634

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864634-01	TEL-4
L864634-02	TEL-3
L864634-03	TEL-2
L864634-04	TEL-1
L864634-05	DUP-TEL-01
L864634-06	EB-TEL-01
L864634-07	TRIP BLANK-TEL-01

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?		X	
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?		X	
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?		X	
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Chromium: TEL-2, EB-TEL-01
- Nitrate-nitrite: TEL-1, TEL-2, TEL-3, TEL-4, DUP-TEL-01, EB-TEL-01
- Sodium: EB-TEL-01

Lab Report L864634 Continued

Equipment Blanks

Equipment blank detections were identified in EB-TEL-01 (10 total). There was no data interpretation for associated samples because all the analytes detected in the equipment blank are non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

Field Duplicates

The duplicate pair TEL-4 and DUP-TEL-01 did not meet the control limit (20%) for 1,2,4-trimethylbenzene (30.1%), chromium (55.5%), iron (57.3%), isopropylbenzene (32.8%), and n-propylbenzene (25.4%). The results for these analytes in TEL-4 may be considered estimated.

Lab Report L864646

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864646-01	MW-113
L864646-02	KWB-8
L864646-03	RA-4798
L864646-04	RA-4196
L864646-05	KWB-7
L864646-06	MW-135
L864646-07	KWB-11A
L864646-08	KWB-11B
L864646-09	DUP-REST-01
L864646-10	EB-REST-01
L864646-11	MW-117
L864646-12	MW-118
L864646-13	MW-119
L864646-14	MW-126A
L864646-15	MW-126B
L864646-16	MW-127
L864646-17	MW-129
L864646-18	MW-131
L864646-19	KWB-5
L864646-20	MW-57
L864646-21	KWB-12A
L864646-22	KWB-12B
L864646-23	KWB-2R
L864646-24	MW-58
L864646-25	DUP-REST-05
L864646-26	EB-REST-05
L864646-27	MW-99
L864646-28	MW-66
L864646-29	MW-107
L864646-30	MW-128
L864646-31	MW-125
L864646-32	MW-116
L864646-33	MW-48
L864646-34	MW-130
L864646-35	MW-52
L864646-36	MW-109
L864646-37	MW-110
L864646-38	MW-105
L864646-39	MW-61
L864646-40	MW-62

Lab Report L864646 Continued

Cross reference table continued:

Lab ID	Sample ID
L864646-41	MW-93
L864646-42	MW-43
L864646-43	MW-137
L864646-44	MW-138
L864646-45	MW-23
L864646-46	MW-39
L864646-47	MW-98
L864646-48	MW-29
L864646-49	MW-50
L864646-50	MW-92
L864646-51	MW-91
L864646-52	MW-90
L864646-53	MW-96
L864646-54	MW-94
L864646-55	MW-67

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X	
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?	X		
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?	X		
Any LCS/LCSD RPD above laboratory defined limits?	X		
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?	X		
Any lab duplicate RPD above laboratory defined limits?	X		
Any field duplicate data additionally flagged as estimated?		X	
Any analyte analyzed by different method than planned?		X	

Sample Condition

The VOC pH for samples MW-23, MW-94, and MW-138 were outside the method requirement. The samples were all analyzed within their holding times, so according to the USEPA document referenced above, detected and non-detected results will not be qualified.

Lab Report L864646 Continued

Laboratory Method Blanks

The inorganic compounds were detected in the following associated samples at concentrations within five times the method blank concentration and the TPH Low Fraction was detected in the following associated samples at concentrations within ten times the method blank concentration. Therefore, these samples may include measurement contributions from laboratory sources.

- Boron: EB-REST-05
- Chromium: KWB-2R, KWB-8, KWB-12A, KWB-12B, MW-29, MW-39, MW-43, MW-48, MW-52, MW-57, MW-58, MW-61, MW-62, MW-66, MW-92, MW-94, MW-96, MW-98, MW-99, MW-105, MW-107, MW-116, MW-117, MW-118, MW-125, MW-128, MW-129, MW-130, MW-135, MW-137, MW-138, DUP-REST-05, EB-REST-01, EB-REST-05
- Nickel: KWB-8, KWB-11B
- Nitrate-nitrite: KWB-2R, KWB-5, KWB-7, KWB-8, MW-48, MW-58, MW-66, MW-99, MW-105, MW-107, MW-109, MW-110, MW-113, MW-116, MW-117, MW-119, MW-126A, MW-127, MW-128, MW-129, MW-131RA-4798, DUP-REST-01, EB-REST-01, EB-REST-05
- Sulfate: EB-REST-01
- TPH High Fraction: KWB-11A, KWB-11B, KWB-12A, KWB-12B, MW-5, MW-113, MW-119, MW-126B, MW-135, DUP-REST-01, DUP-REST-05, EB-REST-01

Equipment Blanks

Equipment blank detections were identified in EB-REST-01 (13 total) and EB-REST-05 (11 total).

Sulfate was detected in the corresponding sample MW-66 at a concentration within five times the equipment blank concentration (EB-REST-05) and therefore may include measurement contributions from the field.

Arsenic was detected in the corresponding samples KWB-2R, KWB-8, KWB-11A, KWB-11B, KWB-12A, KWB-12B, MW-29, MW-50, MW-52, MW-61, MW-66, MW-93, MW-96, MW-98, MW-107, MW-109, MW-113, MW-117, MW-119, MW-123, MW-126A, MW-126B, MW-127, MW-133, MW-125, DUP-REST-01, and DUP-REST-05 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

Barium was detected in all samples that analyzed for barium in this data package at a concentration within five times the equipment blank concentration (EB-REST-01) with the exception of KWB-5, MW-23, MW-48, MW-66, MW-92, MW-99, MW-105, MW-107, and MW-131. Therefore, the samples with a barium concentration within five times the equipment blank concentration may include measurement contributions from the field.

Lab Report L864646 Continued

Calcium was detected in the corresponding samples KWB-5, KWB-8, MW-105, MW-39, MW-43, MW-48, MW-52, MW-58, MW-66, MW-67, MW-92, MW-94, MW-96, MW-99, MW-107, MW-109, MW-110, MW-126A, MW-127, MW-128, MW-129, MW-131, MW-137, and MW-138 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

Manganese was detected in the corresponding samples KWB-11B, KWB-12B, MW-62, MW-91, MW-94, MW-96, MW-118, MW-119, and DUP-REST-05 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

Naphthalene was detected in the corresponding samples KWB-2R, KWB-5, KWB-7, KWB-11A, KWB-11B, MW-113, MW-128, MW-129, MW-130, and DUP-REST-01 at a concentration within five times the equipment blank concentration (EB-REST-05) and therefore may include measurement contributions from the field.

Potassium was detected in all samples that analyzed for potassium in this data package at a concentration within five times the equipment blank concentration (EB-REST-01) with the exception of MW-50, MW-105, MW-117, and MW-118. Therefore, the samples with a potassium concentration within five times the equipment blank concentration may include measurement contributions from the field.

Sodium was detected in the corresponding samples KWB-11B, MW-91, MW-98, MW-105, and MW-107 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

TPH Low Fraction was detected in the corresponding samples KWB-11A, KWB-11B, KWB-12A, KWB-12B, MW-52, MW-57, MW-110, MW-113, MW-119, MW-126B, MW-130, MW-135, DUP-REST-01, and DUP-REST-05 at a concentration within ten times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

LCS/LCSDs

The LCS/LCSD recovery for naphthalene in batch WG916795 was below the laboratory-defined limits. Therefore, samples in the batch with a detection in naphthalene may be biased low.

Acetone exceeded its RPD in batch WG916864. However, acetone was non-detect in all samples, so there was no data interpretation.

Lab Report L864646 Continued

MS/MSDs

The following analytes were below the recovery limit for the MS/MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased low.

- Fluoride in batch WG916530 (only MS %R reported)
- Nitrate-nitrite in batches WG915789, WG916593, and WG916597 (only MS %R reported)]
- Selenium in batch WG916403
- All VOCs, with the exception of bromomethane, benzene, and chloroethane, in batch WG916796

Mercury in batch WG917230 exceeded its respective RPD. However, all mercury detections are non-detect, so no data interpretation was necessary.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-58 is above the laboratory limits. However, the surrogate recovery cannot be used for control limit evaluation due to the large dilution of the sample (MW-58 diluted 20 times). There was no data interpretation for TPH High Fraction in MW-58.

Lab Duplicates

The RPD in MW-131 and EB-REST-01 (WG916593) exceeded the laboratory-defined control limit for nitrate-nitrite, but the RPD values are not applicable because the original samples are less than five times the reporting limit. Therefore, no data interpretation was needed.

The RPD in EB-REST-01 (WG915776) and EB-REST-05 (WG915777) exceeded the laboratory-defined control limit for chloride and sulfate, but the RPD values are not applicable because the original samples are less than five times the reporting limit. Therefore, no data interpretation was needed.

Lab Report L864773

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864773-01	MW-46R

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	X		
Any detection in method blanks?	X		
Any detection in equipment blanks?			X
Any detection in trip blanks?			X
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		X	
Any MS/MSD %R outside of laboratory defined limits?	X		
Any MS/MSD RPD above laboratory defined limits?		X	
Any surrogate %R outside of laboratory defined limits?		X	
Any lab duplicate RPD above laboratory defined limits?			X
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Chromium was detected in MW-46R within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

MS/MSDs

Individual MS/MSD %R were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each MS/MSD %R were outside the laboratory-defined limits.

Appendix E - Summary of Production from Recovery Trenches and Wells

2016 Annual Groundwater Report

HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, New Mexico

Recovery Well	Recovery Method	Volume of Water Recovered ⁽¹⁾ (gallons)					Volume of PSH Recovered ⁽¹⁾ (gallons)				
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2016	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2016
RW-1R	Automated Pump	101	16,139	0	0	16,240	0	0	0	0	0
RW-2R	Automated Pump	0	110,797	279,973	80,018	470,788	0	223	4,816	4,451	9,490
RW-4R	Automated Pump	0	1	0	5	6	0	0	0	1	1
RW-5R	Automated Pump	0	2	834	50,896	51,732	0	0	0	0	0
RW-6R	Automated Pump	0	13	2	1	16	1	0	0	0	1
RW-7R	Automated Pump	1,318,614	676,672	310,749	87,736	2,393,771	0	0	0	0	0
RW-8R	Automated Pump	421,215	280,097	152,160	713,259	1,566,731	0	4	0	0	4
RW-12R	Automated Pump	0	0	0	0	0	0	0	0	0	0
RW-13R	Automated Pump	0	1	113,481	203,602	317,084	0	0	11,251	2,160	13,411
RW-14R	Automated Pump	0	0	53	0	53	0	1	0	0	1
RW-15	Automated Pump	2,559	0	0	0	2,559	686	267	0	0	953
RW-19	Automated Pump	0	947	50	1,026	2,023	0	1	106	744	851
RW-20	Automated Pump	128,929	501,875	725,853	636,369	1,993,026	0	442	0	0	442
RW-22	Automated Pump	0	396,782	488,137	269,062	1,153,981	0	0	8,803	1	8,804
TOTAL VOLUME RECOVERED:		1,871,418	1,983,326	2,071,292	2,041,974	7,968,010	687	938	24,976	7,357	33,958

⁽¹⁾ Volumes of recovered water and PSH are based on automated system readings, rounded to the nearest gallon

Automated Fluid Readings - Skid Area T-9012

Date	Total Fluids Readings				PSH Readings				Tank Reading T-9012
	RW-1R	RW-2R	RW-7	RW-8R	RW-1R	RW-2R	RW-7	RW-8R	
12/28/2015	285,752	411,276	16,555	111,762	3	11,584	4	41,947	28,762
1/4/2016	285,752	411,276	16,555	124,785	3	11,584	4	41,947	28,762
1/11/2016	285,752	411,276	16,924	132,325	3	11,584	4	41,947	28,762
1/18/2016	285,752	411,276	98,451	165,093	3	11,584	4	41,947	28,762
1/25/2016	285,853	411,276	245,886	197,861	3	11,584	4	41,947	28,762
2/1/2016	285,853	411,276	395,226	197,861	3	11,584	4	41,947	28,762
2/8/2016	285,853	411,276	540,037	230,629	3	11,584	4	41,947	28,762
2/15/2016	285,853	411,276	687,111	230,632	3	11,584	4	41,947	28,762
2/22/2016	285,853	411,276	802,337	263,400	3	11,584	4	41,947	28,762
2/29/2016	285,853	411,276	912,641	263,400	3	11,584	4	41,947	28,762
3/7/2016	285,853	411,276	1,022,647	263,400	3	11,584	4	41,947	28,762
3/14/2016	285,853	411,276	1,129,488	330,972	3	11,584	4	41,947	28,762
3/21/2016	285,853	411,276	1,232,690	424,834	3	11,584	4	41,947	28,762
3/28/2016	285,853	411,276	1,335,169	532,977	3	11,584	4	41,947	28,762
1Q Totals:	101	0	1,318,614	421,215	0	0	0	0	0
4/4/2016	285,853	411,276	1,437,264	625,106	3	11,584	4	41,947	28,762
4/11/2016	297,046	411,276	1,538,288	625,106	3	11,584	4	41,947	28,762
4/18/2016	301,992	411,276	1,639,005	633,881	3	11,584	4	41,947	28,762
4/25/2016	301,992	411,276	1,738,265	633,881	3	11,584	4	41,947	28,762
5/2/2016	301,992	411,276	1,807,861	633,881	3	11,584	4	41,947	28,762
5/9/2016	301,992	411,276	1,833,003	633,881	3	11,584	4	41,947	28,762
5/16/2016	301,992	411,276	1,857,822	633,881	3	11,584	4	41,947	28,762
5/23/2016	301,992	411,276	1,884,181	633,881	3	11,584	4	41,947	28,762
5/30/2016	301,992	411,276	1,910,411	633,881	3	11,584	4	41,949	28,762
6/6/2016	301,992	411,276	1,936,480	633,881	3	11,584	4	41,949	28,762
6/13/2016	301,992	448,602	1,961,906	678,832	3	11,584	4	41,949	28,762
6/20/2016	301,992	487,133	1,986,519	760,454	3	11,584	4	41,949	28,762
6/27/2016	301,992	522,073	2,011,841	813,074	3	11,807	4	41,949	28,762
2Q Totals:	16,139	110,797	574,577	187,968	0	223	0	2	0
7/4/2016	301,992	558,559	2,039,363	818,210	3	11,981	4	41,949	28,908
7/11/2016	301,992	593,707	2,066,714	818,210	3	11,981	4	41,949	28,908
7/18/2016	301,992	600,949	2,093,801	818,210	3	11,981	4	41,949	28,908
7/25/2016	301,992	632,127	2,120,977	846,550	3	12,853	4	41,949	29,231
8/1/2016	301,992	662,144	2,148,154	873,792	3	14,689	4	41,949	30,431
8/8/2016	301,992	683,881	2,174,878	911,494	3	16,568	4	41,949	30,748
8/15/2016	301,992	683,881	2,202,790	911,494	3	16,568	4	41,949	32,348
8/22/2016	301,992	683,881	2,220,021	911,494	3	16,568	4	41,949	32,523
8/29/2016	301,992	683,881	2,224,551	911,494	3	16,568	4	41,949	32,554
9/5/2016	301,992	683,881	2,224,551	911,494	3	16,568	4	41,949	32,554
9/12/2016	301,992	683,881	2,255,052	911,494	3	16,568	4	41,949	32,554
9/19/2016	301,992	683,881	2,292,394	911,494	3	16,568	4	41,949	32,554
9/26/2016	301,992	802,046	2,322,590	965,234	3	16,623	4	41,949	40,347
3Q Totals:	0	243,487	283,227	147,024	0	4,642	0	0	11,439
10/3/2016	301,992	881,949	2,349,220	1,045,501	3	16,633	4	41,949	48,914
10/10/2016	301,992	881,949	2,375,436	1,111,703	3	19,130	4	41,949	55,348
10/17/2016	301,992	881,949	2,401,582	1,192,790	3	21,074	4	41,949	60,548
10/24/2016	301,992	881,949	2,410,293	1,273,635	3	21,074	4	41,949	61,120
10/31/2016	301,992	881,949	2,410,293	1,353,569	3	21,074	4	41,949	62,673
11/7/2016	301,992	881,949	2,410,293	1,427,053	3	21,074	4	41,949	63,461
11/14/2016	301,992	881,949	2,410,326	1,511,544	3	21,074	4	41,949	63,461
11/28/2016	301,992	881,949	2,410,326	1,678,493	3	21,074	4	41,949	63,461
12/5/2016	301,992	882,001	2,410,326	1,380,730	3	21,074	4	41,949	63,461
12/12/2016	301,992	882,064	2,410,326	1,457,373	3	21,074	4	41,949	63,461
12/19/2016	301,992	882,064	2,410,326	1,528,273	3	21,074	4	41,949	63,461
12/26/2016	301,992	882,064	2,410,326	1,540,215	3	21,074	4	41,949	63,462
4Q Totals:	0	115	61,106	494,714	0	4,441	0	0	14,548

Automated Fluid Readings - Skid Area T-9003

Date	Total Fluids Readings		PSH Readings		Tank Reading T-9003
	RW-4R	RW-6R	RW-4R	RW-6R	
12/28/2015	4,709	469,968	1	8,849	14,647
1/4/2016	4,709	469,968	1	8,849	14,709
1/11/2016	4,709	469,968	1	8,849	14,721
1/18/2016	4,709	469,968	1	8,850	14,739
1/25/2016	4,709	469,968	1	8,850	14,752
2/1/2016	4,709	469,968	1	8,850	14,752
2/8/2016	4,709	469,968	1	8,850	14,752
2/15/2016	4,709	469,968	1	8,850	14,752
2/22/2016	4,709	469,968	1	8,850	14,752
2/29/2016	4,709	469,968	1	8,850	14,752
3/7/2016	4,709	469,968	1	8,850	14,752
3/14/2016	4,709	469,968	1	8,850	14,752
3/21/2016	4,709	469,968	1	8,850	14,752
3/28/2016	4,709	469,968	1	8,850	14,752
1Q Totals:	0	0	0	1	105
4/4/2016	4,709	469,968	1	8,850	14,752
4/11/2016	4,709	469,968	1	8,850	14,752
4/18/2016	4,709	469,970	1	8,850	14,752
4/25/2016	4,709	469,970	1	8,850	14,752
5/2/2016	4,709	469,970	1	8,850	14,752
5/9/2016	4,709	469,981	1	8,850	14,752
5/16/2016	4,709	469,981	1	8,850	14,752
5/23/2016	4,709	469,981	1	8,850	14,752
5/30/2016	4,709	469,981	1	8,850	14,752
6/6/2016	4,709	469,981	1	8,850	14,752
6/13/2016	4,710	469,981	1	8,850	14,752
6/20/2016	4,710	469,981	1	8,850	14,752
6/27/2016	4,710	469,981	1	8,850	14,752
2Q Totals:	1	13	0	0	0
7/4/2016	4,710	469,981	1	8,850	14,752
7/11/2016	4,710	469,981	1	8,850	14,752
7/18/2016	4,710	469,981	1	8,850	14,752
7/25/2016	4,710	469,981	1	8,850	14,825
8/1/2016	4,710	469,981	1	8,850	14,825
8/8/2016	4,710	469,981	1	8,850	14,825
8/15/2016	4,710	469,981	1	8,850	15,388
8/22/2016	4,710	469,981	1	8,850	15,388
8/29/2016	4,710	469,981	1	8,850	15,388
9/5/2016	4,710	469,981	1	8,850	15,388
9/12/2016	4,710	469,983	1	8,850	15,388
9/19/2016	4,710	469,983	1	8,850	15,388
9/26/2016	4,710	469,983	1	8,850	15,388
3Q Totals:	0	2	0	0	636
10/3/2016	4,710	469,983	1	8,850	15,388
10/10/2016	4,710	469,983	1	8,850	15,388
10/17/2016	4,710	469,984	1	8,850	15,388
10/24/2016	4,715	469,984	1	8,850	15,388
10/31/2016	4,715	469,984	1	8,850	15,388
11/7/2016	4,715	469,984	1	8,850	15,388
11/14/2016	4,715	469,984	1	8,850	15,388
11/28/2016	4,715	469,984	1	8,850	15,388
12/5/2016	4,715	469,984	1	8,850	15,391
12/12/2016	4,715	469,984	1	8,850	15,401
12/19/2016	4,715	469,984	1	8,850	15,402
12/26/2016	4,715	469,984	1	8,850	15,402
4Q Totals:	5	1	0	0	14

Automated Fluid Readings - Skid Area T-9021

Date	Total Fluids Readings			PSH Readings			Tank Reading T-9021
	RW-5R	RW-15	RW-19	RW-5R	RW-15	RW-19	
12/28/2015	23,978	0	58,011	13,201	12,117	5,660	44,515
1/4/2016	23,978	0	58,011	13,201	12,117	5,660	44,515
1/11/2016	23,978	0	58,011	13,201	12,122	5,660	44,515
1/18/2016	23,978	0	58,011	13,201	12,149	5,660	44,515
1/25/2016	23,978	0	58,011	13,201	12,200	5,660	44,515
2/1/2016	23,978	0	58,011	13,201	12,261	5,660	44,515
2/8/2016	23,978	0	58,011	13,201	12,316	5,660	44,803
2/15/2016	23,978	0	58,011	13,201	12,365	5,660	44,803
2/22/2016	23,978	0	58,011	13,201	12,418	5,660	44,804
2/29/2016	23,978	0	58,011	13,201	12,469	5,660	44,804
3/7/2016	23,978	0	58,011	13,201	12,524	5,660	45,026
3/14/2016	23,978	0	58,011	13,201	12,679	5,660	45,026
3/21/2016	23,978	2,559	58,011	13,201	12,803	5,660	45,204
3/28/2016	23,978	2,559	58,011	13,201	12,803	5,660	45,204
1Q Totals:	0	2,559	0	0	686	0	689
4/4/2016	23,978	2,559	58,011	13,201	12,803	5,660	45,368
4/11/2016	23,978	2,559	58,011	13,201	12,859	5,660	45,368
4/18/2016	23,979	2,559	58,011	13,201	12,974	5,660	45,526
4/25/2016	23,979	2,559	58,011	13,201	13,054	5,660	45,679
5/2/2016	23,979	2,559	58,913	13,201	13,070	5,660	45,679
5/9/2016	23,979	2,559	58,958	13,201	13,070	5,660	45,679
5/16/2016	23,979	2,559	58,958	13,201	13,070	5,660	45,679
5/23/2016	23,980	2,559	58,958	13,201	13,070	5,660	45,679
5/30/2016	23,980	2,559	58,958	13,201	13,070	5,660	45,679
6/6/2016	23,980	2,559	58,958	13,201	13,070	5,660	45,679
6/13/2016	23,980	2,559	58,958	13,201	13,070	5,661	45,679
6/20/2016	23,980	2,559	58,958	13,201	13,070	5,661	45,679
6/27/2016	23,980	2,559	58,958	13,201	13,070	5,661	46,115
2Q Totals:	2	0	947	0	267	1	747
7/4/2016	23,980	2,559	59,008	13,201	13,070	5,661	46,115
7/11/2016	23,980	2,559	59,008	13,201	13,070	5,661	46,115
7/18/2016	23,980	2,559	59,008	13,201	13,070	5,661	46,115
7/25/2016	23,980	2,559	59,008	13,201	13,070	5,666	54,541
8/1/2016	23,980	2,559	59,008	13,201	13,070	5,675	76,528
8/8/2016	23,980	2,559	59,008	13,201	13,070	5,684	93,794
8/15/2016	23,980	2,559	59,008	13,201	13,070	5,712	105,669
8/22/2016	23,980	2,559	59,008	13,201	13,070	5,766	109,034
8/29/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/5/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/12/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/19/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/26/2016	24,814	2,559	59,008	13,201	13,070	5,767	109,049
3Q Totals:	834	0	0	0	0	106	62,934
10/3/2016	25,667	2,559	59,008	13,201	13,070	5,780	109,049
10/10/2016	29,818	2,559	59,008	13,201	13,070	5,894	120,384
10/17/2016	38,200	2,559	60,029	13,201	13,070	5,944	134,682
10/24/2016	49,958	2,559	60,029	13,201	13,070	6,094	161,601
10/31/2016	62,629	2,559	60,029	13,201	13,070	6,267	161,601
11/7/2016	75,303	2,559	60,029	13,201	13,070	6,348	161,601
11/14/2016	75,709	2,559	60,034	13,201	13,070	6,390	161,602
11/28/2016	75,709	2,559	60,034	13,201	13,070	6,500	161,615
12/5/2016	75,709	2,559	60,034	13,201	13,070	6,508	161,615
12/12/2016	75,709	2,559	60,034	13,201	13,070	6,508	161,615
12/19/2016	75,709	2,559	60,034	13,201	13,070	6,508	161,615
12/26/2016	75,710	2,559	60,034	13,201	13,070	6,511	161,615
4Q Totals:	50,043	0	1,026	0	0	731	52,566

Automated Fluid Readings - Skid Area T-9020

Date	Total Fluids Readings					PSH Readings					Tank Reading
	RW-12R	RW-13R	RW-14R	RW-20	RW-22	RW-12R	RW-13R	RW-14R	RW-20	RW-22	T-9020
12/28/2015	234	225,001	355,318	3,837,093	52,430	4,755	9,476	42,550	4	5,759	55,958
1/4/2016	234	225,001	355,318	3,860,460	52,430	4,755	9,476	42,550	4	5,759	55,958
1/11/2016	234	225,001	355,318	3,881,433	52,430	4,755	9,476	42,550	4	5,759	55,959
1/18/2016	234	225,001	355,318	3,900,287	52,430	4,755	9,476	42,550	4	5,759	55,959
1/25/2016	234	225,001	355,318	3,917,028	52,430	4,755	9,476	42,550	4	5,759	55,959
2/1/2016	234	225,001	355,318	3,930,784	52,430	4,755	9,476	42,550	4	5,759	55,962
2/8/2016	234	225,001	355,318	3,941,336	52,430	4,755	9,476	42,550	4	5,759	56,090
2/15/2016	234	225,001	355,318	3,949,874	52,430	4,755	9,476	42,550	4	5,759	56,090
2/22/2016	234	225,001	355,318	3,956,378	52,430	4,755	9,476	42,550	4	5,759	56,090
2/29/2016	234	225,001	355,318	3,960,846	52,430	4,755	9,476	42,550	4	5,759	56,090
3/7/2016	234	225,001	355,318	3,963,480	52,430	4,755	9,476	42,550	4	5,759	56,090
3/14/2016	234	225,001	355,318	3,964,472	52,430	4,755	9,476	42,550	4	5,759	56,090
3/21/2016	234	225,001	355,318	3,965,335	52,430	4,755	9,476	42,550	4	5,759	56,090
3/28/2016	234	225,001	355,318	3,966,022	52,430	4,755	9,476	42,550	4	5,759	56,090
1Q Totals:	0	0	0	128,929	0	0	0	0	0	0	132
4/4/2016	234	225,001	355,318	3,966,910	52,430	4,755	9,476	42,550	4	5,759	56,090
4/11/2016	234	225,001	355,318	3,967,501	52,430	4,755	9,476	42,550	4	5,759	56,090
4/18/2016	234	225,001	355,318	3,968,330	52,454	4,755	9,476	42,550	4	5,759	56,090
4/25/2016	234	225,001	355,318	3,970,673	52,454	4,755	9,476	42,550	4	5,759	56,090
5/2/2016	234	225,001	355,318	3,982,570	62,168	4,755	9,476	42,550	4	5,759	56,090
5/9/2016	234	225,001	355,318	4,040,586	123,333	4,755	9,476	42,550	4	5,759	56,090
5/16/2016	234	225,001	355,318	4,108,259	185,665	4,755	9,476	42,550	4	5,759	56,090
5/23/2016	234	225,001	355,318	4,173,915	223,067	4,755	9,476	42,550	4	5,759	56,090
5/30/2016	234	225,001	355,318	4,230,077	252,801	4,755	9,476	42,550	4	5,759	56,090
6/6/2016	234	225,002	355,318	4,302,305	298,393	4,755	9,476	42,550	4	5,759	56,090
6/13/2016	234	225,002	355,318	4,379,636	338,605	4,755	9,476	42,551	4	5,759	56,090
6/20/2016	234	225,002	355,318	4,402,280	400,808	4,755	9,476	42,551	18	5,759	56,090
6/27/2016	234	225,002	355,318	4,467,897	449,212	4,755	9,476	42,551	446	5,759	68,627
2Q Totals:	0	1	0	500,987	396,782	0	0	1	442	0	12,537
7/4/2016	234	225,002	355,318	4,504,226	503,346	4,755	9,477	42,551	446	5,759	68,633
7/11/2016	234	225,002	355,318	4,570,252	546,342	4,755	9,744	42,551	446	5,759	72,007
7/18/2016	234	225,002	355,318	4,634,461	589,836	4,755	12,092	42,551	446	5,759	86,042
7/25/2016	234	225,002	355,371	4,696,407	624,809	4,755	13,756	42,551	446	7,994	89,127
8/1/2016	234	225,002	355,371	4,754,766	660,608	4,755	15,821	42,551	446	10,936	94,938
8/8/2016	234	225,002	355,371	4,811,940	692,890	4,755	18,247	42,551	446	13,742	99,367
8/15/2016	234	225,002	355,371	4,864,136	730,372	4,755	19,512	42,551	446	14,560	102,304
8/22/2016	234	225,002	355,371	4,918,020	767,310	4,755	20,727	42,551	446	14,560	103,318
8/29/2016	234	241,817	355,371	4,924,945	798,007	4,755	20,727	42,551	446	14,560	103,318
9/5/2016	234	312,426	355,371	4,975,033	836,838	4,755	20,727	42,551	446	14,560	103,318
9/12/2016	234	338,347	355,371	5,065,562	880,497	4,755	20,727	42,551	446	14,561	103,318
9/19/2016	234	338,347	355,371	5,136,620	893,953	4,755	20,727	42,551	0	14,561	103,318
9/26/2016	234	338,483	355,371	5,193,750	937,349	4,755	20,727	42,551	0	14,562	103,318
3Q Totals:	0	113,481	53	689,524	434,003	0	11,250	0	-446	8,803	34,685
10/3/2016	234	340,123	355,371	5,296,995	1,002,512	4,755	20,727	42,551	0	14,563	103,318
10/10/2016	234	380,986	355,371	5,349,610	1,043,224	4,755	22,188	42,551	10	14,563	106,509
10/17/2016	234	410,790	355,371	5,400,296	1,091,186	4,755	22,291	42,551	10	14,563	110,525
10/24/2016	234	448,791	355,371	5,448,546	1,133,919	4,755	22,318	42,551	12	14,563	126,672
10/31/2016	234	494,381	355,371	5,525,411	1,169,999	4,755	22,365	42,551	12	14,563	139,036
11/7/2016	234	540,658	355,371	5,578,917	1,205,303	4,755	22,385	42,551	12	14,563	140,424
11/14/2016	234	542,085	355,371	5,644,273	1,206,411	4,755	22,406	42,551	12	14,563	140,424
11/28/2016	234	542,085	355,371	5,690,743	1,206,411	4,755	22,885	42,551	12	14,563	141,115
12/5/2016	234	542,085	355,371	5,739,092	1,206,411	4,755	22,885	42,551	12	14,563	141,141
12/12/2016	234	542,085	355,371	5,790,157	1,206,411	4,755	22,885	42,551	12	14,563	141,190
12/19/2016	234	542,085	355,371	5,830,119	1,206,411	4,755	22,885	42,551	12	14,563	141,204
12/26/2016	234	542,085	355,371	5,830,119	1,206,411	4,755	22,887	42,551	12	14,563	141,220
4Q Totals:	0	201,962	0	533,124	203,899	0	2,160	0	12	0	37,902

Appendix E- Recovery System Gauging Data
 2016 Annual Groundwater Report
 HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-1R						RW-2R						RW-4R								
	Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev
12/22/15	0	7.35	Out	0.00	3,367.03		3,359.68	0	8.61	Out	0.00	3,368.17		3,359.56	0	11.14	Out	0.00	3,364.86		3,353.72
1/7/16	0	7.35	Out	0.00	3,367.03		3,359.68	0	8.61	Out	0.00	3,368.17		3,359.56	0	11.14	Out	0.00	3,364.86		3,353.72
1/13/16	0	7.25	Out	0.00	3,367.03		3,359.78	0	8.47	Out	0.00	3,368.17		3,359.70	0	11.11	Out	0.00	3,364.86		3,353.75
1/20/16	0	7.55	Out	0.00	3,367.03		3,359.48	0	8.67	Out	0.00	3,368.17		3,359.50	0	11.2	Out	0.00	3,364.86		3,353.66
1/29/16	0	7.75	Out	0.00	3,367.03		3,359.28	0	8.92	Out	0.00	3,368.17		3,359.25	0	11.35	Out	0.00	3,364.86		3,353.51
2/3/16	0	8.20	Out	0.00	3,367.03		3,358.83	0	9.43	Out	0.00	3,368.17		3,358.74	0	11.6	Out	0.00	3,364.86		3,353.26
2/16/16	0	8.35	Out	0.00	3,367.03		3,358.68	0	9.44	Out	0.00	3,368.17		3,358.73	0	11.6	Out	0.00	3,364.86		3,353.26
2/26/16	0	8.58	Out	0.00	3,367.03		3,358.45	0	9.7	Out	0.00	3,368.17		3,358.47	0	11.8	Out	0.00	3,364.86		3,353.06
3/3/16	0	8.57	Out	0.00	3,367.03		3,358.46	0	9.72	Out	0.00	3,368.17		3,358.45	0	11.56	Out	0.00	3,364.86		3,353.30
3/11/16	0	8.85	Out	0.00	3,367.03		3,358.18	0	9.93	Out	0.00	3,368.17		3,358.24	0	11.61	Out	0.00	3,364.86		3,353.25
3/15/16	0	9.01	Out	0.00	3,367.03		3,358.02	0	10.05	Out	0.00	3,368.17		3,358.12	0	11.62	Out	0.00	3,364.86		3,353.24
3/22/16	0	9.07	Out	0.00	3,367.03		3,357.96	0	10.05	Out	0.00	3,368.17		3,358.12	0	11.63	Out	0.00	3,364.86		3,353.23
3/29/16	0	9.34	Out	0.00	3,367.03		3,357.69	0	10.4	Out	0.00	3,368.17		3,357.77	0	11.8	Out	0.00	3,364.86		3,353.06
4/7/16	0	14.08	Out	0.00	3,367.03		3,352.95	0	10.77	Out	0.00	3,368.17		3,357.40	0	11.9	Out	0.00	3,364.86		3,352.96
4/13/16	0	14.04	Out	0.00	3,367.03		3,352.99	0	10.95	Out	0.00	3,368.17		3,357.22	0	12.03	Out	0.00	3,364.86		3,352.83
4/19/16	0	9.70	Out	0.00	3,367.03		3,357.33	0	10.83	Out	0.00	3,368.17		3,357.34	0	12.1	Out	0.00	3,364.86		3,352.76
4/28/16	0	9.68	Out	0.00	3,367.03		3,357.35	0	10.78	Out	0.00	3,368.17		3,357.39	0	12.18	Out	0.00	3,364.86		3,352.68
5/3/16	0	9.82	Out	0.00	3,367.03		3,357.21	0	9.92	Out	0.00	3,368.17		3,358.25	0	12.26	Out	0.00	3,364.86		3,352.60
5/13/16	0	9.90	Out	0.00	3,367.03		3,357.13	0	10.95	Out	0.00	3,368.17		3,357.22	0	12.44	Out	0.00	3,364.86		3,352.42
5/26/16	0	9.63	Out	0.00	3,367.03		3,357.40	0	10.64	Out	0.00	3,368.17		3,357.53	0	12.5	Out	0.00	3,364.86		3,352.36
6/3/16	0	9.63	Out	0.00	3,367.03		3,357.40	0	10.64	Out	0.00	3,368.17		3,357.53	0	12.48	Out	0.00	3,364.86		3,352.38
6/9/16	0	10.06	Out	0.00	3,367.03		3,356.97	0	16.83	Out	0.00	3,368.17		3,351.34	0	12.55	Out	0.00	3,364.86		3,352.31
6/10/16	0	9.89	Out	0.00	3,367.03		3,357.14	0	10.89	Out	0.00	3,368.17		3,357.28	0	12.33	Out	0.00	3,364.86		3,352.53
6/17/16	0	10.50	Out	0.00	3,367.03		3,356.53	0	16.8	Out	0.00	3,368.17		3,351.37	0	12.54	Out	0.00	3,364.86		3,352.32
6/22/16	0	10.81	Out	0.00	3,367.03		3,356.22	16.7	17.73	16.91	1.03	3,368.17	3,351.47	3,350.44	0	12.64	Out	0.00	3,364.86		3,352.22
6/30/16	0	10.59	Out	0.00	3,367.03		3,356.44	16.79	17.6	16.91	0.81	3,368.17	3,351.38	3,350.57	0	12.65	Out	0.00	3,364.86		3,352.21
7/7/16	0	10.73	Out	0.00	3,367.03		3,356.30	17	18.55	16.91	1.55	3,368.17	3,351.17	3,349.62	0	12.67	Out	0.00	3,364.86		3,352.19
7/12/16	0	10.85	Out	0.00	3,367.03		3,356.18	16.58	18.9	16.91	2.32	3,368.17	3,351.59	3,349.27	0	12.72	Out	0.00	3,364.86		3,352.14
7/19/16	0	10.96	Out	0.00	3,367.03		3,356.07	16.89	17.8	16.91	0.91	3,368.17	3,351.28	3,350.37	0	12.75	Out	0.00	3,364.86		3,352.11
7/29/16	0	11.06	Out	0.00	3,367.03		3,355.97	16.74	17.7	16.91	0.96	3,368.17	3,351.43	3,350.47	12.81	12.81	Out	0.00	3,364.86	3,352.05	3,352.05
8/4/16	0	11.15	Out	0.00	3,367.03		3,355.88	0	16.75	16.91	0.00	3,368.17		3,351.42	0	12.83	Out	0.00	3,364.86		3,352.03
8/15/16	0	10.11	Out	0.00	3,367.03		3,356.92	16.78	17.68	16.91	0.90	3,368.17	3,351.39	3,350.49	0	12.73	Out	0.00	3,364.86		3,352.13
8/26/16	0	9.45	Out	0.00	3,367.03		3,357.58	10.82	10.82	16.91	0.00	3,368.17	3,357.35	3,357.35	0	12.4	Out	0.00	3,364.86		3,352.46
9/6/16	0	7.99	Out	0.00	3,367.03		3,359.04	0	10.09	16.91	0.00	3,368.17		3,358.08	0	11.44	Out	0.00	3,364.86		3,353.42
9/29/16	0	9.75	Out	0.00	3,367.03		3,357.28	0	28.94	16.91	0.00	3,368.17		3,339.23	0	11.03	Out	0.00	3,364.86		3,353.83
10/5/16	0	8.55	Out	0.00	3,367.03		3,358.48	0	10.35	16.91	0.00	3,368.17		3,357.82	0	10.97	Out	0.00	3,364.86		3,353.89
10/14/16	0	8.46	Out	0.00	3,367.03		3,358.57	0	9.9	N/A	0.00	3,368.17		3,358.27	0	11.07	Out	0.00	3,364.86		3,353.79
10/20/16	0	8.85	Out	0.00	3,367.03		3,358.18	10.01	10.04	N/A	0.03	3,368.17	3,358.16	3,358.13	0	11.2	Out	0.00	3,364.86		3,353.66
10/26/16	0	8.68	Out	0.00	3,367.03		3,358.35	9.93	9.93	N/A	0.00	3,368.17	3,358.24	3,358.24	0	11.14	Out	0.00	3,364.86		3,353.72
11/2/16	0	8.76	Out	0.00	3,367.03		3,358.27	9.99	10.2	N/A	0.21	3,368.17	3,358.18	3,357.97	0	11.25	Out	0.00	3,364.86		3,353.61
11/8/16	0	8.69	Out	0.00	3,367.03		3,358.34	9.98	9.98	N/A	0.00	3,368.17	3,358.19	3,358.19	0	11.4	Out	0.00	3,364.86		3,353.46
11/16/16	0	8.65	Out	0.00	3,368.03		3,359.38	0	9.88	N/A	0.00	3,369.17		3,359.29	0	11.5	Out	0.00	3,365.86		3,354.36
11/22/16	0	8.80	Out	0.00	3,369.03		3,360.23	0	10.01	N/A	0.00	3,370.17		3,360.16	0	11.33	Out	0.00	3,366.86		3,355.53
12/1/16	0	9.15	Out	0.00	3,370.03		3,360.88	0	10.37	N/A	0.00	3,371.17		3,360.80	0	11.52	Out	0.00	3,367.86		3,356.34
12/6/16	0	8.83	Out	0	3,370.03		3,361.20	0	10.1	N/A	0	3,371.17		3,361.07	0	11.41	Out	0	3,367.86		3,356.45

Appendix E- Recovery System Gauging Data
 2016 Annual Groundwater Report
 HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-5R							RW-6R							RW-7R							
	Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	13.78	13.83	Out	0.05	3,368.56	3,354.78	3,354.73	0	12.42	Out	0.00	3,368.36		3,355.94	0	8.75	Out	0.00	3,367.09			3,358.34
1/7/16	13.78	13.83	Out	0.05	3,368.56	3,354.78	3,354.73	0	12.42	Out	0.00	3,368.36		3,355.94	0	8.75	Out	0.00	3,367.09			3,358.34
1/13/16	13.76	13.83	Out	0.07	3,368.56	3,354.80	3,354.73	0	12.4	Out	0.00	3,368.36		3,355.96	0	8.5	Out	0.00	3,367.09			3,358.59
1/20/16	14.74	14.8	Out	0.06	3,368.56	3,353.82	3,353.76	0	12.4	Out	0.00	3,368.36		3,355.96	0	14.29	Out	0.00	3,367.09			3,352.80
1/29/16	13.91	13.94	Out	0.03	3,368.56	3,354.65	3,354.62	0	12.59	Out	0.00	3,368.36		3,355.77	0	14.98	Out	0.00	3,367.09			3,352.11
2/3/16	14.3	14.32	Out	0.02	3,368.56	3,354.26	3,354.24	0	13	Out	0.00	3,368.36		3,355.36	0	15.07	Out	0.00	3,367.09			3,352.02
2/16/16	14.18	14.28	Out	0.10	3,368.56	3,354.38	3,354.28	0	12.9	Out	0.00	3,368.36		3,355.46	0	15.39	Out	0.00	3,367.09			3,351.70
2/26/16	14.33	14.58	Out	0.25	3,368.56	3,354.23	3,353.98	0	12.95	Out	0.00	3,368.36		3,355.41	0	14.36	Out	0.00	3,367.09			3,352.73
3/3/16	14.28	14.32	Out	0.04	3,368.56	3,354.28	3,354.24	0	12.85	Out	0.00	3,368.36		3,355.51	14.59	14.64	Out	0.05	3,367.09	3,352.50		3,352.45
3/11/16	14.5	14.53	Out	0.03	3,368.56	3,354.06	3,354.03	0	13.02	Out	0.00	3,368.36		3,355.34	14.69	14.7	Out	0.01	3,367.09	3,352.40		3,352.39
3/15/16	14.43	14.46	Out	0.03	3,368.56	3,354.13	3,354.10	13.01	13.03	Out	0.02	3,368.36	3,355.35	3,355.33	14.94	15.01	Out	0.07	3,367.09	3,352.15		3,352.08
3/22/16	14.5	14.58	Out	0.08	3,368.56	3,354.06	3,353.98	0	12.87	Out	0.00	3,368.36		3,355.49	0	14.73	Out	0.00	3,367.09			3,352.36
3/29/16	14.59	14.6	Out	0.01	3,368.56	3,353.97	3,353.96	13.05	13.07	Out	0.02	3,368.36	3,355.31	3,355.29	0	15.23	Out	0.00	3,367.09			3,351.86
4/7/16	14.7	14.74	Out	0.04	3,368.56	3,353.86	3,353.82	13.7	13.75	Out	0.05	3,368.36	3,354.66	3,354.61	0	15.25	Out	0.00	3,367.09			3,351.84
4/13/16	14.82	14.9	Out	0.08	3,368.56	3,353.74	3,353.66	13.85	13.87	Out	0.02	3,368.36	3,354.51	3,354.49	0	15.5	Out	0.00	3,367.09			3,351.59
4/19/16	14.91	14.98	Out	0.07	3,368.56	3,353.65	3,353.58	13.9	13.93	Out	0.03	3,368.36	3,354.46	3,354.43	0	15.65	Out	0.00	3,367.09			3,351.44
4/28/16	14.86	15.1	Out	0.24	3,368.56	3,353.70	3,353.46	13.95	13.99	Out	0.04	3,368.36	3,354.41	3,354.37	0	15.61	Out	0.00	3,367.09			3,351.48
5/3/16	15.04	15.16	Out	0.12	3,368.56	3,353.52	3,353.40	14.13	14.13	Out	0.00	3,368.36	3,354.23	3,354.23	0	15.69	Out	0.00	3,367.09			3,351.40
5/13/16	15.1	15.16	Out	0.06	3,368.56	3,353.46	3,353.40	14.23	14.28	Out	0.05	3,368.36	3,354.13	3,354.08	0	15.77	Out	0.00	3,367.09			3,351.32
5/26/16	15.25	15.31	Out	0.06	3,368.56	3,353.31	3,353.25	13.76	13.77	Out	0.01	3,368.36	3,354.60	3,354.59	0	15.82	Out	0.00	3,367.09			3,351.27
6/3/16	15.28	15.43	Out	0.15	3,368.56	3,353.28	3,353.13	13.68	13.71	Out	0.03	3,368.36	3,354.68	3,354.65	0	15.51	Out	0.00	3,367.09			3,351.58
6/9/16	15.27	15.45	Out	0.18	3,368.56	3,353.29	3,353.11	13.67	13.72	Out	0.05	3,368.36	3,354.69	3,354.64	0	15.67	Out	0.00	3,367.09			3,351.42
6/10/16	15.36	15.5	Out	0.14	3,368.56	3,353.20	3,353.06	14.1	14.1	Out	0.00	3,368.36	3,354.26	3,354.26	0	15.74	Out	0.00	3,367.09			3,351.35
6/17/16	15.31	15.35	Out	0.04	3,368.56	3,353.25	3,353.21	13.72	13.8	Out	0.08	3,368.36	3,354.64	3,354.56	0	15.57	Out	0.00	3,367.09			3,351.52
6/22/16	15.41	15.65	Out	0.24	3,368.56	3,353.15	3,352.91	13.8	13.88	Out	0.08	3,368.36	3,354.56	3,354.48	0	15.9	Out	0.00	3,367.09			3,351.19
6/30/16	15.39	15.5	Out	0.11	3,368.56	3,353.17	3,353.06	13.8	13.99	Out	0.19	3,368.36	3,354.56	3,354.37	16.26	16.26	Out	0.00	3,367.09	3,350.83		3,350.83
7/7/16	15.4	15.48	Out	0.08	3,368.56	3,353.16	3,353.08	13.82	13.89	Out	0.07	3,368.36	3,354.54	3,354.47	16.46	16.65	Out	0.19	3,367.09	3,350.63		3,350.44
7/12/16	15.44	15.58	Out	0.14	3,368.56	3,353.12	3,352.98	13.91	13.97	Out	0.06	3,368.36	3,354.45	3,354.39	16.58	16.77	Out	0.19	3,367.09	3,350.51		3,350.32
7/19/16	15.5	15.6	Out	0.10	3,368.56	3,353.06	3,352.96	13.91	13.97	Out	0.06	3,368.36	3,354.45	3,354.39	16.5	16.6	Out	0.10	3,367.09	3,350.59		3,350.49
7/29/16	15.54	15.62	Out	0.08	3,368.56	3,353.02	3,352.94	13.91	13.98	Out	0.07	3,368.36	3,354.45	3,354.38	16.45	16.46	Out	0.01	3,367.09	3,350.64		3,350.63
8/4/16	15.53	15.6	Out	0.07	3,368.56	3,353.03	3,352.96	13.92	14.11	Out	0.19	3,368.36	3,354.44	3,354.25	0	17.19	Out	0.00	3,367.09			3,349.90
8/15/16	15.3	15.34	Out	0.04	3,368.56	3,353.26	3,353.22	14.35	15.27	Out	0.92	3,368.36	3,354.01	3,353.09	0	16	Out	0.00	3,367.09			3,351.09
8/26/16	15.1	15.15	Out	0.05	3,368.56	3,353.46	3,353.41	13.8	13.82	Out	0.02	3,368.36	3,354.56	3,354.54	0	10.16	Out	0.00	3,367.09			3,356.93
9/6/16	14.08	14.12	Out	0.04	3,368.56	3,354.48	3,354.44	0	13	Out	0.00	3,368.36		3,355.36	9.76	9.89	Out	0.13	3,367.09	3,357.33		3,357.20
9/29/16	13.22	13.31	Out	0.09	3,368.56	3,355.34	3,355.25	--	--	Out	--	3,368.36	--	--	0	13.35	Out	0.00	3,367.09			3,353.74
10/5/16	14.66	14.73	Out	0.07	3,368.56	3,353.90	3,353.83	--	--	Out	--	3,368.36	--	--	0	13.55	Out	0.00	3,367.09			3,353.54
10/14/16	18.63	18.75	Out	0.12	3,368.56	3,349.93	3,349.81	0	12.17	Out	0.00	3,368.36		3,356.19	0	14.14	Out	0.00	3,367.09			3,352.95
10/20/16	18.62	18.7	Out	0.08	3,368.56	3,349.94	3,349.86	0	12.55	Out	0.00	3,368.36		3,355.81	0	10.2	Out	0.00	3,367.09			3,356.89
10/26/16	18.65	18.81	Out	0.16	3,368.56	3,349.91	3,349.75	0	12.14	Out	0.00	3,368.36		3,356.22	0	9.65	Out	0.00	3,367.09			3,357.44
11/2/16	18.48	18.81	Out	0.33	3,368.56	3,350.08	3,349.75	0	12.36	Out	0.00	3,368.36		3,356.00	9.72	9.75	Out	0.03	3,367.09	3,357.37		3,357.34
11/8/16	13.76	13.99	Out	0.23	3,368.56	3,354.80	3,354.57	0	12.59	Out	0.00	3,368.36		3,355.77	9.54	9.56	Out	0.02	3,367.09	3,357.55		3,357.53
11/16/16	13.5	13.81	Out	0.31	3,369.56	3,356.06	3,355.75	0	12.29	Out	0.00	3,369.36		3,357.07	0	9.51	Out	0.00	3,368.09			3,358.58
11/22/16	13.62	13.85	Out	0.23	3,370.56	3,356.94	3,356.71	0	12.4	Out	0.00	3,370.36		3,357.96	9.67	9.69	Out	0.02	3,369.09	3,359.42		3,359.40
12/1/16	13.81	14.05	Out	0.24	3,371.56	3,357.75	3,357.51	0	12.6	Out	0.00	3,371.36		3,358.76	9.93	10	Out	0.07	3,370.09	3,360.16		3,360.09
12/6/16	13.64	13.85	Out	0.21	3,371.56	3,357.92	3,357.71	0	12.35	Out	0	3,371.36		3,359.01	0	9.5	Out	0	3,370.09			3,360.59

Appendix E- Recovery System Gauging Data
 2016 Annual Groundwater Report
 HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-8R							RW-12R							RW-13R							
	Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	11.52	11.53	9.5	0.01	3,368.10	3,356.58	3,356.57	0	22.74	Out	0.00	3,351.54		3,328.80	0	21	Out	0.00	3,351.54			3,330.54
1/7/16	11.52	11.53	9.5	0.01	3,368.10	3,356.58	3,356.57	0	22.74	Out	0.00	3,351.54		3,328.80	0	21	Out	0.00	3,351.54			3,330.54
1/13/16	22.5	23	22.6	0.50	3,368.10	3,345.60	3,345.10	0	22.85	Out	0.00	3,351.54		3,328.69	21.07	21.07	Out	0.00	3,351.54	3,330.47		3,330.47
1/20/16	0	16.35	Out	0.00	3,368.10		3,351.75	22.91	22.91	Out	0.00	3,351.54	3,328.63	3,328.63	0	21.12	Out	0.00	3,351.54			3,330.42
1/29/16	0	8.84	Out	0.00	3,368.10		3,359.26	0	23.12	Out	0.00	3,351.54		3,328.42	0	21.24	Out	0.00	3,351.54			3,330.30
2/3/16	0	21.92	Out	0.00	3,368.10		3,346.18	0	23.29	Out	0.00	3,351.54		3,328.25	0	21.45	Out	0.00	3,351.54			3,330.09
2/16/16	13.7	13.8	Out	0.10	3,368.10	3,354.40	3,354.30	0	24.43	Out	0.00	3,351.54		3,327.11	0	21.56	Out	0.00	3,351.54			3,329.98
2/26/16	0	9.6	Out	0.00	3,368.10		3,358.50	0	26.39	Out	0.00	3,351.54		3,325.15	0	21.67	Out	0.00	3,351.54			3,329.87
3/3/16	9.54	9.54	Out	0.00	3,368.10	3,358.56	3,358.56	0	23.75	Out	0.00	3,351.54		3,327.79	0	21.67	Out	0.00	3,351.54			3,329.87
3/11/16	0	21.8	Out	0.00	3,368.10		3,346.30	0	23.89	Out	0.00	3,351.54		3,327.65	0	21.76	Out	0.00	3,351.54			3,329.78
3/15/16	0	20.25	Out	0.00	3,368.10		3,347.85	0	23.95	Out	0.00	3,351.54		3,327.59	0	21.79	Out	0.00	3,351.54			3,329.75
3/22/16	0	19.25	Out	0.00	3,368.10		3,348.85	0	24.05	Out	0.00	3,351.54		3,327.49	0	21.82	Out	0.00	3,351.54			3,329.72
3/29/16	0	18.78	Out	0.00	3,368.10		3,349.32	0	24	Out	0.00	3,351.54		3,327.54	0	21.85	Out	0.00	3,351.54			3,329.69
4/7/16	18.45	18.72	Out	0.27	3,368.10	3,349.65	3,349.38	0	21.98	Out	0.00	3,351.54		3,329.56	0	23.94	Out	0.00	3,351.54			3,327.60
4/13/16	17.46	17.81	Out	0.35	3,368.10	3,350.64	3,350.29	0	23.88	Out	0.00	3,351.54		3,327.66	0	22	Out	0.00	3,351.54			3,329.54
4/19/16	17	17.4	Out	0.40	3,368.10	3,351.10	3,350.70	0	23.61	Out	0.00	3,351.54		3,327.93	0	21.84	Out	0.00	3,351.54			3,329.70
4/28/16	16.14	16.4	Out	0.26	3,368.10	3,351.96	3,351.70	0	23.33	Out	0.00	3,351.54		3,328.21	0	21.61	Out	0.00	3,351.54			3,329.93
5/3/16	0	15.54	Out	0.00	3,368.10		3,352.56	0	21.08	Out	0.00	3,351.54		3,330.46	20	20.2	Out	0.20	3,351.54	3,331.54		3,331.34
5/13/16	16.32	16.59	Out	0.27	3,368.10	3,351.78	3,351.51	0	18.88	Out	0.00	3,351.54		3,332.66	17.9	18.55	Out	0.65	3,351.54	3,333.64		3,332.99
5/26/16	10.55	11.11	Out	0.56	3,368.10	3,357.55	3,356.99	0	20.2	Out	0.00	3,351.54		3,331.34	19.28	19.3	Out	0.02	3,351.54	3,332.26		3,332.24
6/3/16	10.55	11.14	Out	0.59	3,368.10	3,357.55	3,356.96	0	17.7	Out	0.00	3,351.54		3,333.84	16.65	17.2	Out	0.55	3,351.54	3,334.89		3,334.34
6/9/16	10.8	11.15	Out	0.35	3,368.10	3,357.30	3,356.95	0	17.95	Out	0.00	3,351.54		3,333.59	16.95	17.5	Out	0.55	3,351.54	3,334.59		3,334.04
6/10/16	18.92	19.19	Out	0.27	3,368.10	3,349.18	3,348.91	0	19.52	Out	0.00	3,351.54		3,332.02	18.8	18.91	Out	0.11	3,351.54	3,332.74		3,332.63
6/17/16	0	21.75	Out	0.00	3,368.10		3,346.35	0	16.05	Out	0.00	3,351.54		3,335.49	14.96	15.54	Out	0.58	3,351.54	3,336.58		3,336.00
6/22/16	21.15	21.5	21.22	0.35	3,368.10	3,346.95	3,346.60	0	16.96	Out	0.00	3,351.54		3,334.58	15.97	20	Out	4.03	3,351.54	3,335.57		3,331.54
6/30/16	0	11.32	Out	0.00	3,368.10		3,356.78	0	15.96	Out	0.00	3,351.54		3,335.58	15.16	15.74	Out	0.58	3,351.54	3,336.38		3,335.80
7/7/16	0	11.29	Out	0.00	3,368.10		3,356.81	0	17.33	Out	0.00	3,351.54		3,334.21	16.65	17.25	Out	0.60	3,351.54	3,334.89		3,334.29
7/12/16	0	11.41	Out	0.00	3,368.10		3,356.69	0	16.96	Out	0.00	3,351.54		3,334.58	16.2	16.76	Out	0.56	3,351.54	3,335.34		3,334.78
7/19/16	20.67	20.71	Out	0.04	3,368.10	3,347.43	3,347.39	0	17.75	Out	0.00	3,351.54		3,333.79	17.18	17.65	Out	0.47	3,351.54	3,334.36		3,333.89
7/29/16	20.7	20.8	Out	0.10	3,368.10	3,347.40	3,347.30	18.3	18.3	Out	0.00	3,351.54	3,333.24	3,333.24	17.71	18.3	Out	0.59	3,351.54	3,333.83		3,333.24
8/4/16	19	20.65	Out	1.65	3,368.10	3,349.10	3,347.45	0	19	Out	0.00	3,351.54		3,332.54	18.77	19.07	Out	0.30	3,351.54	3,332.77		3,332.47
8/15/16	11.25	11.26	Out	0.01	3,368.10	3,356.85	3,356.84	0	18.27	Out	0.00	3,351.54		3,333.27	18.23	19.34	Out	1.11	3,351.54	3,333.31		3,332.20
8/26/16	0	10.6	Out	0.00	3,368.10		3,357.50	0	18.75	Out	0.00	3,351.54		3,332.79	17.64	18.1	Out	0.46	3,351.54	3,333.90		3,333.44
9/6/16	0	8.97	Out	0.00	3,368.10		3,359.13	0	16.03	Out	0.00	3,351.54		3,335.51	16.06	16.66	Out	0.60	3,351.54	3,335.48		3,334.88
9/29/16	19.56	19.6	Out	0.04	3,368.10	3,348.54	3,348.50	0	17.91	Out	0.00	3,351.54		3,333.63	16.83	17.39	Out	0.56	3,351.54	3,334.71		3,334.15
10/5/16	0	18.88	Out	0.00	3,368.10		3,349.22	17.24	17.25	Out	0.01	3,351.54	3,334.30	3,334.29	16.59	17.15	Out	0.56	3,351.54	3,334.95		3,334.39
10/14/16	19.1	19.18	Out	0.08	3,368.10	3,349.00	3,348.92	17.9	17.92	Out	0.02	3,351.54	3,333.64	3,333.62	17.23	17.83	Out	0.60	3,351.54	3,334.31		3,333.71
10/20/16	18.8	18.95	Out	0.15	3,368.10	3,349.30	3,349.15	17.15	17.19	Out	0.04	3,351.54	3,334.39	3,334.35	16.45	17	Out	0.55	3,351.54	3,335.09		3,334.54
10/26/16	18.36	18.44	Out	0.08	3,368.10	3,349.74	3,349.66	17.8	17.84	Out	0.04	3,351.54	3,333.74	3,333.70	17.18	17.67	Out	0.49	3,351.54	3,334.36		3,333.87
11/2/16	18.22	18.55	Out	0.33	3,368.10	3,349.88	3,349.55	18.57	18.63	Out	0.06	3,351.54	3,332.97	3,332.91	17.95	18.55	Out	0.60	3,351.54	3,333.59		3,332.99
11/8/16	18.63	18.95	Out	0.32	3,368.10	3,349.47	3,349.15	19.07	19.1	Out	0.03	3,351.54	3,332.47	3,332.44	17.95	18.51	Out	0.56	3,351.54	3,333.59		3,333.03
11/16/16	18.2	18.7	Out	0.50	3,369.10	3,350.90	3,350.40	0	19.56	Out	0.00	3,352.54		3,332.98	18.34	18.54	Out	0.20	3,352.54	3,334.20		3,334.00
11/22/16	17.82	18.15	Out	0.33	3,370.10	3,352.28	3,351.95	19.96	19.99	Out	0.03	3,353.54	3,333.58	3,333.55	18.77	18.98	Out	0.21	3,353.54	3,334.77		3,334.56
12/1/16	17.55	18.03	Out	0.48	3,371.10	3,353.55	3,353.07	20.55	20.57	Out	0.02	3,354.54	3,333.99	3,333.97	19.3	19.44	Out	0.14	3,354.54	3,335.24		3,335.10
12/6/16	17.09	17.4	Out	0.31	3,371.10	3,354.01	3,353.70	0	21.05	Out	0	3,354.54		3,333.49	19.4	19.61	Out	0.21	3,354.54	3,335.14		3,334.93

Appendix E- Recovery System Gauging Data
 2016 Annual Groundwater Report
 HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-14R							RW-15							RW-19							
	Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	17.55	17.67	Out	0.12	3,349.37	3,331.82	3,331.70	13.3	13.4	Out	0.10	3,365.30	3,352.00	3,351.90	21.79	22.09	Out	0.30	3,369.11	3,347.32	3,347.02	3,347.02
1/7/16	17.55	17.67	Out	0.12	3,349.37	3,331.82	3,331.70	13.3	13.4	Out	0.10	3,365.30	3,352.00	3,351.90	21.79	22.09	Out	0.30	3,369.11	3,347.32	3,347.02	3,347.02
1/13/16	16.63	16.81	Out	0.18	3,349.37	3,332.74	3,332.56	13.45	13.52	Out	0.07	3,365.30	3,351.85	3,351.78	21.82	22.19	Out	0.37	3,369.11	3,347.29	3,346.92	3,346.92
1/20/16	17.67	17.8	Out	0.13	3,349.37	3,331.70	3,331.57	13.51	13.54	Out	0.03	3,365.30	3,351.79	3,351.76	21.87	22.27	Out	0.40	3,369.11	3,347.24	3,346.84	3,346.84
1/29/16	17.69	17.83	Out	0.14	3,349.37	3,331.68	3,331.54	13.6	13.75	Out	0.15	3,365.30	3,351.70	3,351.55	21.99	22.34	Out	0.35	3,369.11	3,347.12	3,346.77	3,346.77
2/3/16	17.93	17.96	Out	0.03	3,349.37	3,331.44	3,331.41	13.85	13.94	Out	0.09	3,365.30	3,351.45	3,351.36	22.4	22.92	Out	0.52	3,369.11	3,346.71	3,346.19	3,346.19
2/16/16	17.9	18.11	Out	0.21	3,349.37	3,331.47	3,331.26	13.83	13.91	Out	0.08	3,365.30	3,351.47	3,351.39	22.5	22.8	Out	0.30	3,369.11	3,346.61	3,346.31	3,346.31
2/26/16	18.07	18.18	Out	0.11	3,349.37	3,331.30	3,331.19	14.08	14.12	Out	0.04	3,365.30	3,351.22	3,351.18	22.58	22.99	Out	0.41	3,369.11	3,346.53	3,346.12	3,346.12
3/3/16	18.15	18.46	Out	0.31	3,349.37	3,331.22	3,330.91	14.1	14.14	Out	0.04	3,365.30	3,351.20	3,351.16	22.69	23.08	Out	0.39	3,369.11	3,346.42	3,346.03	3,346.03
3/11/16	18.22	18.8	Out	0.58	3,349.37	3,331.15	3,330.57	14.27	14.3	Out	0.03	3,365.30	3,351.03	3,351.00	22.85	23.18	Out	0.33	3,369.11	3,346.26	3,345.93	3,345.93
3/15/16	18.29	18.45	Out	0.16	3,349.37	3,331.08	3,330.92	14.24	14.3	Out	0.06	3,365.30	3,351.06	3,351.00	22.86	23.29	Out	0.43	3,369.11	3,346.25	3,345.82	3,345.82
3/22/16	18.39	18.49	Out	0.10	3,349.37	3,330.98	3,330.88	14.29	14.3	Out	0.01	3,365.30	3,351.01	3,351.00	22.89	23.24	Out	0.35	3,369.11	3,346.22	3,345.87	3,345.87
3/29/16	18.48	18.79	Out	0.31	3,349.37	3,330.89	3,330.58	14.32	14.36	Out	0.04	3,365.30	3,350.98	3,350.94	22.98	23.35	Out	0.37	3,369.11	3,346.13	3,345.76	3,345.76
4/7/16	18.62	18.71	Out	0.09	3,349.37	3,330.75	3,330.66	14.53	14.6	Out	0.07	3,365.30	3,350.77	3,350.70	25.95	26.35	Out	0.40	3,369.11	3,343.16	3,342.76	3,342.76
4/13/16	18.76	18.86	Out	0.10	3,349.37	3,330.61	3,330.51	14.7	14.74	Out	0.04	3,365.30	3,350.60	3,350.56	22.92	23.75	Out	0.83	3,369.11	3,346.19	3,345.36	3,345.36
4/19/16	18.76	18.86	Out	0.10	3,349.37	3,330.61	3,330.51	14.66	14.69	Out	0.03	3,365.30	3,350.64	3,350.61	23.21	23.55	Out	0.34	3,369.11	3,345.90	3,345.56	3,345.56
4/28/16	17.83	17.9	Out	0.07	3,349.37	3,331.54	3,331.47	14.65	14.7	Out	0.05	3,365.30	3,350.65	3,350.60	23.3	24.1	Out	0.80	3,369.11	3,345.81	3,345.01	3,345.01
5/3/16	16.25	16.37	Out	0.12	3,349.37	3,333.12	3,333.00	14.78	14.8	Out	0.02	3,365.30	3,350.52	3,350.50	23.33	23.65	Out	0.32	3,369.11	3,345.78	3,345.46	3,345.46
5/13/16	15.85	15.98	Out	0.13	3,349.37	3,333.52	3,333.39	14.88	14.93	Out	0.05	3,365.30	3,350.42	3,350.37	23.55	23.96	Out	0.41	3,369.11	3,345.56	3,345.15	3,345.15
5/26/16	16.5	16.75	Out	0.25	3,349.37	3,332.87	3,332.62	14.83	14.95	Out	0.12	3,365.30	3,350.47	3,350.35	23.33	23.71	Out	0.38	3,369.11	3,345.78	3,345.40	3,345.40
6/3/16	15.05	15.1	Out	0.05	3,349.37	3,334.32	3,334.27	N/A	N/A	Out	#VALUE!	3,365.30	#VALUE!	#VALUE!	23.33	23.73	Out	0.40	3,369.11	3,345.78	3,345.38	3,345.38
6/9/16	15.33	15.78	Out	0.45	3,349.37	3,334.04	3,333.59	N/A	N/A	Out	#VALUE!	3,365.30	#VALUE!	#VALUE!	23.3	23.75	Out	0.45	3,369.11	3,345.81	3,345.36	3,345.36
6/10/16	16.16	16.25	Out	0.09	3,349.37	3,333.21	3,333.12	14.89	15	Out	0.11	3,365.30	3,350.41	3,350.30	23.43	23.86	Out	0.43	3,369.11	3,345.68	3,345.25	3,345.25
6/17/16	13.92	14.04	Out	0.12	3,349.37	3,335.45	3,335.33	14.85	14.9	Out	0.05	3,365.30	3,350.45	3,350.40	23.31	23.85	Out	0.54	3,369.11	3,345.80	3,345.26	3,345.26
6/22/16	14.85	15.18	Out	0.33	3,349.37	3,334.52	3,334.19	14.88	14.95	Out	0.07	3,365.30	3,350.42	3,350.35	23.29	23.87	Out	0.58	3,369.11	3,345.82	3,345.24	3,345.24
6/30/16	14.62	14.74	Out	0.12	3,349.37	3,334.75	3,334.63	14.9	14.93	Out	0.03	3,365.30	3,350.40	3,350.37	23.25	25.3	Out	2.05	3,369.11	3,345.86	3,343.81	3,343.81
7/7/16	15.35	15.82	Out	0.47	3,349.37	3,334.02	3,333.55	14.89	14.92	Out	0.03	3,365.30	3,350.41	3,350.38	23.25	23.6	Out	0.35	3,369.11	3,345.86	3,345.51	3,345.51
7/12/16	15.34	15.78	Out	0.44	3,349.37	3,334.03	3,333.59	14.88	14.91	Out	0.03	3,365.30	3,350.42	3,350.39	23.21	23.67	Out	0.46	3,369.11	3,345.90	3,345.44	3,345.44
7/19/16	15.97	16.05	Out	0.08	3,349.37	3,333.40	3,333.32	14.9	14.95	Out	0.05	3,365.30	3,350.40	3,350.35	23.3	23.65	Out	0.35	3,369.11	3,345.81	3,345.46	3,345.46
7/29/16	16.57	16.75	Out	0.18	3,349.37	3,332.80	3,332.62	14.9	15	Out	0.10	3,365.30	3,350.40	3,350.30	26.22	27	Out	0.78	3,369.11	3,342.89	3,342.11	3,342.11
8/4/16	17.06	17.17	Out	0.11	3,349.37	3,332.31	3,332.20	14.84	14.95	Out	0.11	3,365.30	3,350.46	3,350.35	26.2	26.7	Out	0.50	3,369.11	3,342.91	3,342.41	3,342.41
8/15/16	16.8	16.97	Out	0.17	3,349.37	3,332.57	3,332.40	14.94	14.99	Out	0.05	3,365.30	3,350.36	3,350.31	23.85	26.24	Out	2.39	3,369.11	3,345.26	3,342.87	3,342.87
8/26/16	17.3	17.45	Out	0.15	3,349.37	3,332.07	3,331.92	14.58	14.6	Out	0.02	3,365.30	3,350.72	3,350.70	21.95	22.15	Out	0.20	3,369.11	3,347.16	3,346.96	3,346.96
9/6/16	16.14	16.3	Out	0.16	3,349.37	3,333.23	3,333.07	13.95	13.95	Out	0.00	3,365.30	3,351.35	3,351.35	22.42	22.62	Out	0.20	3,369.11	3,346.69	3,346.49	3,346.49
9/29/16	16.22	16.32	Out	0.10	3,349.37	3,333.15	3,333.05	0	12.97	Out	0.00	3,365.30		3,352.33	21.6	21.8	Out	0.20	3,369.11	3,347.51	3,347.31	3,347.31
10/5/16	16.64	16.68	Out	0.04	3,349.37	3,332.73	3,332.69	0	12.8	Out	0.00	3,365.30		3,352.50	21.33	21.54	Out	0.21	3,369.11	3,347.78	3,347.57	3,347.57
10/14/16	16.69	16.8	Out	0.11	3,349.37	3,332.68	3,332.57	0	12.9	Out	0.00	3,365.30		3,352.40	21.36	21.6	Out	0.24	3,369.11	3,347.75	3,347.51	3,347.51
10/20/16	16.65	16.75	Out	0.10	3,349.37	3,332.72	3,332.62	0	12.96	Out	0.00	3,365.30		3,352.34	21.35	21.59	Out	0.24	3,369.11	3,347.76	3,347.52	3,347.52
10/26/16	16.85	16.95	Out	0.10	3,349.37	3,332.52	3,332.42	13.06	13.09	Out	0.03	3,365.30	3,352.24	3,352.21	21.43	21.62	Out	0.19	3,369.11	3,347.68	3,347.49	3,347.49
11/2/16	17.27	17.34	Out	0.07	3,349.37	3,332.10	3,332.03	0	13.13	Out	0.00	3,365.30		3,352.17	21.5	21.73	Out	0.23	3,369.11	3,347.61	3,347.38	3,347.38
11/8/16	18.17	18.31	Out	0.14	3,349.37	3,331.20	3,331.06	0	13.2	Out	0.00	3,365.30		3,352.10	21.52	22.15	Out	0.63	3,369.11	3,347.59	3,346.96	3,346.96
11/16/16	16.85	16.92	Out	0.07	3,350.37	3,333.52	3,333.45	13.15	13.19	Out	0.04	3,366.30	3,353.15	3,353.11	21.39	21.46	Out	0.07	3,370.11	3,348.72	3,348.65	3,348.65
11/22/16	18.58	18.79	Out	0.21	3,351.37	3,332.79	3,332.58	13.2	13.24	Out	0.04	3,367.30	3,354.10	3,354.06	21.5	21.68	Out	0.18	3,371.11	3,349.61	3,349.43	3,349.43
12/1/16	17.9	17.98	Out	0.08	3,352.37	3,334.47	3,334.39	13.21	13.25	Out	0.04	3,368.30	3,355.09	3,355.05	21.77	21.97	Out	0.20	3,372.11	3,350.34	3,350.14	3,350.14
12/6/16	19.15	19.25	Out	0.1	3,352.37	3,333.22	3,333.12	13.45	13.5	Out	0.05	3,368.30	3,354.85	3,354.80	21.81	22.06	Out	0.25	3,372.11	3,350.30	3,350.05	3,350.05

Appendix E- Recovery System Gauging Data
 2016 Annual Groundwater Report
 HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-20							RW-22						
	Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev
12/22/15	19.87	20.09	Out	0.22	3,348.44	3,328.57	3,328.35	19.79	19.8	Out	0.01	3,349.21	3,329.42	3,329.41
1/7/16	19.87	20.09	Out	0.22	3,348.44	3,328.57	3,328.35	19.79	19.8	Out	0.01	3,349.21	3,329.42	3,329.41
1/13/16	19.8	20.05	Out	0.25	3,348.44	3,328.64	3,328.39	Too Wet	Too Wet	Out		3,349.21		
1/20/16	19.78	19.99	Out	0.21	3,348.44	3,328.66	3,328.45	21.01	21.02	Out	0.01	3,349.21	3,328.20	3,328.19
1/29/16	19.74	20.05	Out	0.31	3,348.44	3,328.70	3,328.39	21.25	21.28	Out	0.03	3,349.21	3,327.96	3,327.93
2/3/16	19.76	20	Out	0.24	3,348.44	3,328.68	3,328.44	21.52	21.55	Out	0.03	3,349.21	3,327.69	3,327.66
2/16/16	19.75	20.05	Out	0.30	3,348.44	3,328.69	3,328.39	21.8	21.86	Out	0.06	3,349.21	3,327.41	3,327.35
2/26/16	19.75	20.13	Out	0.38	3,348.44	3,328.69	3,328.31	22.09	22.14	Out	0.05	3,349.21	3,327.12	3,327.07
3/3/16	19.8	20	Out	0.20	3,348.44	3,328.64	3,328.44	22.18	22.3	Out	0.12	3,349.21	3,327.03	3,326.91
3/11/16	19.77	20	Out	0.23	3,348.44	3,328.67	3,328.44	22.35	22.45	Out	0.10	3,349.21	3,326.86	3,326.76
3/15/16	19.7	20	Out	0.30	3,348.44	3,328.74	3,328.44	22.42	22.5	Out	0.08	3,349.21	3,326.79	3,326.71
3/22/16	19.74	20	Out	0.26	3,348.44	3,328.70	3,328.44	22.54	22.8	Out	0.26	3,349.21	3,326.67	3,326.41
3/29/16	19.74	20	Out	0.26	3,348.44	3,328.70	3,328.44	22.5	22.56	Out	0.06	3,349.21	3,326.71	3,326.65
4/7/16	19.71	20	Out	0.29	3,348.44	3,328.73	3,328.44	22.42	22.49	Out	0.07	3,349.21	3,326.79	3,326.72
4/13/16	19.75	20	Out	0.25	3,348.44	3,328.69	3,328.44	22.44	22.48	Out	0.04	3,349.21	3,326.77	3,326.73
4/19/16	19.72	20.05	Out	0.33	3,348.44	3,328.72	3,328.39	22.06	22.09	Out	0.03	3,349.21	3,327.15	3,327.12
4/28/16	19.74	20.11	Out	0.37	3,348.44	3,328.70	3,328.33	21.44	21.45	Out	0.01	3,349.21	3,327.77	3,327.76
5/3/16	19.71	20.21	Out	0.50	3,348.44	3,328.73	3,328.23	Too Wet	Too Wet	Out		3,349.21		
5/13/16	18.74	19.1	Out	0.36	3,348.44	3,329.70	3,329.34	28.52	28.63	Out	0.11	3,349.21	3,320.69	3,320.58
5/26/16	19.77	20.1	Out	0.33	3,348.44	3,328.67	3,328.34	23.12	23.12	Out	0.00	3,349.21	3,326.09	3,326.09
6/3/16	18.18	18.47	Out	0.29	3,348.44	3,330.26	3,329.97	N/A	N/A	Out		3,349.21		
6/9/16	18.1	18.5	Out	0.40	3,348.44	3,330.34	3,329.94	23.55	23.9	Out	0.35	3,349.21	3,325.66	3,325.31
6/10/16	19.74	20.05	Out	0.31	3,348.44	3,328.70	3,328.39	22.44	22.44	Out	0.00	3,349.21	3,326.77	3,326.77
6/17/16	14.1	17.42	Out	3.32	3,348.44	3,334.34	3,331.02	23.19	23.35	Out	0.16	3,349.21	3,326.02	3,325.86
6/22/16	16.88	17.42	Out	0.54	3,348.44	3,331.56	3,331.02	23.5	24	23.6	0.50	3,349.21	3,325.71	3,325.21
6/30/16	9.74	16.94	Out	7.20	3,348.44	3,338.70	3,331.50	22.43	22.45	23.6	0.02	3,349.21	3,326.78	3,326.76
7/7/16	16.87	19.21	Out	2.34	3,348.44	3,331.57	3,329.23	22.83	22.84	23.6	0.01	3,349.21	3,326.38	3,326.37
7/12/16	17.16	17.32	Out	0.16	3,348.44	3,331.28	3,331.12	22.76	23.1	23.6	0.34	3,349.21	3,326.45	3,326.11
7/19/16	17.94	18.11	Out	0.17	3,348.44	3,330.50	3,330.33	23.3	23.62	23.6	0.32	3,349.21	3,325.91	3,325.59
7/29/16	17.54	17.88	Out	0.34	3,348.44	3,330.90	3,330.56	23.25	23.25	23.6	0.00	3,349.21	3,325.96	3,325.96
8/4/16	18.4	18.65	Out	0.25	3,348.44	3,330.04	3,329.79	0	23.82	23.6	0.00	3,349.21		3,325.39
8/15/16	17.88	18.4	Out	0.52	3,348.44	3,330.56	3,330.04	0	23.02	23.6	0.00	3,349.21		3,326.19
8/26/16	13.9	17.2	Out	3.30	3,348.44	3,334.54	3,331.24	0	23.84	23.6	0.00	3,349.21		3,325.37
9/6/16	12.16	12.45	Out	0.29	3,348.44	3,336.28	3,335.99	23.29	23.29	23.6	0.00	3,349.21	3,325.92	3,325.92
9/29/16	20.15	20.25	Out	0.10	3,348.44	3,328.29	3,328.19	0	28.71	23.6	0.00	3,349.21		3,320.50
10/5/16	16.27	17.35	Out	1.08	3,348.44	3,332.17	3,331.09	0	20.92	23.6	0.00	3,349.21		3,328.29
10/14/16	18.54	18.66	Out	0.12	3,348.44	3,329.90	3,329.78	0	22.25	23.6	0.00	3,349.21		3,326.96
10/20/16	17.47	17.55	Out	0.08	3,348.44	3,330.97	3,330.89	0	21.29	N/A	0.00	3,349.21		3,327.92
10/26/16	17.9	18.09	Out	0.19	3,348.44	3,330.54	3,330.35	0	21.19	N/A	0.00	3,349.21		3,328.02
11/2/16	17.93	18.12	Out	0.19	3,348.44	3,330.51	3,330.32	0	22.17	N/A	0.00	3,349.21		3,327.04
11/8/16	19.33	19.48	Out	0.15	3,348.44	3,329.11	3,328.96	0	17.68	N/A	0.00	3,349.21		3,331.53
11/16/16	0	19.3	Out	0.00	3,349.44		3,330.14	0	18.1	N/A	0.00	3,350.21		3,332.11
11/22/16	20.23	20.32	Out	0.09	3,350.44	3,330.21	3,330.12	0	18.49	N/A	0.00	3,351.21		3,332.72
12/1/16	20	20.1	Out	0.10	3,351.44	3,331.44	3,331.34	0	19.5	N/A	0.00	3,352.21		3,332.71
12/6/16	20	20.05	Out	0.05	3,351.44	3,331.44	3,331.39	0	19.26	N/A	0	3,352.21		3,332.95



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

February 15, 2016

Micki Schultz
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 746-5281
FAX

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

OrderNo.: 1601864

Dear Micki Schultz:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/22/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010							
Ignitability	>200	0		°F	1	1/29/2016	R32136
SULFIDE, REACTIVE							
Reactive Sulfide	ND	1.0		mg/L	1	1/29/2016	R32136
SPECIFIC GRAVITY							
Specific Gravity	1.006	0			1	1/27/2016 3:13:00 PM	R31723
EPA METHOD 300.0: ANIONS							
Fluoride	20	2.0	*	mg/L	20	1/23/2016 12:57:44 AM	R31638
Chloride	570	25		mg/L	50	1/26/2016 11:44:39 PM	R31714
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	1/23/2016 12:45:19 AM	R31638
Bromide	2.1	2.0		mg/L	20	1/23/2016 12:57:44 AM	R31638
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	1/23/2016 12:45:19 AM	R31638
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	1/23/2016 12:45:19 AM	R31638
Sulfate	2000	25		mg/L	50	1/26/2016 11:44:39 PM	R31714
SM2510B: SPECIFIC CONDUCTANCE							
Conductivity	5600	0.010		µmhos/cm	1	1/25/2016 8:12:02 PM	R31664
SM2320B: ALKALINITY							
Bicarbonate (As CaCO3)	220.4	20.00		mg/L CaCO3	1	1/25/2016 8:12:02 PM	R31664
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	1/25/2016 8:12:02 PM	R31664
Total Alkalinity (as CaCO3)	220.4	20.00		mg/L CaCO3	1	1/25/2016 8:12:02 PM	R31664
SM2540C MOD: TOTAL DISSOLVED SOLIDS							
Total Dissolved Solids	3780	40.0	*D	mg/L	1	1/28/2016 6:43:00 PM	23428
CORROSIVITY							
pH	7.16			pH Units	1	1/28/2016	R32136
CYANIDE, REACTIVE							
Cyanide, Reactive	ND	1.00		mg/L	1	2/4/2016	R32136
EPA METHOD 7470: MERCURY							
Mercury	ND	0.00020		mg/L	1	1/25/2016 4:48:50 PM	23378
MERCURY, TCLP							
Mercury	ND	0.020		mg/L	1	1/28/2016 11:50:30 AM	23438
EPA METHOD 6010B: TCLP METALS							
Arsenic	ND	5.0		mg/L	1	1/25/2016 11:17:08 AM	23359
Barium	ND	100		mg/L	1	1/25/2016 11:17:08 AM	23359
Cadmium	ND	1.0		mg/L	1	1/25/2016 11:17:08 AM	23359
Chromium	ND	5.0		mg/L	1	1/25/2016 11:17:08 AM	23359

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS							Analyst: MED
Lead	ND	5.0		mg/L	1	1/25/2016 11:17:08 AM	23359
Selenium	ND	1.0		mg/L	1	1/25/2016 11:17:08 AM	23359
Silver	ND	5.0		mg/L	1	1/25/2016 11:17:08 AM	23359
EPA 6010B: TOTAL METALS							Analyst: MED
Aluminum	1.0	0.020		mg/L	1	1/27/2016 10:18:42 AM	23359
Antimony	ND	0.050		mg/L	1	1/27/2016 10:18:42 AM	23359
Arsenic	ND	0.020		mg/L	1	1/27/2016 10:18:42 AM	23359
Barium	ND	0.020		mg/L	1	1/27/2016 10:18:42 AM	23359
Beryllium	ND	0.0030		mg/L	1	1/27/2016 10:18:42 AM	23359
Cadmium	ND	0.0020		mg/L	1	1/27/2016 10:18:42 AM	23359
Calcium	39	1.0		mg/L	1	1/27/2016 10:18:42 AM	23359
Chromium	ND	0.0060		mg/L	1	1/27/2016 10:18:42 AM	23359
Cobalt	ND	0.0060		mg/L	1	1/28/2016 10:29:14 AM	23359
Copper	0.012	0.0060		mg/L	1	1/27/2016 10:18:42 AM	23359
Iron	7.6	0.25		mg/L	5	1/27/2016 10:20:32 AM	23359
Lead	ND	0.0050		mg/L	1	1/27/2016 10:18:42 AM	23359
Magnesium	13	1.0		mg/L	1	1/27/2016 10:18:42 AM	23359
Manganese	0.15	0.0020		mg/L	1	1/27/2016 10:18:42 AM	23359
Nickel	0.042	0.010		mg/L	1	1/27/2016 10:18:42 AM	23359
Potassium	72	1.0		mg/L	1	1/27/2016 10:18:42 AM	23359
Selenium	0.53	0.050		mg/L	1	1/27/2016 10:18:42 AM	23359
Silver	ND	0.0050		mg/L	1	1/27/2016 10:18:42 AM	23359
Sodium	1200	50		mg/L	50	1/29/2016 11:10:54 AM	23359
Thallium	ND	0.050		mg/L	1	1/27/2016 10:18:42 AM	23359
Vanadium	ND	0.050		mg/L	1	1/27/2016 10:18:42 AM	23359
Zinc	0.035	0.020		mg/L	1	1/27/2016 10:18:42 AM	23359
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acetonitrile	ND	12		µg/L	1	2/2/2016	R32136
Allyl chloride	ND	2.5		µg/L	1	2/2/2016	R32136
Chloroprene	ND	2.5		µg/L	1	2/2/2016	R32136
Cyclohexane	ND	2.5		µg/L	1	2/2/2016	R32136
Diethyl ether	ND	2.5		µg/L	1	2/2/2016	R32136
Diisopropyl ether	ND	2.5		µg/L	1	2/2/2016	R32136
Epichlorohydrin	ND	25		µg/L	1	2/2/2016	R32136
Ethyl acetate	ND	2.5		µg/L	1	2/2/2016	R32136
Ethyl methacrylate	ND	12		µg/L	1	2/2/2016	R32136
Ethyl tert-butyl ether	ND	2.5		µg/L	1	2/2/2016	R32136
Freon-113	ND	2.5		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Isobutanol	ND	25		µg/L	1	2/2/2016	R32136
Isopropyl acetate	ND	2.5		µg/L	1	2/2/2016	R32136
Methacrylonitrile	ND	12		µg/L	1	2/2/2016	R32136
Methyl acetate	ND	2.5		µg/L	1	2/2/2016	R32136
Methyl ethyl ketone	ND	12		µg/L	1	2/2/2016	R32136
Methyl isobutyl ketone	ND	12		µg/L	1	2/2/2016	R32136
Methyl methacrylate	ND	12		µg/L	1	2/2/2016	R32136
Methylcyclohexane	ND	5.0		µg/L	1	2/2/2016	R32136
n-Amyl acetate	ND	2.5		µg/L	1	2/2/2016	R32136
n-Hexane	ND	2.5		µg/L	1	2/2/2016	R32136
Nitrobenzene	ND	25		µg/L	1	2/2/2016	R32136
Pentachloroethane	ND	25		µg/L	1	2/2/2016	R32136
p-isopropyltoluene	ND	2.5		µg/L	1	2/2/2016	R32136
Propionitrile	ND	12		µg/L	1	2/2/2016	R32136
Tetrahydrofuran	ND	2.5		µg/L	1	2/2/2016	R32136
Benzene	ND	2.5		µg/L	1	2/2/2016	R32136
Toluene	ND	2.5		µg/L	1	2/2/2016	R32136
Ethylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
Methyl tert-butyl ether (MTBE)	3.2	2.5		µg/L	1	2/2/2016	R32136
1,2,4-Trimethylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,3,5-Trimethylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,2-Dichloroethane (EDC)	ND	2.5		µg/L	1	2/2/2016	R32136
1,2-Dibromoethane (EDB)	ND	2.5		µg/L	1	2/2/2016	R32136
Naphthalene	ND	2.5		µg/L	1	2/2/2016	R32136
Acetone	100	12		µg/L	1	2/2/2016	R32136
Bromobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
Bromodichloromethane	ND	2.5		µg/L	1	2/2/2016	R32136
Bromoform	ND	2.5		µg/L	1	2/2/2016	R32136
Bromomethane	ND	2.5		µg/L	1	2/2/2016	R32136
Carbon disulfide	ND	2.5		µg/L	1	2/2/2016	R32136
Carbon Tetrachloride	ND	2.5		µg/L	1	2/2/2016	R32136
Chlorobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
Chloroethane	ND	2.5		µg/L	1	2/2/2016	R32136
Chloroform	ND	2.5		µg/L	1	2/2/2016	R32136
Chloromethane	ND	2.5		µg/L	1	2/2/2016	R32136
2-Chlorotoluene	ND	2.5		µg/L	1	2/2/2016	R32136
4-Chlorotoluene	ND	2.5		µg/L	1	2/2/2016	R32136
cis-1,2-DCE	ND	2.5		µg/L	1	2/2/2016	R32136
cis-1,3-Dichloropropene	ND	2.5		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
1,2-Dibromo-3-chloropropane	ND	2.5		µg/L	1	2/2/2016	R32136
Dibromochloromethane	ND	2.5		µg/L	1	2/2/2016	R32136
Dibromomethane	ND	2.5		µg/L	1	2/2/2016	R32136
1,2-Dichlorobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,3-Dichlorobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,4-Dichlorobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
Dichlorodifluoromethane	ND	2.5		µg/L	1	2/2/2016	R32136
1,1-Dichloroethane	ND	2.5		µg/L	1	2/2/2016	R32136
1,1-Dichloroethene	ND	2.5		µg/L	1	2/2/2016	R32136
1,2-Dichloropropane	ND	2.5		µg/L	1	2/2/2016	R32136
1,3-Dichloropropane	ND	2.5		µg/L	1	2/2/2016	R32136
2,2-Dichloropropane	ND	2.5		µg/L	1	2/2/2016	R32136
1,1-Dichloropropene	ND	2.5		µg/L	1	2/2/2016	R32136
Hexachlorobutadiene	ND	2.5		µg/L	1	2/2/2016	R32136
2-Hexanone	ND	2.5		µg/L	1	2/2/2016	R32136
Isopropylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
Methylene Chloride	ND	12		µg/L	1	2/2/2016	R32136
n-Butylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
n-Propylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
sec-Butylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
Styrene	ND	2.5		µg/L	1	2/2/2016	R32136
tert-Butylbenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,1,1,2-Tetrachloroethane	ND	2.5		µg/L	1	2/2/2016	R32136
1,1,2,2-Tetrachloroethane	ND	2.5		µg/L	1	2/2/2016	R32136
Tetrachloroethene (PCE)	ND	2.5		µg/L	1	2/2/2016	R32136
trans-1,2-DCE	ND	2.5		µg/L	1	2/2/2016	R32136
trans-1,3-Dichloropropene	ND	2.5		µg/L	1	2/2/2016	R32136
1,2,3-Trichlorobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,2,4-Trichlorobenzene	ND	2.5		µg/L	1	2/2/2016	R32136
1,1,1-Trichloroethane	ND	2.5		µg/L	1	2/2/2016	R32136
1,1,2-Trichloroethane	ND	2.5		µg/L	1	2/2/2016	R32136
Trichloroethene (TCE)	ND	2.5		µg/L	1	2/2/2016	R32136
Trichlorofluoromethane	ND	2.5		µg/L	1	2/2/2016	R32136
1,2,3-Trichloropropane	ND	2.5		µg/L	1	2/2/2016	R32136
Vinyl chloride	ND	2.5		µg/L	1	2/2/2016	R32136
mp-Xylenes	ND	5.0		µg/L	1	2/2/2016	R32136
o-Xylene	ND	2.5		µg/L	1	2/2/2016	R32136
tert-Amyl methyl ether	ND	2.5		µg/L	1	2/2/2016	R32136
tert-Butyl alcohol	ND	25		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acrolein	ND	12		µg/L	1	2/2/2016	R32136
Acrylonitrile	ND	2.5		µg/L	1	2/2/2016	R32136
Bromochloromethane	ND	2.5		µg/L	1	2/2/2016	R32136
2-Chloroethyl vinyl ether	ND	2.5		µg/L	1	2/2/2016	R32136
Iodomethane	ND	2.5		µg/L	1	2/2/2016	R32136
trans-1,4-Dichloro-2-butene	ND	2.5		µg/L	1	2/2/2016	R32136
Vinyl acetate	ND	2.5		µg/L	1	2/2/2016	R32136
1,4-Dioxane	ND	100		µg/L	1	2/2/2016	R32136
Surr: 1,2-Dichlorobenzene-d4	89.2	70-130		%Rec	1	2/2/2016	R32136
Surr: 4-Bromofluorobenzene	94.0	70-130		%Rec	1	2/2/2016	R32136
Surr: Toluene-d8	99.6	70-130		%Rec	1	2/2/2016	R32136
EPA 8270D: SEMIVOLATILES							Analyst: SUB
1,1-Biphenyl	ND	5.0		µg/L	1	2/2/2016	R32136
1,4-Dioxane	ND	5.0		µg/L	1	2/2/2016	R32136
Atrazine	ND	5.0		µg/L	1	2/2/2016	R32136
Benzaldehyde	ND	5.0		µg/L	1	2/2/2016	R32136
Caprolactam	ND	5.0		µg/L	1	2/2/2016	R32136
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	2/2/2016	R32136
Acetophenone	ND	5.0		µg/L	1	2/2/2016	R32136
1-Methylnaphthalene	ND	5.0		µg/L	1	2/2/2016	R32136
2,3,4,6-Tetrachlorophenol	ND	5.0		µg/L	1	2/2/2016	R32136
2,4,5-Trichlorophenol	ND	5.0		µg/L	1	2/2/2016	R32136
2,4,6-Trichlorophenol	ND	5.0		µg/L	1	2/2/2016	R32136
2,4-Dichlorophenol	ND	5.0		µg/L	1	2/2/2016	R32136
2,4-Dimethylphenol	ND	5.0		µg/L	1	2/2/2016	R32136
2,4-Dinitrophenol	ND	5.0		µg/L	1	2/2/2016	R32136
2,4-Dinitrotoluene	ND	5.0		µg/L	1	2/2/2016	R32136
2,6-Dinitrotoluene	ND	5.0		µg/L	1	2/2/2016	R32136
2-Chloronaphthalene	ND	5.0		µg/L	1	2/2/2016	R32136
2-Chlorophenol	ND	5.0		µg/L	1	2/2/2016	R32136
2-Methylnaphthalene	ND	5.0		µg/L	1	2/2/2016	R32136
2-Methylphenol	ND	5.0		µg/L	1	2/2/2016	R32136
2-Nitroaniline	ND	5.0		µg/L	1	2/2/2016	R32136
2-Nitrophenol	ND	5.0		µg/L	1	2/2/2016	R32136
3,3'-Dichlorobenzidine	ND	5.0		µg/L	1	2/2/2016	R32136
3-Nitroaniline	ND	5.0		µg/L	1	2/2/2016	R32136
4,6-Dinitro-2-methylphenol	ND	5.0		µg/L	1	2/2/2016	R32136
4-Bromophenyl phenyl ether	ND	5.0		µg/L	1	2/2/2016	R32136
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270D: SEMIVOLATILES							Analyst: SUB
4-Chloroaniline	ND	5.0		µg/L	1	2/2/2016	R32136
4-Chlorophenyl phenyl ether	ND	5.0		µg/L	1	2/2/2016	R32136
4-Nitroaniline	ND	5.0		µg/L	1	2/2/2016	R32136
4-Nitrophenol	ND	5.0		µg/L	1	2/2/2016	R32136
Acenaphthene	ND	5.0		µg/L	1	2/2/2016	R32136
Acenaphthylene	ND	5.0		µg/L	1	2/2/2016	R32136
Anthracene	ND	5.0		µg/L	1	2/2/2016	R32136
Benzo(g,h,i)perylene	ND	5.0		µg/L	1	2/2/2016	R32136
Benz(a)anthracene	ND	0.50		µg/L	1	2/2/2016	R32136
Benzo(a)pyrene	ND	0.50		µg/L	1	2/2/2016	R32136
Benzo(b)fluoranthene	ND	0.50		µg/L	1	2/2/2016	R32136
Benzo(k)fluoranthene	ND	0.50		µg/L	1	2/2/2016	R32136
Bis(2-chloroethoxy)methane	ND	5.0		µg/L	1	2/2/2016	R32136
Bis(2-chloroethyl)ether	ND	5.0		µg/L	1	2/2/2016	R32136
Bis(2-chloroisopropyl)ether	ND	5.0		µg/L	1	2/2/2016	R32136
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	2/2/2016	R32136
Butyl benzyl phthalate	ND	5.0		µg/L	1	2/2/2016	R32136
Carbazole	ND	5.0		µg/L	1	2/2/2016	R32136
Chrysene	ND	0.50		µg/L	1	2/2/2016	R32136
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	2/2/2016	R32136
Dibenzofuran	ND	5.0		µg/L	1	2/2/2016	R32136
Diethyl phthalate	ND	5.0		µg/L	1	2/2/2016	R32136
Dimethyl phthalate	ND	5.0		µg/L	1	2/2/2016	R32136
Di-n-butyl phthalate	ND	5.0		µg/L	1	2/2/2016	R32136
Di-n-octyl phthalate	ND	5.0		µg/L	1	2/2/2016	R32136
Fluoranthene	ND	5.0		µg/L	1	2/2/2016	R32136
Fluorene	ND	5.0		µg/L	1	2/2/2016	R32136
Hexachlorobenzene	ND	5.0		µg/L	1	2/2/2016	R32136
Hexachlorobutadiene	ND	5.0		µg/L	1	2/2/2016	R32136
Hexachlorocyclopentadiene	ND	5.0		µg/L	1	2/2/2016	R32136
Hexachloroethane	ND	5.0		µg/L	1	2/2/2016	R32136
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	2/2/2016	R32136
Isophorone	ND	5.0		µg/L	1	2/2/2016	R32136
Naphthalene	ND	5.0		µg/L	1	2/2/2016	R32136
Nitrobenzene	ND	5.0		µg/L	1	2/2/2016	R32136
N-Nitrosodi-n-propylamine	ND	5.0		µg/L	1	2/2/2016	R32136
N-Nitrosodiphenylamine	ND	5.0		µg/L	1	2/2/2016	R32136
Pentachlorophenol	ND	5.0		µg/L	1	2/2/2016	R32136
Phenanthrene	ND	5.0		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 1/21/2016 7:35:00 AM

Lab ID: 1601864-001

Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270D: SEMIVOLATILES							Analyst: SUB
Phenol	ND	5.0		µg/L	1	2/2/2016	R32136
Pyrene	ND	5.0		µg/L	1	2/2/2016	R32136
o-Toluidine	ND	5.0		µg/L	1	2/2/2016	R32136
Pyridine	ND	5.0		µg/L	1	2/2/2016	R32136
1,2,4,5-Tetrachlorobenzene	ND	5.0		µg/L	1	2/2/2016	R32136
Surr: 2,4,6-Tribromophenol	94.2	10-123		%Rec	1	2/2/2016	R32136
Surr: 2-Fluorobiphenyl	80.4	19-130		%Rec	1	2/2/2016	R32136
Surr: 2-Fluorophenol	82.8	21-120		%Rec	1	2/2/2016	R32136
Surr: Nitrobenzene-d5	89.6	25-130		%Rec	1	2/2/2016	R32136
Surr: Phenol-d5	86.0	10-130		%Rec	1	2/2/2016	R32136
Surr: Terphenyl-d14	32.8	20-137		%Rec	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1601864-002

Matrix: TRIP BLANK

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acetonitrile	ND	2.5		µg/L	1	2/2/2016	R32136
Allyl chloride	ND	0.50		µg/L	1	2/2/2016	R32136
Chloroprene	ND	0.50		µg/L	1	2/2/2016	R32136
Cyclohexane	ND	0.50		µg/L	1	2/2/2016	R32136
Diethyl ether	ND	0.50		µg/L	1	2/2/2016	R32136
Diisopropyl ether	ND	0.50		µg/L	1	2/2/2016	R32136
Epichlorohydrin	ND	5.0		µg/L	1	2/2/2016	R32136
Ethyl acetate	ND	0.50		µg/L	1	2/2/2016	R32136
Ethyl methacrylate	ND	2.5		µg/L	1	2/2/2016	R32136
Ethyl tert-butyl ether	ND	0.50		µg/L	1	2/2/2016	R32136
Freon-113	ND	0.50		µg/L	1	2/2/2016	R32136
Isobutanol	ND	5.0		µg/L	1	2/2/2016	R32136
Isopropyl acetate	ND	0.50		µg/L	1	2/2/2016	R32136
Methacrylonitrile	ND	2.5		µg/L	1	2/2/2016	R32136
Methyl acetate	ND	0.50		µg/L	1	2/2/2016	R32136
Methyl ethyl ketone	ND	2.5		µg/L	1	2/2/2016	R32136
Methyl isobutyl ketone	ND	2.5		µg/L	1	2/2/2016	R32136
Methyl methacrylate	ND	2.5		µg/L	1	2/2/2016	R32136
Methylcyclohexane	ND	1.0		µg/L	1	2/2/2016	R32136
n-Amyl acetate	ND	0.50		µg/L	1	2/2/2016	R32136
n-Hexane	ND	0.50		µg/L	1	2/2/2016	R32136
Nitrobenzene	ND	5.0		µg/L	1	2/2/2016	R32136
Pentachloroethane	ND	5.0		µg/L	1	2/2/2016	R32136
p-isopropyltoluene	ND	0.50		µg/L	1	2/2/2016	R32136
Propionitrile	ND	2.5		µg/L	1	2/2/2016	R32136
Tetrahydrofuran	ND	0.50		µg/L	1	2/2/2016	R32136
Benzene	ND	0.50		µg/L	1	2/2/2016	R32136
Toluene	ND	0.50		µg/L	1	2/2/2016	R32136
Ethylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	2/2/2016	R32136
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	2/2/2016	R32136
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	2/2/2016	R32136
Naphthalene	ND	0.50		µg/L	1	2/2/2016	R32136
Acetone	ND	2.5		µg/L	1	2/2/2016	R32136
Bromobenzene	ND	0.50		µg/L	1	2/2/2016	R32136
Bromodichloromethane	ND	0.50		µg/L	1	2/2/2016	R32136
Bromoform	ND	0.50		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1601864

Date Reported: 2/15/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1601864-002

Matrix: TRIP BLANK

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Bromomethane	ND	0.50		µg/L	1	2/2/2016	R32136
Carbon disulfide	ND	0.50		µg/L	1	2/2/2016	R32136
Carbon Tetrachloride	ND	0.50		µg/L	1	2/2/2016	R32136
Chlorobenzene	ND	0.50		µg/L	1	2/2/2016	R32136
Chloroethane	ND	0.50		µg/L	1	2/2/2016	R32136
Chloroform	ND	0.50		µg/L	1	2/2/2016	R32136
Chloromethane	ND	0.50		µg/L	1	2/2/2016	R32136
2-Chlorotoluene	ND	0.50		µg/L	1	2/2/2016	R32136
4-Chlorotoluene	ND	0.50		µg/L	1	2/2/2016	R32136
cis-1,2-DCE	ND	0.50		µg/L	1	2/2/2016	R32136
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	2/2/2016	R32136
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	2/2/2016	R32136
Dibromochloromethane	ND	0.50		µg/L	1	2/2/2016	R32136
Dibromomethane	ND	0.50		µg/L	1	2/2/2016	R32136
1,2-Dichlorobenzene	ND	0.50		µg/L	1	2/2/2016	R32136
1,3-Dichlorobenzene	ND	0.50		µg/L	1	2/2/2016	R32136
1,4-Dichlorobenzene	ND	0.50		µg/L	1	2/2/2016	R32136
Dichlorodifluoromethane	ND	0.50		µg/L	1	2/2/2016	R32136
1,1-Dichloroethane	ND	0.50		µg/L	1	2/2/2016	R32136
1,1-Dichloroethene	ND	0.50		µg/L	1	2/2/2016	R32136
1,2-Dichloropropane	ND	0.50		µg/L	1	2/2/2016	R32136
1,3-Dichloropropane	ND	0.50		µg/L	1	2/2/2016	R32136
2,2-Dichloropropane	ND	0.50		µg/L	1	2/2/2016	R32136
1,1-Dichloropropene	ND	0.50		µg/L	1	2/2/2016	R32136
Hexachlorobutadiene	ND	0.50		µg/L	1	2/2/2016	R32136
2-Hexanone	ND	0.50		µg/L	1	2/2/2016	R32136
Isopropylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
Methylene Chloride	ND	2.5		µg/L	1	2/2/2016	R32136
n-Butylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
n-Propylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
sec-Butylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
Styrene	ND	0.50		µg/L	1	2/2/2016	R32136
tert-Butylbenzene	ND	0.50		µg/L	1	2/2/2016	R32136
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	2/2/2016	R32136
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	2/2/2016	R32136
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	2/2/2016	R32136
trans-1,2-DCE	ND	0.50		µg/L	1	2/2/2016	R32136
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	2/2/2016	R32136
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	2/2/2016	R32136

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1601864-002

Matrix: TRIP BLANK

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	2/2/2016	R32136
1,1,1-Trichloroethane	ND	0.50		µg/L	1	2/2/2016	R32136
1,1,2-Trichloroethane	ND	0.50		µg/L	1	2/2/2016	R32136
Trichloroethene (TCE)	ND	0.50		µg/L	1	2/2/2016	R32136
Trichlorofluoromethane	ND	0.50		µg/L	1	2/2/2016	R32136
1,2,3-Trichloropropane	ND	0.50		µg/L	1	2/2/2016	R32136
Vinyl chloride	ND	0.50		µg/L	1	2/2/2016	R32136
mp-Xylenes	ND	1.0		µg/L	1	2/2/2016	R32136
o-Xylene	ND	0.50		µg/L	1	2/2/2016	R32136
tert-Amyl methyl ether	ND	0.50		µg/L	1	2/2/2016	R32136
tert-Butyl alcohol	ND	5.0		µg/L	1	2/2/2016	R32136
Acrolein	ND	2.5		µg/L	1	2/2/2016	R32136
Acrylonitrile	ND	0.50		µg/L	1	2/2/2016	R32136
Bromochloromethane	ND	0.50		µg/L	1	2/2/2016	R32136
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	2/2/2016	R32136
Iodomethane	ND	0.50		µg/L	1	2/2/2016	R32136
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	2/2/2016	R32136
Vinyl acetate	ND	0.50		µg/L	1	2/2/2016	R32136
1,4-Dioxane	ND	20		µg/L	1	2/2/2016	R32136
Surr: 1,2-Dichlorobenzene-d4	89.2	70-130		%Rec	1	2/2/2016	R32136
Surr: 4-Bromofluorobenzene	93.2	70-130		%Rec	1	2/2/2016	R32136
Surr: Toluene-d8	99.6	70-130		%Rec	1	2/2/2016	R32136

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R31638		RunNo: 31638							
Prep Date:	Analysis Date: 1/22/2016		SeqNo: 968134		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R31638		RunNo: 31638							
Prep Date:	Analysis Date: 1/22/2016		SeqNo: 968135		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	98.4	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.1	90	110			
Bromide	2.5	0.10	2.500	0	98.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.2	90	110			
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	93.3	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R31714		RunNo: 31714							
Prep Date:	Analysis Date: 1/26/2016		SeqNo: 970466		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R31714		RunNo: 31714							
Prep Date:	Analysis Date: 1/26/2016		SeqNo: 970467		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.5	90	110			
Sulfate	9.8	0.50	10.00	0	98.3	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID	MB-R32136	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R32136	RunNo:	32136					
Prep Date:		Analysis Date:	2/2/2016	SeqNo:	982421	Units:	µg/L			

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

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID	MB-R32136	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R32136	RunNo:	32136					
Prep Date:		Analysis Date:	2/2/2016	SeqNo:	982421	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromomethane	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
2-Chlorotoluene	ND	0.50								
4-Chlorotoluene	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,3-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								
1,1-Dichloropropene	ND	0.50								
Hexachlorobutadiene	ND	0.50								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.50								
Methylene Chloride	ND	2.5								
n-Butylbenzene	ND	0.50								
n-Propylbenzene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Styrene	ND	0.50								
tert-Butylbenzene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								
1,2,3-Trichlorobenzene	ND	0.50								

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.8		10.00	0	97.7	80	120			
Toluene	9.8		10.00	0	98.4	80	120			
Ethylbenzene	10		10.00	0	102	80	120			
Chlorobenzene	9.6		10.00	0	96.0	80	120			
1,1-Dichloroethene	9.6		10.00	0	96.4	80	120			
Tetrachloroethene (PCE)	9.2		10.00	0	92.4	80	120			
Trichloroethene (TCE)	9.8		10.00	0	98.0	80	120			
o-Xylene	10		10.00	0	104	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID: MB-R32136	SampType: MBLK	TestCode: EPA 8270D: Semivolatiles
Client ID: PBW	Batch ID: R32136	RunNo: 32136
Prep Date:	Analysis Date: 2/2/2016	SeqNo: 982533 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Biphenyl	ND	5.0								
1,4-Dioxane	ND	5.0								
Atrazine	ND	5.0								
Benzaldehyde	ND	5.0								
Caprolactam	ND	5.0								
N-Nitroso-di-n-butylamine	ND	5.0								
Acetophenone	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2,3,4,6-Tetrachlorophenol	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dichlorophenol	ND	5.0								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
2-Chloronaphthalene	ND	5.0								
2-Chlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3,3'-Dichlorobenzidine	ND	5.0								
3-Nitroaniline	ND	5.0								
4,6-Dinitro-2-methylphenol	ND	5.0								
4-Bromophenyl phenyl ether	ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
4-Chlorophenyl phenyl ether	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benz(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-R32136	SampType: MBLK	TestCode: EPA 8270D: Semivolatiles
Client ID: PBW	Batch ID: R32136	RunNo: 32136
Prep Date:	Analysis Date: 2/2/2016	SeqNo: 982533 Units: µg/L

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

Sample ID LCS-R32136	SampType: LCS	TestCode: EPA 8270D: Semivolatiles
Client ID: LCSW	Batch ID: R32136	RunNo: 32136
Prep Date:	Analysis Date: 2/2/2016	SeqNo: 982534 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	4.6		5.000	0	93.0	49	134			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID	LCS-R32136	SampType:	LCS	TestCode:	EPA 8270D: Semivolatiles					
Client ID:	LCSW	Batch ID:	R32136	RunNo:	32136					
Prep Date:		Analysis Date:	2/2/2016	SeqNo:	982534	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Chlorophenol	4.6		5.000	0	91.6	50	131			
4-Chloro-3-methylphenol	4.7		5.000	0	94.4	42	139			
4-Nitrophenol	4.5		5.000	0	90.2	19	137			
Acenaphthene	5.0		5.000	0	100	36	122			
Bis(2-ethylhexyl)phthalate	5.2		5.000	0	105	50	150			
N-Nitrosodi-n-propylamine	4.7		5.000	0	93.6	46	135			
Pentachlorophenol	3.7		5.000	0	73.2	22	138			
Phenol	5.2		5.000	0	103	45	134			
Pyrene	4.7		5.000	0	93.2	45	139			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-23378	SampType: MBLK		TestCode: EPA Method 7470: Mercury							
Client ID: PBW	Batch ID: 23378		RunNo: 31658							
Prep Date: 1/25/2016	Analysis Date: 1/25/2016		SeqNo: 968855		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID LCS-23378	SampType: LCS		TestCode: EPA Method 7470: Mercury							
Client ID: LCSW	Batch ID: 23378		RunNo: 31658							
Prep Date: 1/25/2016	Analysis Date: 1/25/2016		SeqNo: 968856		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Sample ID 1601864-001BMS	SampType: MS		TestCode: EPA Method 7470: Mercury							
Client ID: WDW-1,2,&3 Effluen	Batch ID: 23378		RunNo: 31658							
Prep Date: 1/25/2016	Analysis Date: 1/25/2016		SeqNo: 968858		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0040	0.00020	0.005000	.00006177	79.6	75	125			

Sample ID 1601864-001BMSD	SampType: MSD		TestCode: EPA Method 7470: Mercury							
Client ID: WDW-1,2,&3 Effluen	Batch ID: 23378		RunNo: 31658							
Prep Date: 1/25/2016	Analysis Date: 1/25/2016		SeqNo: 968859		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0041	0.00020	0.005000	.00006177	80.1	75	125	0.688	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-23438	SampType: MBLK		TestCode: MERCURY, TCLP							
Client ID: PBW	Batch ID: 23438		RunNo: 31746							
Prep Date: 1/27/2016	Analysis Date: 1/28/2016		SeqNo: 971551		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID LCS-23438	SampType: LCS		TestCode: MERCURY, TCLP							
Client ID: LCSW	Batch ID: 23438		RunNo: 31746							
Prep Date: 1/27/2016	Analysis Date: 1/28/2016		SeqNo: 971552		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	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 | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-23359	SampType: MBLK	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: PBW	Batch ID: 23359	RunNo: 31646								
Prep Date: 1/22/2016	Analysis Date: 1/25/2016	SeqNo: 968535	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID LCS-23359	SampType: LCS	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: LCSW	Batch ID: 23359	RunNo: 31646								
Prep Date: 1/22/2016	Analysis Date: 1/25/2016	SeqNo: 968536	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0	0.5000	0	96.1	80	120			
Barium	ND	100	0.5000	0	94.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.5	80	120			
Chromium	ND	5.0	0.5000	0	93.7	80	120			
Lead	ND	5.0	0.5000	0	92.9	80	120			
Selenium	ND	1.0	0.5000	0	95.8	80	120			
Silver	ND	5.0	0.1000	0	92.0	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-23359	SampType: MBLK	TestCode: EPA 6010B: Total Metals
Client ID: PBW	Batch ID: 23359	RunNo: 31646
Prep Date: 1/22/2016	Analysis Date: 1/25/2016	SeqNo: 968316 Units: mg/L

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

Sample ID LCS-23359	SampType: LCS	TestCode: EPA 6010B: Total Metals
Client ID: LCSW	Batch ID: 23359	RunNo: 31646
Prep Date: 1/22/2016	Analysis Date: 1/25/2016	SeqNo: 968317 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.46	0.020	0.5000	0	91.9	80	120			
Antimony	0.48	0.050	0.5000	0	95.5	80	120			
Arsenic	0.48	0.020	0.5000	0	96.1	80	120			
Barium	0.47	0.020	0.5000	0	94.0	80	120			
Beryllium	0.49	0.0030	0.5000	0	99.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.5	80	120			
Chromium	0.47	0.0060	0.5000	0	93.7	80	120			
Copper	0.47	0.0060	0.5000	0	94.5	80	120			
Iron	0.48	0.050	0.5000	0	95.5	80	120			
Lead	0.46	0.0050	0.5000	0	92.9	80	120			
Manganese	0.47	0.0020	0.5000	0	93.5	80	120			
Nickel	0.46	0.010	0.5000	0	92.2	80	120			
Potassium	44	1.0	50.00	0	88.6	80	120			
Selenium	0.48	0.050	0.5000	0	95.8	80	120			
Silver	0.092	0.0050	0.1000	0	92.0	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID	LCS-23359		SampType:	LCS		TestCode:	EPA 6010B: Total Metals				
Client ID:	LCSW		Batch ID:	23359		RunNo:	31646				
Prep Date:	1/22/2016		Analysis Date:	1/25/2016		SeqNo:	968317		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Thallium	0.47	0.050	0.5000	0	93.8	80	120				
Vanadium	0.49	0.050	0.5000	0	98.1	80	120				
Zinc	0.48	0.020	0.5000	0	95.2	80	120				

Sample ID	MB-23359		SampType:	MBLK		TestCode:	EPA 6010B: Total Metals				
Client ID:	PBW		Batch ID:	23359		RunNo:	31648				
Prep Date:	1/22/2016		Analysis Date:	1/25/2016		SeqNo:	968397		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium	ND	1.0									
Magnesium	ND	1.0									
Sodium	ND	1.0									

Sample ID	LCS-23359		SampType:	LCS		TestCode:	EPA 6010B: Total Metals				
Client ID:	LCSW		Batch ID:	23359		RunNo:	31648				
Prep Date:	1/22/2016		Analysis Date:	1/25/2016		SeqNo:	968398		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium	50	1.0	50.00	0	99.1	80	120				
Magnesium	49	1.0	50.00	0	98.8	80	120				
Sodium	48	1.0	50.00	0	96.6	80	120				

Sample ID	MB-23359		SampType:	MBLK		TestCode:	EPA 6010B: Total Metals				
Client ID:	PBW		Batch ID:	23359		RunNo:	31737				
Prep Date:	1/22/2016		Analysis Date:	1/28/2016		SeqNo:	971326		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Cobalt	ND	0.0060									

Sample ID	LCS-23359		SampType:	LCS		TestCode:	EPA 6010B: Total Metals				
Client ID:	LCSW		Batch ID:	23359		RunNo:	31737				
Prep Date:	1/22/2016		Analysis Date:	1/28/2016		SeqNo:	971327		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Cobalt	0.46	0.0060	0.5000	0	91.5	80	120				

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-R32136	SampType: MBLK		TestCode: CYANIDE, Reactive							
Client ID: PBW	Batch ID: R32136		RunNo: 32136							
Prep Date:	Analysis Date: 2/4/2016		SeqNo: 982430		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID LCS-R32136	SampType: LCS		TestCode: CYANIDE, Reactive							
Client ID: LCSW	Batch ID: R32136		RunNo: 32136							
Prep Date:	Analysis Date: 2/4/2016		SeqNo: 982431		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.542		0.5000	0	108	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-R32136	SampType: MBLK		TestCode: SULFIDE, Reactive							
Client ID: PBW	Batch ID: R32136		RunNo: 32136							
Prep Date:	Analysis Date: 1/29/2016		SeqNo: 982433		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID LCS-R32136	SampType: LCS		TestCode: SULFIDE, Reactive							
Client ID: LCSW	Batch ID: R32136		RunNo: 32136							
Prep Date:	Analysis Date: 1/29/2016		SeqNo: 982434		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.18		0.2000	0	90.0	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID mb-1	SampType: MBLK		TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R31664		RunNo: 31664							
Prep Date:	Analysis Date: 1/25/2016		SeqNo: 968939		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID ics-1	SampType: LCS		TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R31664		RunNo: 31664							
Prep Date:	Analysis Date: 1/25/2016		SeqNo: 968940		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.44	20.00	80.00	0	94.3	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID	1601864-001ADUP	SampType:	DUP	TestCode:	Specific Gravity					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	R31723	RunNo:	31723					
Prep Date:		Analysis Date:	1/27/2016	SeqNo:	970796	Units:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.004	0						0.179	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-23428	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 23428		RunNo: 31755							
Prep Date: 1/27/2016	Analysis Date: 1/28/2016		SeqNo: 971754		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-23428	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 23428		RunNo: 31755							
Prep Date: 1/27/2016	Analysis Date: 1/28/2016		SeqNo: 971755		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			

Sample ID 1601864-001AMS	SampType: MS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: WDW-1,2,&3 Effluen	Batch ID: 23428		RunNo: 31755							
Prep Date: 1/27/2016	Analysis Date: 1/28/2016		SeqNo: 971765		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	5800	40.0	2000	3784	101	80	120			D

Sample ID 1601864-001AMSD	SampType: MSD		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: WDW-1,2,&3 Effluen	Batch ID: 23428		RunNo: 31755							
Prep Date: 1/27/2016	Analysis Date: 1/28/2016		SeqNo: 971766		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	5820	40.0	2000	3784	102	80	120	0.379	5	D

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

Sample Log-In Check List

Client Name: NAVAJO REFINING CO

Work Order Number: 1601864

RcptNo: 1

Received by/date: LM 01/22/16

Logged By: **Michelle Garcia** 1/22/2016 9:40:00 AM *Michelle Garcia*

Completed By: **Michelle Garcia** 1/22/2016 11:23:27 AM *Michelle Garcia*

Reviewed By: IO 01/27/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 2,2
 (2 or 12 unless noted)
 Adjusted? No
 Checked by: mg

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
 By Whom: _____ Via: eMail Phone Fax In Person
 Regarding: _____
 Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			

Injection Well Quarterly Sample Details Attachment



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



Sample Type	
Grab	<input checked="" type="checkbox"/>
Time Weighted Composite	<input type="checkbox"/>
Flow Weighted Composite	<input type="checkbox"/>

Physical Property	
Solid	<input type="checkbox"/>
Liquid	<input checked="" type="checkbox"/>
Sludge	<input type="checkbox"/>

Parts / Sample Intervals One

Type of Sampler: Directly to sample jars

Outfall / Sample Location: Waste water effluent pumps to injection wells.

P-843 sample point (first from east) P-856 sample point (third from east)

P-854 sample point (second from east) P-857 sample point (fourth from east)

Container	Size	Material	# of Containers	Neat (None)	Preservatives						Analysis and/or Method Requested	
					HCL	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4		Other
1			3	X			X					Specific Gravity, HCO3, CO3, Cl, SO4, TDS, pH, cond, FI, Cation/anion bal., Br, Eh, 40 CFR 136.3
2			1			X						VOCs/SW-845 Method 8260C (see attached list 'VOCs')
3			3		X							SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')
4			2	X								R.C. 140 CFR part 261
5			2	X								Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
6			2	X								Ca, K, Mg, Na/40 CFR 136.3
7			1	X								TCLP Metals, only 40 CFR Part 261/ SW-846 Method 1311
8												
9												
10												

Field Data (Weather, Observations, Etc):

Date and Time: 1/21/2016 Temp. 37.4 °F Humidity 70% Wind direction NW Wind Speed 11.5 mph Condition: Clear

Field Temp. 40.7C Field pH 7.49

Storage Method

Ice

Refrigerated

Other

Shipping Media

Ice

Other



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

April 01, 2016

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

RE: Monthly R.O. Reject

OrderNo.: 1603242

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/4/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1603242

Date Reported: 4/1/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Monthly R.O. Reject

Collection Date: 3/3/2016 9:45:00 AM

Lab ID: 1603242-001

Matrix: AQUEOUS

Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8011/504.1: EDB						Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	3/7/2016 4:42:17 PM
EPA METHOD 8082: PCB'S						Analyst: SCC
Aroclor 1016	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1221	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1232	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1242	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1248	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1254	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1260	ND	1.0		µg/L	1	3/11/2016 2:01:36 PM
Surr: Decachlorobiphenyl	100	26.1-140		%Rec	1	3/11/2016 2:01:36 PM
Surr: Tetrachloro-m-xylene	119	15-123		%Rec	1	3/11/2016 2:01:36 PM
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: KJH
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	3/7/2016 5:37:40 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	3/7/2016 5:37:40 PM
Surr: DNOP	102	70-141		%Rec	1	3/7/2016 5:37:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	3/4/2016 9:22:09 PM
Surr: BFB	92.5	49.5-130		%Rec	1	3/4/2016 9:22:09 PM
EPA METHOD 8310: PAHS						Analyst: SCC
Naphthalene	ND	2.0		µg/L	1	3/17/2016 12:56:02 PM
1-Methylnaphthalene	ND	2.0		µg/L	1	3/17/2016 12:56:02 PM
2-Methylnaphthalene	ND	2.0		µg/L	1	3/17/2016 12:56:02 PM
Benzo(a)pyrene	ND	0.070		µg/L	1	3/17/2016 12:56:02 PM
Surr: Benzo(e)pyrene	75.2	33.4-129		%Rec	1	3/17/2016 12:56:02 PM
EPA METHOD 300.0: ANIONS						Analyst: JRR
Fluoride	3.5	2.0		mg/L	20	3/4/2016 3:03:27 PM
Chloride	370	10		mg/L	20	3/4/2016 3:03:27 PM
Nitrogen, Nitrate (As N)	2.2	0.10		mg/L	1	3/4/2016 2:51:02 PM
Sulfate	1900	25		mg/L	50	3/18/2016 3:05:33 AM
EPA METHOD 200.7: DISSOLVED METALS						Analyst: ELS
Aluminum	ND	0.020		mg/L	1	3/18/2016 6:31:34 PM
Barium	0.069	0.0020		mg/L	1	3/18/2016 6:31:34 PM
Boron	0.093	0.040		mg/L	1	3/18/2016 6:31:34 PM
Cadmium	ND	0.0020		mg/L	1	3/18/2016 6:31:34 PM
Chromium	ND	0.0060		mg/L	1	3/18/2016 6:31:34 PM
Cobalt	ND	0.0060		mg/L	1	3/18/2016 6:31:34 PM

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

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

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Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: ELS
Copper	ND	0.0060		mg/L	1	3/18/2016 6:31:34 PM
Iron	ND	0.020		mg/L	1	3/18/2016 6:31:34 PM
Manganese	ND	0.0020		mg/L	1	3/18/2016 6:31:34 PM
Molybdenum	0.0099	0.0080		mg/L	1	3/18/2016 6:31:34 PM
Nickel	ND	0.010		mg/L	1	3/18/2016 6:31:34 PM
Silver	ND	0.0050		mg/L	1	3/18/2016 6:31:34 PM
Zinc	0.014	0.010		mg/L	1	3/18/2016 6:31:34 PM
EPA 200.8: DISSOLVED METALS						Analyst: JLF
Arsenic	ND	0.0050		mg/L	5	3/29/2016 5:36:33 PM
Lead	ND	0.0025		mg/L	5	3/29/2016 5:36:33 PM
Selenium	0.0093	0.0050		mg/L	5	3/29/2016 5:36:33 PM
Uranium	0.0058	0.0025		mg/L	5	3/29/2016 5:36:33 PM
EPA METHOD 245.1: MERCURY						Analyst: pmf
Mercury	ND	0.00020		mg/L	1	3/10/2016 11:32:03 AM
EPA METHOD 8260B: VOLATILES						Analyst: DJF
Benzene	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Toluene	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Ethylbenzene	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Chloroform	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Methylene Chloride	ND	3.0		µg/L	1	3/11/2016 7:47:26 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/11/2016 7:47:26 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Vinyl chloride	ND	1.0		µg/L	1	3/11/2016 7:47:26 PM
Xylenes, Total	ND	1.5		µg/L	1	3/11/2016 7:47:26 PM
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%Rec	1	3/11/2016 7:47:26 PM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	3/11/2016 7:47:26 PM
Surr: Dibromofluoromethane	94.2	70-130		%Rec	1	3/11/2016 7:47:26 PM
Surr: Toluene-d8	92.0	70-130		%Rec	1	3/11/2016 7:47:26 PM
TOTAL PHENOLICS BY SW-846 9067						Analyst: SCC

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

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TOTAL PHENOLICS BY SW-846 9067							Analyst: SCC
Phenolics, Total Recoverable	ND	2.5		µg/L	1	3/8/2016	
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: SUB
Cyanide	ND	0.0100		mg/L	1	3/16/2016	
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED							Analyst: SUB
Radium-226	1.08	0.770		pCi/L	1	3/18/2016 10:42:00 AM	
Radium-226 ±	0.67	0.770		pCi/L	1	3/18/2016 10:42:00 AM	
Radium-228	0.451	0.810		pCi/L	1	3/18/2016 10:42:00 AM	
Radium-228 ±	0.39	0.810		pCi/L	1	3/18/2016 10:42:00 AM	
SM4500-H+B: PH							Analyst: JRR
pH	8.02	1.68	H	pH units	1	3/7/2016 7:54:14 PM	
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	4030	20.0	*	mg/L	1	3/9/2016 11:47:00 AM	

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Analytical Report

Lab Order 1603242

Date Reported: 4/1/2016

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Monthly R.O. Reject

Collection Date:

Lab ID: 1603242-002

Matrix: TRIP BLANK

Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8011/504.1: EDB						Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	3/7/2016 4:57:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	3/4/2016 9:46:30 PM
Surr: BFB	88.1	49.5-130		%Rec	1	3/4/2016 9:46:30 PM
EPA METHOD 8260B: VOLATILES						Analyst: DJF
Benzene	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Toluene	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Ethylbenzene	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Chloroform	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Methylene Chloride	ND	3.0		µg/L	1	3/11/2016 8:15:43 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/11/2016 8:15:43 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Vinyl chloride	ND	1.0		µg/L	1	3/11/2016 8:15:43 PM
Xylenes, Total	ND	1.5		µg/L	1	3/11/2016 8:15:43 PM
Surr: 1,2-Dichloroethane-d4	98.7	70-130		%Rec	1	3/11/2016 8:15:43 PM
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	1	3/11/2016 8:15:43 PM
Surr: Dibromofluoromethane	97.7	70-130		%Rec	1	3/11/2016 8:15:43 PM
Surr: Toluene-d8	99.6	70-130		%Rec	1	3/11/2016 8:15:43 PM

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	MB-C	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	C32891	RunNo:	32891					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1008301	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								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID	LCS-C	SampType:	LCS	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	LCSW	Batch ID:	C32891	RunNo:	32891					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1008302	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.56	0.020	0.5000	0	112	85	115			
Barium	0.50	0.0020	0.5000	0	99.1	85	115			
Boron	0.51	0.040	0.5000	0	102	85	115			
Cadmium	0.50	0.0020	0.5000	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	97.0	85	115			
Cobalt	0.48	0.0060	0.5000	0	95.8	85	115			
Copper	0.50	0.0060	0.5000	0	101	85	115			
Iron	0.49	0.020	0.5000	0	98.4	85	115			
Manganese	0.49	0.0020	0.5000	0	97.8	85	115			
Molybdenum	0.51	0.0080	0.5000	0	103	85	115			
Nickel	0.47	0.010	0.5000	0	93.6	85	115			
Zinc	0.48	0.010	0.5000	0	96.3	85	115			

Sample ID	LLLCS-C	SampType:	LCSLL	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	BatchQC	Batch ID:	C32891	RunNo:	32891					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1008303	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	111	50	150			
Barium	0.0021	0.0020	0.002000	0	103	50	150			
Boron	ND	0.040	0.04000	0	97.7	50	150			

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: C32891		RunNo: 32891							
Prep Date:	Analysis Date: 3/18/2016		SeqNo: 1008303		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020	0.002000	0	99.5	50	150			
Chromium	ND	0.0060	0.006000	0	87.8	50	150			
Cobalt	ND	0.0060	0.006000	0	85.3	50	150			
Copper	0.0068	0.0060	0.006000	0	114	50	150			
Iron	0.021	0.020	0.02000	0	103	50	150			
Manganese	0.0021	0.0020	0.002000	0	104	50	150			
Molybdenum	0.0097	0.0080	0.008000	0	121	50	150			
Nickel	ND	0.010	0.005000	0	98.6	50	150			
Silver	ND	0.0050	0.005000	0	76.2	50	150			
Zinc	ND	0.010	0.005000	0	100	50	150			

Sample ID	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: C32891		RunNo: 32891							
Prep Date:	Analysis Date: 3/18/2016		SeqNo: 1008305		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	101	85	115			

Qualifiers:

- | | |
|---|---|
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01-Apr-16

Client: Navajo Refining Company

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Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: B33154		RunNo: 33154							
Prep Date:	Analysis Date: 3/29/2016		SeqNo: 1018089		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	97.7	85	115			
Lead	0.012	0.00050	0.01250	0	95.4	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			
Uranium	0.011	0.00050	0.01250	0	91.8	85	115			

Sample ID LLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: B33154		RunNo: 33154							
Prep Date:	Analysis Date: 3/29/2016		SeqNo: 1018090		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	98.0	50	150			
Lead	0.00050	0.00050	0.0005000	0	100	50	150			
Selenium	ND	0.0010	0.001000	0	94.9	50	150			
Uranium	ND	0.00050	0.0005000	0	91.1	50	150			

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: B33154		RunNo: 33154							
Prep Date:	Analysis Date: 3/29/2016		SeqNo: 1018091		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:

- | | |
|---|---|
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01-Apr-16

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Project: Monthly R.O. Reject

Sample ID	MB-24156	SampType:	mblk	TestCode:	EPA Method 245.1: Mercury					
Client ID:	PBW	Batch ID:	24156	RunNo:	32702					
Prep Date:	3/9/2016	Analysis Date:	3/10/2016	SeqNo:	1000942	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-24156	SampType:	lcs	TestCode:	EPA Method 245.1: Mercury					
Client ID:	LCSW	Batch ID:	24156	RunNo:	32702					
Prep Date:	3/9/2016	Analysis Date:	3/10/2016	SeqNo:	1000945	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0054	0.00020	0.005000	0	109	80	120			

Qualifiers:

- | | |
|---|---|
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WO#: 1603242

01-Apr-16

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: R32618		RunNo: 32618							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997926		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: R32618		RunNo: 32618							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997927		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	94.9	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: R32879		RunNo: 32879							
Prep Date:	Analysis Date: 3/17/2016		SeqNo: 1007965		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: R32879		RunNo: 32879							
Prep Date:	Analysis Date: 3/17/2016		SeqNo: 1007966		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	94.6	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID MB-24100	SampType: MBLK		TestCode: EPA Method 8011/504.1: EDB							
Client ID: PBW	Batch ID: 24100		RunNo: 32621							
Prep Date: 3/7/2016	Analysis Date: 3/7/2016		SeqNo: 998470		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-24100	SampType: LCS		TestCode: EPA Method 8011/504.1: EDB							
Client ID: LCSW	Batch ID: 24100		RunNo: 32621							
Prep Date: 3/7/2016	Analysis Date: 3/7/2016		SeqNo: 998471		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	108	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID LCS-24101	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: LCSW	Batch ID: 24101		RunNo: 32603							
Prep Date: 3/7/2016	Analysis Date: 3/7/2016		SeqNo: 997914		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	71.3	139			
Surr: DNOP	0.50		0.5000		99.7	70	141			

Sample ID MB-24101	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: PBW	Batch ID: 24101		RunNo: 32603							
Prep Date: 3/7/2016	Analysis Date: 3/7/2016		SeqNo: 997915		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	0.91		1.000		90.8	70	141			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID 5ML RB	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: A32596		RunNo: 32596							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997207		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	19		20.00		95.0	49.5	130			

Sample ID 2.5UG GRO LCS	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: A32596		RunNo: 32596							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997208		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.51	0.050	0.5000	0	103	80	120			
Surr: BFB	21		20.00		106	49.5	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	MB-24175	SampType:	MBLK	TestCode:	EPA Method 8082: PCB's					
Client ID:	PBW	Batch ID:	24175	RunNo:	32727					
Prep Date:	3/10/2016	Analysis Date:	3/11/2016	SeqNo:	1002684	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.4		2.500		94.4	26.1	140			
Surr: Tetrachloro-m-xylene	3.9		2.500		155	15	123			S

Sample ID	LCS-24175	SampType:	LCS	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSW	Batch ID:	24175	RunNo:	32727					
Prep Date:	3/10/2016	Analysis Date:	3/11/2016	SeqNo:	1002685	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.1	1.0	5.000	0	62.3	15	131			
Aroclor 1260	3.3	1.0	5.000	0	66.9	15	162			
Surr: Decachlorobiphenyl	2.2		2.500		89.2	26.1	140			
Surr: Tetrachloro-m-xylene	3.0		2.500		122	15	123			

Sample ID	LCSD-24175	SampType:	LCSD	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSS02	Batch ID:	24175	RunNo:	32727					
Prep Date:	3/10/2016	Analysis Date:	3/11/2016	SeqNo:	1002686	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.4	1.0	5.000	0	68.0	15	131	8.66	24.4	
Aroclor 1260	3.7	1.0	5.000	0	74.8	15	162	11.1	28	
Surr: Decachlorobiphenyl	2.4		2.500		94.8	26.1	140	0	0	
Surr: Tetrachloro-m-xylene	3.3		2.500		130	15	123	0	0	S

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	B32762	RunNo:	32762					
Prep Date:		Analysis Date:	3/11/2016	SeqNo:	1002996	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		114	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Sample ID	100ng lcs b	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	B32762	RunNo:	32762					
Prep Date:		Analysis Date:	3/11/2016	SeqNo:	1003007	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.5	70	130			
Toluene	20	1.0	20.00	0	98.8	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	90.8	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.7	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		111	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.9	70	130			
Surr: Toluene-d8	9.8		10.00		98.3	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	MB-24176	SampType:	MBLK	TestCode:	EPA Method 8310: PAHs					
Client ID:	PBW	Batch ID:	24176	RunNo:	32851					
Prep Date:	3/10/2016	Analysis Date:	3/17/2016	SeqNo:	1006908	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.4	33.4	129			

Sample ID	LCS-24176	SampType:	LCS	TestCode:	EPA Method 8310: PAHs					
Client ID:	LCSW	Batch ID:	24176	RunNo:	32851					
Prep Date:	3/10/2016	Analysis Date:	3/17/2016	SeqNo:	1006935	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	73	2.0	80.00	0	91.6	54.6	110			
1-Methylnaphthalene	75	2.0	80.20	0	93.6	49.1	116			
2-Methylnaphthalene	75	2.0	80.00	0	94.1	52.5	111			
Acenaphthylene	69	2.5	80.20	0	85.9	63.7	122			
Acenaphthene	77	2.0	80.00	0	96.2	50.6	114			
Fluorene	8.0	0.80	8.020	0	99.6	48.9	106			
Phenanthrene	4.0	0.60	4.020	0	100	54.7	110			
Anthracene	3.7	0.60	4.020	0	92.5	52	106			
Fluoranthene	8.7	0.30	8.020	0	109	57.8	113			
Pyrene	8.1	0.30	8.020	0	101	59.7	118			
Benz(a)anthracene	0.75	0.070	0.8020	0	93.5	56.6	109			
Chrysene	4.1	0.20	4.020	0	102	57.6	110			
Benzo(b)fluoranthene	0.96	0.10	1.002	0	95.8	54.9	106			
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112			

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	LCS-24176		SampType:	LCS		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSW		Batch ID:	24176		RunNo:	32851				
Prep Date:	3/10/2016		Analysis Date:	3/17/2016		SeqNo:	1006935		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107				
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	103	54.8	108				
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110				
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109				
Surr: Benzo(e)pyrene	17		20.00		83.0	33.4	129				

Sample ID	LCSD-24176		SampType:	LCSD		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSS02		Batch ID:	24176		RunNo:	32851				
Prep Date:	3/10/2016		Analysis Date:	3/17/2016		SeqNo:	1006990		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Naphthalene	73	2.0	80.00	0	91.3	54.6	110	0.314	20		
1-Methylnaphthalene	73	2.0	80.20	0	91.2	49.1	116	2.51	20		
2-Methylnaphthalene	73	2.0	80.00	0	90.7	52.5	111	3.64	20		
Acenaphthylene	68	2.5	80.20	0	85.4	63.7	122	0.640	20		
Acenaphthene	74	2.0	80.00	0	92.3	50.6	114	4.22	20		
Fluorene	7.2	0.80	8.020	0	89.7	48.9	106	10.5	20		
Phenanthrene	4.0	0.60	4.020	0	99.5	54.7	110	0.747	24		
Anthracene	3.7	0.60	4.020	0	92.5	52	106	0	20		
Fluoranthene	8.7	0.30	8.020	0	108	57.8	113	0.460	20.9		
Pyrene	8.1	0.30	8.020	0	101	59.7	118	0.618	20.8		
Benz(a)anthracene	0.77	0.070	0.8020	0	96.0	56.6	109	2.63	20		
Chrysene	4.1	0.20	4.020	0	102	57.6	110	0.244	20		
Benzo(b)fluoranthene	0.95	0.10	1.002	0	94.8	54.9	106	1.05	20.6		
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112	0	20.8		
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107	0	20		
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	104	54.8	108	0.966	20		
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110	0	20		
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109	0	20		
Surr: Benzo(e)pyrene	17		20.00		82.8	33.4	129	0			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID MB-24124	SampType: MBLK		TestCode: Total Phenolics by SW-846 9067							
Client ID: PBW	Batch ID: 24124		RunNo: 32622							
Prep Date: 3/8/2016	Analysis Date: 3/8/2016		SeqNo: 998125		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-24124	SampType: LCS		TestCode: Total Phenolics by SW-846 9067							
Client ID: LCSW	Batch ID: 24124		RunNo: 32622							
Prep Date: 3/8/2016	Analysis Date: 3/8/2016		SeqNo: 998126		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	106	64.4	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	MB-R32959	SampType:	MBLK	TestCode:	EPA 335.4: Total Cyanide Subbed					
Client ID:	PBW	Batch ID:	R32959	RunNo:	32959					
Prep Date:		Analysis Date:	3/16/2016	SeqNo:	1010968	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	LCS-R32959	SampType:	LCS	TestCode:	EPA 335.4: Total Cyanide Subbed					
Client ID:	LCSW	Batch ID:	R32959	RunNo:	32959					
Prep Date:		Analysis Date:	3/16/2016	SeqNo:	1010969	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.493		0.5000	0	98.6	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID	MB-R32954	SampType:	MBLK	TestCode:	EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed					
Client ID:	PBW	Batch ID:	R32954	RunNo:	32954					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1010754	Units:	pCi/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.501	0.776								
Radium-226 ±	0.521	0.776								
Radium-228	0.0536	0.871								
Radium-228 ±	0.38	0.871								

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603242

01-Apr-16

Client: Navajo Refining Company

Project: Monthly R.O. Reject

Sample ID MB-24120	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 24120		RunNo: 32669							
Prep Date: 3/7/2016	Analysis Date: 3/9/2016		SeqNo: 999682		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-24120	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 24120		RunNo: 32669							
Prep Date: 3/7/2016	Analysis Date: 3/9/2016		SeqNo: 999683		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Qualifiers:

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



Hall Environmental Analysis Laboratory
 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: **1603242**

RcptNo: 1

Received by/date:

[Signature]

03/04/16

Logged By: **Ashley Gallegos**

3/4/2016 10:00:00 AM

[Signature]

Completed By: **Ashley Gallegos**

3/4/2016 10:28:24 AM

[Signature]

Reviewed By: **IO**

03/04/16

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
 By Whom: _____ Via: eMail Phone Fax In Person
 Regarding: _____
 Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Yes			



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

April 01, 2016

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.: 1603243

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/4/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1603243

Date Reported: 4/1/2016

CLIENT: Navajo Refining Company

Client Sample ID: Temporary R.O. Reject

Project: Monthly Temporary R.O. Reject

Collection Date: 3/3/2016 9:30:00 AM

Lab ID: 1603243-001

Matrix: AQUEOUS

Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8011/504.1: EDB						Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	3/7/2016 5:12:38 PM
EPA METHOD 8082: PCB'S						Analyst: SCC
Aroclor 1016	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1221	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1232	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1242	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1248	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1254	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1260	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Surr: Decachlorobiphenyl	119	26.1-140		%Rec	1	3/11/2016 3:10:44 PM
Surr: Tetrachloro-m-xylene	126	15-123	S	%Rec	1	3/11/2016 3:10:44 PM
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: KJH
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	3/7/2016 5:59:24 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	3/7/2016 5:59:24 PM
Surr: DNOP	102	70-141		%Rec	1	3/7/2016 5:59:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	3/4/2016 10:11:02 PM
Surr: BFB	89.2	49.5-130		%Rec	1	3/4/2016 10:11:02 PM
EPA METHOD 8310: PAHS						Analyst: SCC
Naphthalene	ND	2.0		µg/L	1	3/17/2016 1:25:22 PM
1-Methylnaphthalene	ND	2.0		µg/L	1	3/17/2016 1:25:22 PM
2-Methylnaphthalene	ND	2.0		µg/L	1	3/17/2016 1:25:22 PM
Benzo(a)pyrene	ND	0.070		µg/L	1	3/17/2016 1:25:22 PM
Surr: Benzo(e)pyrene	75.2	33.4-129		%Rec	1	3/17/2016 1:25:22 PM
EPA METHOD 300.0: ANIONS						Analyst: JRR
Fluoride	2.6	2.0		mg/L	20	3/4/2016 3:28:16 PM
Chloride	100	10		mg/L	20	3/4/2016 3:28:16 PM
Nitrogen, Nitrate (As N)	1.5	0.10		mg/L	1	3/4/2016 3:15:51 PM
Sulfate	1100	25		mg/L	50	3/18/2016 3:17:58 AM
EPA METHOD 200.7: DISSOLVED METALS						Analyst: ELS
Aluminum	ND	0.020		mg/L	1	3/18/2016 6:33:30 PM
Barium	0.047	0.0020		mg/L	1	3/18/2016 6:33:30 PM
Boron	0.066	0.040		mg/L	1	3/18/2016 6:33:30 PM
Cadmium	ND	0.0020		mg/L	1	3/18/2016 6:33:30 PM
Chromium	ND	0.0060		mg/L	1	3/18/2016 6:33:30 PM
Cobalt	ND	0.0060		mg/L	1	3/18/2016 6:33:30 PM

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1603243

Date Reported: 4/1/2016

CLIENT: Navajo Refining Company

Client Sample ID: Temporary R.O. Reject

Project: Monthly Temporary R.O. Reject

Collection Date: 3/3/2016 9:30:00 AM

Lab ID: 1603243-001

Matrix: AQUEOUS

Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: ELS
Copper	ND	0.0060		mg/L	1	3/23/2016 5:28:16 PM
Iron	ND	0.020		mg/L	1	3/18/2016 6:33:30 PM
Manganese	ND	0.0020		mg/L	1	3/18/2016 6:33:30 PM
Molybdenum	ND	0.0080		mg/L	1	3/18/2016 6:33:30 PM
Nickel	ND	0.010		mg/L	1	3/18/2016 6:33:30 PM
Silver	ND	0.0050		mg/L	1	3/18/2016 6:33:30 PM
Zinc	0.043	0.010		mg/L	1	3/18/2016 6:33:30 PM
EPA 200.8: DISSOLVED METALS						Analyst: JLF
Arsenic	ND	0.0050		mg/L	5	3/29/2016 5:48:50 PM
Lead	ND	0.00050		mg/L	1	3/28/2016 8:28:07 PM
Selenium	0.0065	0.0010		mg/L	1	3/28/2016 8:28:07 PM
Uranium	0.0042	0.00050		mg/L	1	3/28/2016 8:28:07 PM
EPA METHOD 245.1: MERCURY						Analyst: pmf
Mercury	ND	0.00020		mg/L	1	3/10/2016 11:34:07 AM
EPA METHOD 8260B: VOLATILES						Analyst: DJF
Benzene	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Toluene	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Ethylbenzene	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Chloroform	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Methylene Chloride	ND	3.0		µg/L	1	3/11/2016 8:44:01 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/11/2016 8:44:01 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Vinyl chloride	ND	1.0		µg/L	1	3/11/2016 8:44:01 PM
Xylenes, Total	ND	1.5		µg/L	1	3/11/2016 8:44:01 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	3/11/2016 8:44:01 PM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	3/11/2016 8:44:01 PM
Surr: Dibromofluoromethane	99.8	70-130		%Rec	1	3/11/2016 8:44:01 PM
Surr: Toluene-d8	94.1	70-130		%Rec	1	3/11/2016 8:44:01 PM

TOTAL PHENOLICS BY SW-846 9067

Analyst: SCC

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1603243

Date Reported: 4/1/2016

CLIENT: Navajo Refining Company

Client Sample ID: Temporary R.O. Reject

Project: Monthly Temporary R.O. Reject

Collection Date: 3/3/2016 9:30:00 AM

Lab ID: 1603243-001

Matrix: AQUEOUS

Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
TOTAL PHENOLICS BY SW-846 9067						Analyst: SCC
Phenolics, Total Recoverable	ND	2.5		µg/L	1	3/8/2016
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: SUB
Cyanide	ND	0.0100		mg/L	1	3/8/2016
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst: SUB
Radium-226	0.561	0.671		pCi/L	1	3/21/2016 10:40:00 AM
Radium-226 ±	0.478	0.671		pCi/L	1	3/21/2016 10:40:00 AM
Radium-228	0.425	0.810		pCi/L	1	3/21/2016 10:40:00 AM
Radium-228 ±	0.397	0.810		pCi/L	1	3/21/2016 10:40:00 AM
SM4500-H+B: PH						Analyst: JRR
pH	8.15	1.68	H	pH units	1	3/7/2016 7:58:22 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: KS
Total Dissolved Solids	2490	20.0	*	mg/L	1	3/9/2016 11:47:00 AM

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1603243

Date Reported: 4/1/2016

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Monthly Temporary R.O. Reject

Collection Date:

Lab ID: 1603243-002

Matrix: TRIP BLANK

Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	3/4/2016 10:35:40 PM
Surr: BFB	87.8	49.5-130		%Rec	1	3/4/2016 10:35:40 PM
EPA METHOD 8260B: VOLATILES						Analyst: DJF
Benzene	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Toluene	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Ethylbenzene	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Chloroform	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Methylene Chloride	ND	3.0		µg/L	1	3/11/2016 9:12:13 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/11/2016 9:12:13 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Vinyl chloride	ND	1.0		µg/L	1	3/11/2016 9:12:13 PM
Xylenes, Total	ND	1.5		µg/L	1	3/11/2016 9:12:13 PM
Surr: 1,2-Dichloroethane-d4	96.1	70-130		%Rec	1	3/11/2016 9:12:13 PM
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	3/11/2016 9:12:13 PM
Surr: Dibromofluoromethane	94.6	70-130		%Rec	1	3/11/2016 9:12:13 PM
Surr: Toluene-d8	98.6	70-130		%Rec	1	3/11/2016 9:12:13 PM

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID	MB-C	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	C32891	RunNo:	32891					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1008301	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								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID	LCS-C	SampType:	LCS	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	LCSW	Batch ID:	C32891	RunNo:	32891					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1008302	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.56	0.020	0.5000	0	112	85	115			
Barium	0.50	0.0020	0.5000	0	99.1	85	115			
Boron	0.51	0.040	0.5000	0	102	85	115			
Cadmium	0.50	0.0020	0.5000	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	97.0	85	115			
Cobalt	0.48	0.0060	0.5000	0	95.8	85	115			
Iron	0.49	0.020	0.5000	0	98.4	85	115			
Manganese	0.49	0.0020	0.5000	0	97.8	85	115			
Molybdenum	0.51	0.0080	0.5000	0	103	85	115			
Nickel	0.47	0.010	0.5000	0	93.6	85	115			
Zinc	0.48	0.010	0.5000	0	96.3	85	115			

Sample ID	LLLCS-C	SampType:	LCSLL	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	BatchQC	Batch ID:	C32891	RunNo:	32891					
Prep Date:		Analysis Date:	3/18/2016	SeqNo:	1008303	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	111	50	150			
Barium	0.0021	0.0020	0.002000	0	103	50	150			
Boron	ND	0.040	0.04000	0	97.7	50	150			
Cadmium	ND	0.0020	0.002000	0	99.5	50	150			
Chromium	ND	0.0060	0.006000	0	87.8	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID LLLCS-C	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: C32891		RunNo: 32891							
Prep Date:	Analysis Date: 3/18/2016		SeqNo: 1008303		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	ND	0.0060	0.006000	0	85.3	50	150			
Iron	0.021	0.020	0.02000	0	103	50	150			
Manganese	0.0021	0.0020	0.002000	0	104	50	150			
Molybdenum	0.0097	0.0080	0.008000	0	121	50	150			
Nickel	ND	0.010	0.005000	0	98.6	50	150			
Silver	ND	0.0050	0.005000	0	76.2	50	150			
Zinc	ND	0.010	0.005000	0	100	50	150			

Sample ID LCS-C	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: C32891		RunNo: 32891							
Prep Date:	Analysis Date: 3/18/2016		SeqNo: 1008305		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	101	85	115			

Sample ID MB-C	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: C33001		RunNo: 33001							
Prep Date:	Analysis Date: 3/23/2016		SeqNo: 1012812		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.0060								

Sample ID LCS-C	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: C33001		RunNo: 33001							
Prep Date:	Analysis Date: 3/23/2016		SeqNo: 1012813		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.48	0.0060	0.5000	0	95.4	85	115			

Sample ID LLLCS-C	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: C33001		RunNo: 33001							
Prep Date:	Analysis Date: 3/23/2016		SeqNo: 1012814		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.0074	0.0060	0.006000	0	124	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: C33120		RunNo: 33120							
Prep Date:	Analysis Date: 3/28/2016		SeqNo: 1016768		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	98.1	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			
Uranium	0.012	0.00050	0.01250	0	95.1	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: C33120		RunNo: 33120							
Prep Date:	Analysis Date: 3/28/2016		SeqNo: 1016770		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	0.0011	0.0010	0.001000	0	108	50	150			
Uranium	ND	0.00050	0.0005000	0	96.8	50	150			

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: C33120		RunNo: 33120							
Prep Date:	Analysis Date: 3/28/2016		SeqNo: 1016772		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								
Selenium	ND	0.0010								
Uranium	ND	0.00050								

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: B33154		RunNo: 33154							
Prep Date:	Analysis Date: 3/29/2016		SeqNo: 1018089		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	97.7	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: B33154		RunNo: 33154							
Prep Date:	Analysis Date: 3/29/2016		SeqNo: 1018090		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	98.0	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: B33154	RunNo: 33154								
Prep Date:	Analysis Date: 3/29/2016	SeqNo: 1018091			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID	MB-24156	SampType:	mblk	TestCode:	EPA Method 245.1: Mercury					
Client ID:	PBW	Batch ID:	24156	RunNo:	32702					
Prep Date:	3/9/2016	Analysis Date:	3/10/2016	SeqNo:	1000942	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-24156	SampType:	lcs	TestCode:	EPA Method 245.1: Mercury					
Client ID:	LCSW	Batch ID:	24156	RunNo:	32702					
Prep Date:	3/9/2016	Analysis Date:	3/10/2016	SeqNo:	1000945	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0054	0.00020	0.005000	0	109	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

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: R32618		RunNo: 32618							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997926		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: R32618		RunNo: 32618							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997927		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Fluoride	0.50	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	94.9	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: R32879		RunNo: 32879							
Prep Date:	Analysis Date: 3/17/2016		SeqNo: 1007965		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	ND	0.50								
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Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R32879		RunNo: 32879							
Prep Date:	Analysis Date: 3/17/2016		SeqNo: 1007966		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	9.5	0.50	10.00	0	94.6	90	110			
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Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID MB-24100	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 24100	RunNo: 32621								
Prep Date: 3/7/2016	Analysis Date: 3/7/2016	SeqNo: 998470	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-24100	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 24100	RunNo: 32621								
Prep Date: 3/7/2016	Analysis Date: 3/7/2016	SeqNo: 998471	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	108	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID LCS-24101	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: LCSW	Batch ID: 24101		RunNo: 32603							
Prep Date: 3/7/2016	Analysis Date: 3/7/2016		SeqNo: 997914		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	71.3	139			
Surr: DNOP	0.50		0.5000		99.7	70	141			

Sample ID MB-24101	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: PBW	Batch ID: 24101		RunNo: 32603							
Prep Date: 3/7/2016	Analysis Date: 3/7/2016		SeqNo: 997915		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	0.91		1.000		90.8	70	141			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

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: A32596		RunNo: 32596							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997207		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	19		20.00		95.0	49.5	130			

Sample ID 2.5UG GRO LCS	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: A32596		RunNo: 32596							
Prep Date:	Analysis Date: 3/4/2016		SeqNo: 997208		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.51	0.050	0.5000	0	103	80	120			
Surr: BFB	21		20.00		106	49.5	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID	MB-24175	SampType:	MBLK	TestCode:	EPA Method 8082: PCB's					
Client ID:	PBW	Batch ID:	24175	RunNo:	32727					
Prep Date:	3/10/2016	Analysis Date:	3/11/2016	SeqNo:	1002684	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.4		2.500		94.4	26.1	140			
Surr: Tetrachloro-m-xylene	3.9		2.500		155	15	123			S

Sample ID	LCS-24175	SampType:	LCS	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSW	Batch ID:	24175	RunNo:	32727					
Prep Date:	3/10/2016	Analysis Date:	3/11/2016	SeqNo:	1002685	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.1	1.0	5.000	0	62.3	15	131			
Aroclor 1260	3.3	1.0	5.000	0	66.9	15	162			
Surr: Decachlorobiphenyl	2.2		2.500		89.2	26.1	140			
Surr: Tetrachloro-m-xylene	3.0		2.500		122	15	123			

Sample ID	LCSD-24175	SampType:	LCSD	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSS02	Batch ID:	24175	RunNo:	32727					
Prep Date:	3/10/2016	Analysis Date:	3/11/2016	SeqNo:	1002686	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.4	1.0	5.000	0	68.0	15	131	8.66	24.4	
Aroclor 1260	3.7	1.0	5.000	0	74.8	15	162	11.1	28	
Surr: Decachlorobiphenyl	2.4		2.500		94.8	26.1	140	0	0	
Surr: Tetrachloro-m-xylene	3.3		2.500		130	15	123	0	0	S

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

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:	B32762	RunNo:	32762					
Prep Date:		Analysis Date:	3/11/2016	SeqNo:	1002996	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		114	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Sample ID	100ng lcs b	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	B32762	RunNo:	32762					
Prep Date:		Analysis Date:	3/11/2016	SeqNo:	1003007	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.5	70	130			
Toluene	20	1.0	20.00	0	98.8	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	90.8	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.7	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		111	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.9	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 | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID	MB-24176	SampType:	MBLK	TestCode:	EPA Method 8310: PAHs					
Client ID:	PBW	Batch ID:	24176	RunNo:	32851					
Prep Date:	3/10/2016	Analysis Date:	3/17/2016	SeqNo:	1006908	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.4	33.4	129			

Sample ID	LCS-24176	SampType:	LCS	TestCode:	EPA Method 8310: PAHs					
Client ID:	LCSW	Batch ID:	24176	RunNo:	32851					
Prep Date:	3/10/2016	Analysis Date:	3/17/2016	SeqNo:	1006935	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	73	2.0	80.00	0	91.6	54.6	110			
1-Methylnaphthalene	75	2.0	80.20	0	93.6	49.1	116			
2-Methylnaphthalene	75	2.0	80.00	0	94.1	52.5	111			
Acenaphthylene	69	2.5	80.20	0	85.9	63.7	122			
Acenaphthene	77	2.0	80.00	0	96.2	50.6	114			
Fluorene	8.0	0.80	8.020	0	99.6	48.9	106			
Phenanthrene	4.0	0.60	4.020	0	100	54.7	110			
Anthracene	3.7	0.60	4.020	0	92.5	52	106			
Fluoranthene	8.7	0.30	8.020	0	109	57.8	113			
Pyrene	8.1	0.30	8.020	0	101	59.7	118			
Benz(a)anthracene	0.75	0.070	0.8020	0	93.5	56.6	109			
Chrysene	4.1	0.20	4.020	0	102	57.6	110			
Benzo(b)fluoranthene	0.96	0.10	1.002	0	95.8	54.9	106			
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112			

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID	LCS-24176		SampType:	LCS		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSW		Batch ID:	24176		RunNo:	32851				
Prep Date:	3/10/2016		Analysis Date:	3/17/2016		SeqNo:	1006935		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107				
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	103	54.8	108				
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110				
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109				
Surr: Benzo(e)pyrene	17		20.00		83.0	33.4	129				

Sample ID	LCSD-24176		SampType:	LCSD		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSS02		Batch ID:	24176		RunNo:	32851				
Prep Date:	3/10/2016		Analysis Date:	3/17/2016		SeqNo:	1006990		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Naphthalene	73	2.0	80.00	0	91.3	54.6	110	0.314	20		
1-Methylnaphthalene	73	2.0	80.20	0	91.2	49.1	116	2.51	20		
2-Methylnaphthalene	73	2.0	80.00	0	90.7	52.5	111	3.64	20		
Acenaphthylene	68	2.5	80.20	0	85.4	63.7	122	0.640	20		
Acenaphthene	74	2.0	80.00	0	92.3	50.6	114	4.22	20		
Fluorene	7.2	0.80	8.020	0	89.7	48.9	106	10.5	20		
Phenanthrene	4.0	0.60	4.020	0	99.5	54.7	110	0.747	24		
Anthracene	3.7	0.60	4.020	0	92.5	52	106	0	20		
Fluoranthene	8.7	0.30	8.020	0	108	57.8	113	0.460	20.9		
Pyrene	8.1	0.30	8.020	0	101	59.7	118	0.618	20.8		
Benzo(a)anthracene	0.77	0.070	0.8020	0	96.0	56.6	109	2.63	20		
Chrysene	4.1	0.20	4.020	0	102	57.6	110	0.244	20		
Benzo(b)fluoranthene	0.95	0.10	1.002	0	94.8	54.9	106	1.05	20.6		
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112	0	20.8		
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107	0	20		
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	104	54.8	108	0.966	20		
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110	0	20		
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109	0	20		
Surr: Benzo(e)pyrene	17		20.00		82.8	33.4	129	0			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID MB-24124	SampType: MBLK		TestCode: Total Phenolics by SW-846 9067							
Client ID: PBW	Batch ID: 24124		RunNo: 32622							
Prep Date: 3/8/2016	Analysis Date: 3/8/2016		SeqNo: 998125		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-24124	SampType: LCS		TestCode: Total Phenolics by SW-846 9067							
Client ID: LCSW	Batch ID: 24124		RunNo: 32622							
Prep Date: 3/8/2016	Analysis Date: 3/8/2016		SeqNo: 998126		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	106	64.4	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID MB-R33030	SampType: MBLK	TestCode: EPA 335.4: Total Cyanide Subbed								
Client ID: PBW	Batch ID: R33030	RunNo: 33030								
Prep Date:	Analysis Date: 3/8/2016	SeqNo: 1013399	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID LCS-R33030	SampType: LCS	TestCode: EPA 335.4: Total Cyanide Subbed								
Client ID: LCSW	Batch ID: R33030	RunNo: 33030								
Prep Date:	Analysis Date: 3/8/2016	SeqNo: 1013400	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.545		0.5000	0	109	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID	MB-R32960	SampType:	MBLK	TestCode:	EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed					
Client ID:	PBW	Batch ID:	R32960	RunNo:	32960					
Prep Date:		Analysis Date:	3/21/2016	SeqNo:	1010971	Units:	pCi/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0	0.643								
Radium-226 ±	0.287	0.643								
Radium-228	0.31	0.686								
Radium-228 ±	0.33	0.686								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client: Navajo Refining Company
Project: Monthly Temporary R.O. Reject

Sample ID MB-24120	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 24120		RunNo: 32669							
Prep Date: 3/7/2016	Analysis Date: 3/9/2016		SeqNo: 999682		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-24120	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 24120		RunNo: 32669							
Prep Date: 3/7/2016	Analysis Date: 3/9/2016		SeqNo: 999683		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Qualifiers:

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

Sample Log-In Check List

Client Name: **NAVAJO REFINING CO**

Work Order Number: **1603243**

RcptNo: 1

Received by/date:

AG

03/04/14

Logged By: **Ashley Gallegos**

3/4/2016 10:00:00 AM

AG

Completed By: **Ashley Gallegos**

3/4/2016 10:29:02 AM

AG

Reviewed By:

TC

03/04/14

Chain of Custody

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

Log In

- 4. Was an attempt made to cool the samples? Yes No NA
- 5. Were all samples received at a temperature of >0° C to 6.0°C Yes No NA
- 6. Sample(s) in proper container(s)? Yes No
- 7. Sufficient sample volume for indicated test(s)? Yes No
- 8. Are samples (except VOA and ONG) properly preserved? Yes No
- 9. Was preservative added to bottles? Yes No NA
- 10. VOA vials have zero headspace? Yes No No VOA Vials
- 11. Were any sample containers received broken? Yes No
- 12. Does paperwork match bottle labels? Yes No # of preserved bottles checked for pH: *5* *1* *3/03/16*
 (Note discrepancies on chain of custody) *11* *1* *as*
 (<2 or >12 unless noted)
- 13. Are matrices correctly identified on Chain of Custody? Yes No Adjusted? *NO*
- 14. Is it clear what analyses were requested? Yes No
- 15. Were all holding times able to be met? Yes No Checked by: *as*
 (If no, notify customer for authorization.)

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
 By Whom: _____ Via: eMail Phone Fax In Person
 Regarding: _____
 Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refinery

Mailing Address: P.O. Box 159 Artesia,

M 86211-0159

Phone #: 575-748-3311

Mail or Fax#: 575-746-5451

A/QC Package:

Standard Level 4 (Full Validation)

Other

EDD (Type) _____

DATE-TIME

X Standard Rush

Project Name:

Monthly Temporary R.O. Reject

Project #: P.O. # 167796

Project Manager:

Robert Combs

Sampler: Elizabeth Salsberry

On Ice: Yes No

Sample Temperature: 2.3-10 = 1.36°

Date Time Matrix Sample Request ID

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
3/3/16	9:30	liquid	Temporary R.O. Reject	2 - 500ml P	1-unpres H2SO4	1603243
3/3/16	9:30	liquid	Temporary R.O. Reject	3-40ml VOA	HCL	-001
3/3/16	9:30	liquid	Temporary R.O. Reject	1-500ml P	HNO3	
3/3/16	9:30	liquid	Temporary R.O. Reject	1-125ml P	HNO3	
3/3/16	9:30	liquid	Temporary R.O. Reject	1-500ml P	NaOH	
3/3/16	9:30	liquid	Temporary R.O. Reject	2- 1L P	HNO3	
3/3/16	9:30	liquid	Temporary R.O. Reject	3-40ml VOA	Na2S2O3	
3/3/16	9:30	liquid	Temporary R.O. Reject	2 - 1L Glass	unpres	
3/3/16	9:30	liquid	Temporary R.O. Reject	1 - 1L Glass	unpres	
3/3/16	9:30	liquid	Temporary R.O. Reject	3-40ml VOA	HCl	
3/3/16	9:30	liquid	Temporary R.O. Reject	1-250ml Glass	unpres	
3/3/16	9:30	liquid	Temporary R.O. Reject	1 - 1L Glass	H2SO4	
3/3/16	9:30	liquid	Trip Blank	2-40ml VOA	HCL	

Date Time: Relinquished by: Elizabeth Salsberry

Date: 1:00 Time: Relinquished by: Elizabeth Salsberry

Received by: Date Time

Received by: Elizabeth Salsberry Date Time: 03/04/16 1000

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

8260B: WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470: Mercury	8015: GRO, DRO, ORO	8082: PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB	Air Bubbles (Y or N)
X				X				X		X	X	X	X		

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-Dichloroethane; 1,2-Dichloroethene; 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 serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



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

June 13, 2016

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

RE: Quarterly R.O. Reject

OrderNo.: 1604184

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/6/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued May 12, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



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

Case Narrative

WO#: 1604184
Date: 6/13/2016

CLIENT: Navajo Refining Company
Project: Quarterly R.O. Reject

Analytical Notes Regarding EPA Method 8015 DRO/MRO:
The results for EPA Method 8015 DRO/MRO are being reported as past the holding time due to a laboratory error.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Quarterly R.O. Reject

Collection Date: 4/5/2016 8:15:00 AM

Lab ID: 1604184-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0033	0.010		µg/L	1	4/8/2016 2:39:53 PM	24682
EPA METHOD 8082: PCB'S							Analyst: SCC	
Aroclor 1016	ND	0.28	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Aroclor 1221	ND	0.70	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Aroclor 1232	ND	0.76	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Aroclor 1242	ND	0.20	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Aroclor 1248	ND	0.57	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Aroclor 1254	ND	0.97	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Aroclor 1260	ND	0.24	1.0		µg/L	1	4/19/2016 2:38:24 AM	24708
Surr: Decachlorobiphenyl	121	0	26.1-140		%Rec	1	4/19/2016 2:38:24 AM	24708
Surr: Tetrachloro-m-xylene	95.2	0	15-123		%Rec	1	4/19/2016 2:38:24 AM	24708
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM	
Diesel Range Organics (DRO)	ND	0.69	1.0	H	mg/L	1	5/27/2016 3:55:42 PM	24652
Motor Oil Range Organics (MRO)	ND	5.0	5.0	H	mg/L	1	5/27/2016 3:55:42 PM	24652
Surr: DNOP	94.1	0	70-141	H	%Rec	1	5/27/2016 3:55:42 PM	24652
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	4/8/2016 11:55:58 AM	R33412
Surr: BFB	89.0	0	49.5-130		%Rec	1	4/8/2016 11:55:58 AM	R33412
EPA METHOD 8310: PAHS							Analyst: SCC	
Naphthalene	ND	1.1	2.0		µg/L	1	4/19/2016 11:30:48 AM	24709
1-Methylnaphthalene	ND	1.1	2.0		µg/L	1	4/19/2016 11:30:48 AM	24709
2-Methylnaphthalene	ND	1.1	2.0		µg/L	1	4/19/2016 11:30:48 AM	24709
Benzo(a)pyrene	ND	0.018	0.070		µg/L	1	4/19/2016 11:30:48 AM	24709
Surr: Benzo(e)pyrene	74.7	0	33.4-129		%Rec	1	4/19/2016 11:30:48 AM	24709
EPA METHOD 300.0: ANIONS							Analyst: LGT	
Fluoride	4.7	0.45	2.0	*	mg/L	20	4/18/2016 10:52:15 PM	R33628
Chloride	390	2.7	50		mg/L	100	4/18/2016 11:04:39 PM	R33628
Nitrogen, Nitrite (As N)	ND	0.83	2.0		mg/L	20	4/7/2016 4:51:08 AM	R33368
Nitrogen, Nitrate (As N)	2.4	0.042	0.10		mg/L	1	4/7/2016 4:38:43 AM	R33368
Sulfate	2400	6.4	50		mg/L	100	4/18/2016 11:04:39 PM	R33628
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Aluminum	ND	0.0038	0.020		mg/L	1	4/18/2016 5:43:21 PM	A33606
Barium	0.094	0.0013	0.0020		mg/L	1	4/18/2016 5:43:21 PM	A33606
Boron	0.10	0.0011	0.040		mg/L	1	4/18/2016 5:43:21 PM	A33606
Cadmium	ND	0.00075	0.0020		mg/L	1	4/18/2016 5:43:21 PM	A33606
Chromium	ND	0.0018	0.0060		mg/L	1	4/18/2016 5:43:21 PM	A33606

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Quarterly R.O. Reject

Collection Date: 4/5/2016 8:15:00 AM

Lab ID: 1604184-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	0.0022	0.00074	0.0060	J	mg/L	1	4/18/2016 5:43:21 PM	A33606
Copper	ND	0.0040	0.0060		mg/L	1	4/18/2016 5:43:21 PM	A33606
Iron	0.034	0.0091	0.020		mg/L	1	4/18/2016 5:43:21 PM	A33606
Manganese	0.0014	0.00032	0.0020	J	mg/L	1	4/18/2016 5:43:21 PM	A33606
Molybdenum	0.0068	0.0019	0.0080	J	mg/L	1	4/18/2016 5:43:21 PM	A33606
Nickel	ND	0.0024	0.010		mg/L	1	4/18/2016 5:43:21 PM	A33606
Silver	ND	0.0028	0.0050		mg/L	1	4/18/2016 5:43:21 PM	A33606
Zinc	0.027	0.0028	0.010		mg/L	1	4/18/2016 5:43:21 PM	A33606
EPA 200.8: DISSOLVED METALS							Analyst: JLF	
Arsenic	0.0027	0.00069	0.0050	J	mg/L	5	4/19/2016 6:19:56 PM	A33644
Lead	ND	0.00036	0.0025		mg/L	5	4/19/2016 6:19:56 PM	A33644
Selenium	0.011	0.0042	0.020	J	mg/L	20	4/20/2016 6:29:13 PM	A33677
Uranium	0.0067	0.00026	0.0025		mg/L	5	4/19/2016 6:19:56 PM	A33644
EPA METHOD 245.1: MERCURY							Analyst: pmf	
Mercury	ND	0.000053	0.00020		mg/L	1	4/15/2016 12:01:33 PM	24817
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.096	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Toluene	ND	0.089	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Ethylbenzene	ND	0.11	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
1,2-Dichloroethane (EDC)	0.32	0.053	1.0	J	µg/L	1	4/14/2016 6:30:43 PM	R33550
1,2-Dibromoethane (EDB)	ND	0.11	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Carbon Tetrachloride	ND	0.11	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Chloroform	ND	0.089	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
1,1-Dichloroethane	ND	0.11	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
1,1-Dichloroethene	ND	0.076	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Methylene Chloride	ND	0.063	3.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
1,1,2,2-Tetrachloroethane	ND	0.11	2.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
1,1,1-Trichloroethane	ND	0.063	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
1,1,2-Trichloroethane	ND	0.077	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Trichloroethene (TCE)	ND	0.18	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Vinyl chloride	ND	0.063	1.0		µg/L	1	4/14/2016 6:30:43 PM	R33550
Xylenes, Total	ND	0.32	1.5		µg/L	1	4/14/2016 6:30:43 PM	R33550
Surr: 1,2-Dichloroethane-d4	98.3	0	70-130		%Rec	1	4/14/2016 6:30:43 PM	R33550
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	4/14/2016 6:30:43 PM	R33550
Surr: Dibromofluoromethane	110	0	70-130		%Rec	1	4/14/2016 6:30:43 PM	R33550
Surr: Toluene-d8	94.9	0	70-130		%Rec	1	4/14/2016 6:30:43 PM	R33550

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

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

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Navajo Refining Company**Client Sample ID:** R.O. Reject**Project:** Quarterly R.O. Reject**Collection Date:** 4/5/2016 8:15:00 AM**Lab ID:** 1604184-001**Matrix:** AQUEOUS**Received Date:** 4/6/2016 9:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
TOTAL PHENOLICS BY SW-846 9067							Analyst: SCC	
Phenolics, Total Recoverable	ND	1.5	2.5		µg/L	1	4/21/2016	24923
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: SUB	
Cyanide	ND	0.0100	0.0100		mg/L	1	4/13/2016	R34156
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED							Analyst: SUB	
Radium-226	1.02	0.578	0.578		pCi/L	1	4/29/2016	R34156
Radium-226 ±	0.608	0.578	0.578		pCi/L	1	4/29/2016	R34156
Radium-228	0.143	0.803	0.803		pCi/L	1	4/29/2016	R34156
Radium-228 ±	0.361	0.803	0.803		pCi/L	1	4/29/2016	R34156
SM4500-H+B: PH							Analyst: MRA	
pH	8.17	0.100	1.68	H	pH units	1	4/9/2016 2:23:07 AM	R33424
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS	
Total Dissolved Solids	5190	10.5	20.0	*	mg/L	1	4/7/2016 3:22:00 PM	24656

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Quarterly R.O. Reject

Collection Date:

Lab ID: 1604184-002

Matrix: TRIP BLANK

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0033	0.010		µg/L	1	4/8/2016 2:54:59 PM	24682
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	4/8/2016 12:20:35 PM	R33412
Surr: BFB	85.7	0	49.5-130		%Rec	1	4/8/2016 12:20:35 PM	R33412
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.096	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Toluene	ND	0.089	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Ethylbenzene	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
1,2-Dichloroethane (EDC)	0.33	0.053	1.0	J	µg/L	1	4/14/2016 6:59:37 PM	R33550
1,2-Dibromoethane (EDB)	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Carbon Tetrachloride	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Chloroform	ND	0.089	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
1,1-Dichloroethane	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
1,1-Dichloroethene	ND	0.076	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Methylene Chloride	ND	0.063	3.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
1,1,2,2-Tetrachloroethane	ND	0.11	2.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
1,1,1-Trichloroethane	ND	0.063	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
1,1,2-Trichloroethane	ND	0.077	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Trichloroethene (TCE)	ND	0.18	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Vinyl chloride	ND	0.063	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550
Xylenes, Total	ND	0.32	1.5		µg/L	1	4/14/2016 6:59:37 PM	R33550
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550
Surr: 4-Bromofluorobenzene	106	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550
Surr: Dibromofluoromethane	111	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550
Surr: Toluene-d8	96.2	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID MB-A	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: A33606		RunNo: 33606							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1034060		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								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID LCS-A	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: A33606		RunNo: 33606							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1034061		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.46	0.020	0.5000	0	92.5	85	115			
Barium	0.49	0.0020	0.5000	0	97.6	85	115			
Boron	0.50	0.040	0.5000	0	99.1	85	115			
Cadmium	0.50	0.0020	0.5000	0	99.3	85	115			
Chromium	0.48	0.0060	0.5000	0	96.7	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.2	85	115			
Copper	0.48	0.0060	0.5000	0	95.7	85	115			
Iron	0.47	0.020	0.5000	0	93.8	85	115			
Manganese	0.47	0.0020	0.5000	0	94.1	85	115			
Molybdenum	0.51	0.0080	0.5000	0	103	85	115			
Nickel	0.46	0.010	0.5000	0	91.9	85	115			
Silver	0.097	0.0050	0.1000	0	96.9	85	115			
Zinc	0.48	0.010	0.5000	0	95.4	85	115			

Sample ID LLLCS-A	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: A33606		RunNo: 33606							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1034062		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.010	0.020	0.01000	0	100	50	150			J
Barium	0.0019	0.0020	0.002000	0	94.5	50	150			J

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: A33606		RunNo: 33606							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1034062		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.038	0.040	0.04000	0	94.9	50	150			J
Cadmium	0.0028	0.0020	0.002000	0	140	50	150			
Chromium	0.0063	0.0060	0.006000	0	105	50	150			
Cobalt	0.0056	0.0060	0.006000	0	92.7	50	150			J
Copper	0.0090	0.0060	0.006000	0	150	50	150			S
Iron	0.020	0.020	0.02000	0	98.6	50	150			J
Manganese	0.0018	0.0020	0.002000	0	90.5	50	150			J
Molybdenum	0.0079	0.0080	0.008000	0	99.0	50	150			J
Nickel	0.0043	0.010	0.005000	0	86.2	50	150			J
Silver	0.0046	0.0050	0.005000	0	92.6	50	150			J
Zinc	0.0054	0.010	0.005000	0	108	50	150			J

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: A33644		RunNo: 33644							
Prep Date:	Analysis Date: 4/19/2016		SeqNo: 1036133		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.023	0.0010	0.02500	0	93.5	85	115			
Lead	0.011	0.00050	0.01250	0	91.9	85	115			
Uranium	0.011	0.00050	0.01250	0	91.8	85	115			

Sample ID LCSLL	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: A33644		RunNo: 33644							
Prep Date:	Analysis Date: 4/19/2016		SeqNo: 1036134		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	102	50	150			
Lead	0.00052	0.00050	0.0005000	0	105	50	150			
Uranium	0.00050	0.00050	0.0005000	0	99.1	50	150			J

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: A33644		RunNo: 33644							
Prep Date:	Analysis Date: 4/19/2016		SeqNo: 1036136		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								
Uranium	ND	0.00050								

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: A33677		RunNo: 33677							
Prep Date:	Analysis Date: 4/20/2016		SeqNo: 1037321		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.024	0.0010	0.02500	0	97.2	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: A33677		RunNo: 33677							
Prep Date:	Analysis Date: 4/20/2016		SeqNo: 1037322		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.0011	0.0010	0.001000	0	106	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A33677	RunNo: 33677								
Prep Date:	Analysis Date: 4/20/2016	SeqNo: 1037323			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.0010								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	MB-24817	SampType:	MBLK	TestCode:	EPA Method 245.1: Mercury					
Client ID:	PBW	Batch ID:	24817	RunNo:	33567					
Prep Date:	4/14/2016	Analysis Date:	4/15/2016	SeqNo:	1032804	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-24817	SampType:	LCS	TestCode:	EPA Method 245.1: Mercury					
Client ID:	LCSW	Batch ID:	24817	RunNo:	33567					
Prep Date:	4/14/2016	Analysis Date:	4/15/2016	SeqNo:	1032805	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R33368		RunNo: 33368							
Prep Date:	Analysis Date: 4/6/2016		SeqNo: 1025773		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R33368		RunNo: 33368							
Prep Date:	Analysis Date: 4/6/2016		SeqNo: 1025774		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	98.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	102	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R33628		RunNo: 33628							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1035257		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R33628		RunNo: 33628							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1035258		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	109	90	110			
Chloride	4.8	0.50	5.000	0	96.7	90	110			
Sulfate	9.8	0.50	10.00	0	98.3	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID MB-24682	SampType: MBLK		TestCode: EPA Method 8011/504.1: EDB							
Client ID: PBW	Batch ID: 24682		RunNo: 33411							
Prep Date: 4/7/2016	Analysis Date: 4/8/2016		SeqNo: 1027492	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-24682	SampType: LCS		TestCode: EPA Method 8011/504.1: EDB							
Client ID: LCSW	Batch ID: 24682		RunNo: 33411							
Prep Date: 4/7/2016	Analysis Date: 4/8/2016		SeqNo: 1027494	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.12	0.010	0.1000	0	116	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID MB-24652	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: PBW	Batch ID: 24652		RunNo: 33385							
Prep Date: 4/6/2016	Analysis Date: 4/8/2016		SeqNo: 1026445				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	70	141			

Sample ID LCS-24652	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: LCSW	Batch ID: 24652		RunNo: 33385							
Prep Date: 4/6/2016	Analysis Date: 4/8/2016		SeqNo: 1026634				Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.6	1.0	5.000	0	112	71.3	139			
Surr: DNOP	0.53		0.5000		107	70	141			

Sample ID LCS-25494	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: LCSW	Batch ID: 25494		RunNo: 34489							
Prep Date: 5/25/2016	Analysis Date: 5/26/2016		SeqNo: 1064130				Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	0.50		0.5000		101	70	141			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID 5ML RB	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: R33412		RunNo: 33412							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027408		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	17		20.00		86.6	49.5	130			

Sample ID 2.5UG GRO LCS	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: R33412		RunNo: 33412							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027409		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	92.9	80	120			
Surr: BFB	19		20.00		96.6	49.5	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	MB-24708	SampType:	MBLK	TestCode:	EPA Method 8082: PCB's					
Client ID:	PBW	Batch ID:	24708	RunNo:	33583					
Prep Date:	4/11/2016	Analysis Date:	4/18/2016	SeqNo:	1034347	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.5		2.500		99.2	26.1	140			
Surr: Tetrachloro-m-xylene	2.3		2.500		93.2	15	123			

Sample ID	LCS-24708	SampType:	LCS	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSW	Batch ID:	24708	RunNo:	33583					
Prep Date:	4/11/2016	Analysis Date:	4/18/2016	SeqNo:	1034348	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	6.5	1.0	5.000	0	130	15	131			
Aroclor 1260	9.4	1.0	5.000	0	189	15	162			S
Surr: Decachlorobiphenyl	5.2		2.500		208	26.1	140			S
Surr: Tetrachloro-m-xylene	5.2		2.500		208	15	123			S

Sample ID	LCSD-24708	SampType:	LCSD	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSS02	Batch ID:	24708	RunNo:	33583					
Prep Date:	4/11/2016	Analysis Date:	4/18/2016	SeqNo:	1034349	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.5	1.0	5.000	0	70.0	15	131	60.1	24.4	R
Aroclor 1260	6.1	1.0	5.000	0	123	15	162	42.3	28	R
Surr: Decachlorobiphenyl	3.3		2.500		133	26.1	140	0	0	
Surr: Tetrachloro-m-xylene	2.9		2.500		118	15	123	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R33550		RunNo: 33550							
Prep Date:	Analysis Date: 4/14/2016		SeqNo: 1032303		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	114	70	130			
Toluene	20	1.0	20.00	0	99.4	70	130			
1,1-Dichloroethene	23	1.0	20.00	0	115	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	99.7	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	12		10.00		117	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: R33550		RunNo: 33550							
Prep Date:	Analysis Date: 4/14/2016		SeqNo: 1032305		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	0.33	1.0								J
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	0.79	3.0								J
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	11		10.00		112	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	MB-24709	SampType:	MBLK	TestCode:	EPA Method 8310: PAHs					
Client ID:	PBW	Batch ID:	24709	RunNo:	33614					
Prep Date:	4/11/2016	Analysis Date:	4/19/2016	SeqNo:	1034469	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	15		20.00		77.2	33.4	129			

Sample ID	LCS-24709	SampType:	LCS	TestCode:	EPA Method 8310: PAHs					
Client ID:	LCSW	Batch ID:	24709	RunNo:	33614					
Prep Date:	4/11/2016	Analysis Date:	4/19/2016	SeqNo:	1034474	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	79	2.0	80.00	0	98.3	54.6	110			
1-Methylnaphthalene	80	2.0	80.20	0	99.9	49.1	116			
2-Methylnaphthalene	81	2.0	80.00	0	101	52.5	111			
Acenaphthylene	73	2.5	80.20	0	91.0	63.7	122			
Acenaphthene	81	2.0	80.00	0	101	50.6	114			
Fluorene	8.2	0.80	8.020	0	103	48.9	106			
Phenanthrene	4.0	0.60	4.020	0	98.5	54.7	110			
Anthracene	3.7	0.60	4.020	0	92.5	52	106			
Fluoranthene	8.7	0.30	8.020	0	109	57.8	113			
Pyrene	7.6	0.30	8.020	0	95.3	59.7	118			
Benz(a)anthracene	0.88	0.070	0.8020	0	110	56.6	109			S
Chrysene	4.1	0.20	4.020	0	102	57.6	110			
Benzo(b)fluoranthene	0.91	0.10	1.002	0	90.8	54.9	106			
Benzo(k)fluoranthene	0.51	0.070	0.5000	0	102	59.3	112			

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	LCS-24709		SampType:	LCS		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSW		Batch ID:	24709		RunNo:	33614				
Prep Date:	4/11/2016		Analysis Date:	4/19/2016		SeqNo:	1034474		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107				
Dibenz(a,h)anthracene	1.1	0.12	1.002	0	106	54.8	108				
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	105	56.9	110				
Indeno(1,2,3-cd)pyrene	2.3	0.25	2.004	0	113	55.2	109			S	
Surr: Benzo(e)pyrene	11		20.00		53.7	33.4	129				

Sample ID	LCSD-24709		SampType:	LCSD		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSS02		Batch ID:	24709		RunNo:	33614				
Prep Date:	4/11/2016		Analysis Date:	4/19/2016		SeqNo:	1034484		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Naphthalene	76	2.0	80.00	0	94.6	54.6	110	3.77	20		
1-Methylnaphthalene	74	2.0	80.20	0	92.8	49.1	116	7.35	20		
2-Methylnaphthalene	73	2.0	80.00	0	91.6	52.5	111	9.80	20		
Acenaphthylene	70	2.5	80.20	0	87.3	63.7	122	4.19	20		
Acenaphthene	73	2.0	80.00	0	91.4	50.6	114	10.4	20		
Fluorene	6.6	0.80	8.020	0	82.8	48.9	106	21.4	20	R	
Phenanthrene	3.8	0.60	4.020	0	95.0	54.7	110	3.60	24		
Anthracene	3.6	0.60	4.020	0	88.6	52	106	4.40	20		
Fluoranthene	8.4	0.30	8.020	0	104	57.8	113	3.98	20.9		
Pyrene	7.3	0.30	8.020	0	91.5	59.7	118	4.01	20.8		
Benzo(a)anthracene	0.85	0.070	0.8020	0	106	56.6	109	3.47	20		
Chrysene	4.0	0.20	4.020	0	98.8	57.6	110	3.47	20		
Benzo(b)fluoranthene	0.86	0.10	1.002	0	85.8	54.9	106	5.65	20.6		
Benzo(k)fluoranthene	0.49	0.070	0.5000	0	98.0	59.3	112	4.00	20.8		
Benzo(a)pyrene	0.51	0.070	0.5020	0	102	62	107	3.85	20		
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	101	54.8	108	4.83	20		
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	100	56.9	110	4.88	20		
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109	7.78	20		
Surr: Benzo(e)pyrene	10		20.00		51.5	33.4	129	0			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID MB-24923	SampType: MBLK		TestCode: Total Phenolics by SW-846 9067							
Client ID: PBW	Batch ID: 24923		RunNo: 33678							
Prep Date: 4/21/2016	Analysis Date: 4/21/2016		SeqNo: 1037376				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-24923	SampType: LCS		TestCode: Total Phenolics by SW-846 9067							
Client ID: LCSW	Batch ID: 24923		RunNo: 33678							
Prep Date: 4/21/2016	Analysis Date: 4/21/2016		SeqNo: 1037377				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	89.0	64.4	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	MB-R34156	SampType:	MBLK	TestCode:	EPA 335.4: Total Cyanide Subbed					
Client ID:	PBW	Batch ID:	R34156	RunNo:	34156					
Prep Date:		Analysis Date:	4/13/2016	SeqNo:	1053134	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	LCS-R34156	SampType:	LCS	TestCode:	EPA 335.4: Total Cyanide Subbed					
Client ID:	LCSW	Batch ID:	R34156	RunNo:	34156					
Prep Date:		Analysis Date:	4/13/2016	SeqNo:	1053135	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.507		0.5000	0	101	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	MB-R34156	SampType:	MBLK	TestCode:	EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed					
Client ID:	PBW	Batch ID:	R34156	RunNo:	34156					
Prep Date:		Analysis Date:	4/29/2016	SeqNo:	1053137	Units:	pCi/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	-2.01	0.933								
Radium-226 ±	0.459	0.933								
Radium-228	0.321	0.795								
Radium-228 ±	0.376	0.795								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604184

13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	MB-24656	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	24656	RunNo:	33372					
Prep Date:	4/6/2016	Analysis Date:	4/7/2016	SeqNo:	1025974	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-24656	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	24656	RunNo:	33372					
Prep Date:	4/6/2016	Analysis Date:	4/7/2016	SeqNo:	1025975	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1040	20.0	1000	0	104	80	120			

Qualifiers:

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



Hall Environmental Analysis Laboratory
 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: **1604184**

RcptNo: 1

Received by/date: *[Signature]* *04/06/16*

Logged By: **Ashley Gallegos** 4/6/2016 9:40:00 AM *[Signature]*

Completed By: **Ashley Gallegos** 4/6/2016 12:24:03 PM *[Signature]*

Reviewed By: *[Signature]* *04/06/16*

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 6 1
 (2 or 12 unless noted)

Adjusted? NO

Checked by: [Signature]

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Yes			



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

Quarterly RO Reject Sample Details Attachment



HOLLYFRONTIER
 The HollyFrontier Companies

Sample Type	Grab <input checked="" type="checkbox"/>
Time Weighted Composite	<input type="checkbox"/>
Flow Weighted Composite	<input type="checkbox"/>

Physical Property	Solid <input type="checkbox"/>
	Liquid <input checked="" type="checkbox"/>
	Sludge <input type="checkbox"/>

Type of Sampler: Directly to sample jars

Project Name	Biannual RO Reject
Samplers Name	Brady Hubbard
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	4/5/2016 @ 8:05 a.m.
End Date and Time	4/5/2016 @ 8:30 a.m.

Parts / Sample Intervals: One

Outfall / Sample Location: North Field R.O. Reject Discharge South Field R.O. Reject Discharge

Container	Size	Material	Containers	Preservatives										Analysis and/or Method Requested	
				None	HCl	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other				
1	500ml	Plastic	2	X			X								PH, Cl, F, SO4, 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): 4/5/2016 Tmp 55.4 °F, Humidity 41%, Wind Dir. SE, Wind Speed 4.6mph, Conditions Clear

Date and Time:

Field Temp: 23.6C Field pH: 7.05

Storage Method: Ice Refrigerated Other

Shipping Media: Ice Other



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

May 12, 2016

Scott Denton

Navajo Refining Company

P.O. Box 159

Artesia, NM 88211-0159

TEL: (575) 748-3311

FAX

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

OrderNo.: 1604185

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/6/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010							
Ignitability	>200	0		°F	1	4/11/2016	R34102
Analyst: SUB							
SULFIDE, REACTIVE							
Reactive Sulfide	ND	1.0		mg/L	1	4/12/2016	R34102
Analyst: SUB							
SPECIFIC GRAVITY							
Specific Gravity	0.9996	0			1	4/19/2016 4:21:00 PM	R33651
Analyst: JRR							
EPA METHOD 300.0: ANIONS							
Fluoride	13	0.50	*	mg/L	5	4/8/2016 1:42:27 PM	R33432
Chloride	420	25		mg/L	50	4/20/2016 9:31:48 PM	A33690
Bromide	1.6	0.50		mg/L	5	4/8/2016 1:42:27 PM	R33432
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	4/8/2016 1:42:27 PM	R33432
Sulfate	1700	25		mg/L	50	4/20/2016 9:31:48 PM	A33690
Nitrate+Nitrite as N	ND	1.0		mg/L	5	4/8/2016 2:07:17 PM	R33432
Analyst: LGT							
SM2510B: SPECIFIC CONDUCTANCE							
Conductivity	4500	0.010		µmhos/cm	1	4/8/2016 2:11:16 PM	R33424
Analyst: MRA							
SM2320B: ALKALINITY							
Bicarbonate (As CaCO3)	318.5	20.00		mg/L CaCO3	1	4/8/2016 2:11:16 PM	R33424
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	4/8/2016 2:11:16 PM	R33424
Total Alkalinity (as CaCO3)	318.5	20.00		mg/L CaCO3	1	4/8/2016 2:11:16 PM	R33424
Analyst: MRA							
SM2540C MOD: TOTAL DISSOLVED SOLIDS							
Total Dissolved Solids	2950	40.0	*D	mg/L	1	4/7/2016 3:22:00 PM	24656
Analyst: KS							
CORROSIVITY							
pH	7.98			pH Units	1	4/12/2016	R34102
Analyst: SUB							
CYANIDE, REACTIVE							
Cyanide, Reactive	ND	1.00		mg/L	1	4/19/2016	R34102
Analyst: SUB							
SM4500-H+B: PH							
pH	7.85	1.68	H	pH units	1	4/8/2016 2:11:16 PM	R33424
Analyst: MRA							
EPA METHOD 7470: MERCURY							
Mercury	ND	0.00020		mg/L	1	4/19/2016 10:26:39 AM	24854
Analyst: pmf							
MERCURY, TCLP							
Mercury	ND	0.020		mg/L	1	4/18/2016 4:38:52 PM	24855
Analyst: pmf							
EPA METHOD 6010B: TCLP METALS							
Arsenic	ND	5.0		mg/L	1	4/18/2016 11:58:20 AM	24833
Barium	ND	100		mg/L	1	4/18/2016 11:58:20 AM	24833

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS							Analyst: MED
Cadmium	ND	1.0		mg/L	1	4/18/2016 11:58:20 AM	24833
Chromium	ND	5.0		mg/L	1	4/18/2016 11:58:20 AM	24833
Lead	ND	5.0		mg/L	1	4/18/2016 11:58:20 AM	24833
Selenium	ND	1.0		mg/L	1	4/19/2016 12:32:11 PM	24833
Silver	ND	5.0		mg/L	1	4/18/2016 11:58:20 AM	24833
EPA 6010B: TOTAL METALS							Analyst: MED
Aluminum	ND	0.020		mg/L	1	4/18/2016 11:54:40 AM	24833
Antimony	ND	0.050		mg/L	1	4/19/2016 12:33:42 PM	24833
Arsenic	ND	0.020		mg/L	1	4/18/2016 11:54:40 AM	24833
Barium	0.040	0.020		mg/L	1	4/18/2016 11:54:40 AM	24833
Beryllium	ND	0.0030		mg/L	1	4/18/2016 11:54:40 AM	24833
Cadmium	ND	0.0020		mg/L	1	4/18/2016 11:54:40 AM	24833
Calcium	380	5.0		mg/L	5	4/18/2016 11:56:27 AM	24833
Chromium	ND	0.0060		mg/L	1	4/18/2016 11:54:40 AM	24833
Cobalt	ND	0.0060		mg/L	1	4/18/2016 11:54:40 AM	24833
Copper	ND	0.0060		mg/L	1	4/18/2016 11:54:40 AM	24833
Iron	0.055	0.050		mg/L	1	4/18/2016 11:54:40 AM	24833
Lead	ND	0.0050		mg/L	1	4/18/2016 11:54:40 AM	24833
Magnesium	110	5.0		mg/L	5	4/18/2016 11:56:27 AM	24833
Manganese	ND	0.0020		mg/L	1	4/20/2016 12:37:59 PM	24833
Nickel	ND	0.010		mg/L	1	4/18/2016 11:54:40 AM	24833
Potassium	4.8	1.0		mg/L	1	4/18/2016 11:54:40 AM	24833
Selenium	ND	0.050		mg/L	1	4/18/2016 11:54:40 AM	24833
Silver	ND	0.0050		mg/L	1	4/18/2016 11:54:40 AM	24833
Sodium	47	1.0		mg/L	1	4/18/2016 11:54:40 AM	24833
Thallium	ND	0.050		mg/L	1	4/18/2016 11:54:40 AM	24833
Vanadium	ND	0.050		mg/L	1	4/18/2016 11:54:40 AM	24833
Zinc	0.034	0.020		mg/L	1	4/18/2016 11:54:40 AM	24833
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acetonitrile	54	10		µg/L	1	4/18/2016	R34102
Allyl chloride	ND	2.5		µg/L	1	4/18/2016	R34102
Chloroprene	ND	10		µg/L	1	4/18/2016	R34102
Cyclohexane	ND	10		µg/L	1	4/18/2016	R34102
Diethyl ether	ND	2.5		µg/L	1	4/18/2016	R34102
Diisopropyl ether	ND	10		µg/L	1	4/18/2016	R34102
Epichlorohydrin	ND	25		µg/L	1	4/18/2016	R34102
Ethyl acetate	ND	2.5		µg/L	1	4/18/2016	R34102
Ethyl methacrylate	ND	12		µg/L	1	4/18/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Ethyl tert-butyl ether	ND	10		µg/L	1	4/18/2016	R34102
Freon-113	ND	10		µg/L	1	4/18/2016	R34102
Isobutanol	ND	50		µg/L	1	4/18/2016	R34102
Isopropyl acetate	ND	2.5		µg/L	1	4/18/2016	R34102
Methacrylonitrile	ND	12		µg/L	1	4/18/2016	R34102
Methyl acetate	ND	2.5		µg/L	1	4/18/2016	R34102
Methyl ethyl ketone	ND	12		µg/L	1	4/18/2016	R34102
Methyl isobutyl ketone	ND	12		µg/L	1	4/18/2016	R34102
Methyl methacrylate	ND	12		µg/L	1	4/18/2016	R34102
Methylcyclohexane	ND	10		µg/L	1	4/18/2016	R34102
n-Amyl acetate	ND	2.5		µg/L	1	4/18/2016	R34102
n-Hexane	ND	10		µg/L	1	4/18/2016	R34102
Nitrobenzene	ND	25		µg/L	1	4/18/2016	R34102
Pentachloroethane	ND	25		µg/L	1	4/18/2016	R34102
p-isopropyltoluene	ND	2.5		µg/L	1	4/18/2016	R34102
Propionitrile	ND	12		µg/L	1	4/18/2016	R34102
Tetrahydrofuran	ND	10		µg/L	1	4/18/2016	R34102
Benzene	ND	2.5		µg/L	1	4/18/2016	R34102
Toluene	ND	2.5		µg/L	1	4/18/2016	R34102
Ethylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	1	4/18/2016	R34102
1,2,4-Trimethylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,3,5-Trimethylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,2-Dichloroethane (EDC)	ND	2.5		µg/L	1	4/18/2016	R34102
1,2-Dibromoethane (EDB)	ND	2.5		µg/L	1	4/18/2016	R34102
Naphthalene	ND	2.5		µg/L	1	4/18/2016	R34102
Acetone	ND	12		µg/L	1	4/18/2016	R34102
Bromobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
Bromodichloromethane	ND	2.5		µg/L	1	4/18/2016	R34102
Bromoform	ND	2.5		µg/L	1	4/18/2016	R34102
Bromomethane	ND	2.5		µg/L	1	4/18/2016	R34102
Carbon disulfide	ND	2.5		µg/L	1	4/18/2016	R34102
Carbon Tetrachloride	ND	2.5		µg/L	1	4/18/2016	R34102
Chlorobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
Chloroethane	ND	2.5		µg/L	1	4/18/2016	R34102
Chloroform	ND	2.5		µg/L	1	4/18/2016	R34102
Chloromethane	ND	2.5		µg/L	1	4/18/2016	R34102
2-Chlorotoluene	ND	2.5		µg/L	1	4/18/2016	R34102
4-Chlorotoluene	ND	2.5		µg/L	1	4/18/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
cis-1,2-DCE	ND	2.5		µg/L	1	4/18/2016	R34102
cis-1,3-Dichloropropene	ND	2.5		µg/L	1	4/18/2016	R34102
1,2-Dibromo-3-chloropropane	ND	2.5		µg/L	1	4/18/2016	R34102
Dibromochloromethane	ND	2.5		µg/L	1	4/18/2016	R34102
Dibromomethane	ND	2.5		µg/L	1	4/18/2016	R34102
1,2-Dichlorobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,3-Dichlorobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,4-Dichlorobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
Dichlorodifluoromethane	ND	2.5		µg/L	1	4/18/2016	R34102
1,1-Dichloroethane	ND	2.5		µg/L	1	4/18/2016	R34102
1,1-Dichloroethene	ND	2.5		µg/L	1	4/18/2016	R34102
1,2-Dichloropropane	ND	2.5		µg/L	1	4/18/2016	R34102
1,3-Dichloropropane	ND	2.5		µg/L	1	4/18/2016	R34102
2,2-Dichloropropane	ND	2.5		µg/L	1	4/18/2016	R34102
1,1-Dichloropropene	ND	2.5		µg/L	1	4/18/2016	R34102
Hexachlorobutadiene	ND	2.5		µg/L	1	4/18/2016	R34102
2-Hexanone	ND	2.5		µg/L	1	4/18/2016	R34102
Isopropylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
Methylene Chloride	ND	12		µg/L	1	4/18/2016	R34102
n-Butylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
n-Propylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
sec-Butylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
Styrene	ND	2.5		µg/L	1	4/18/2016	R34102
tert-Butylbenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,1,1,2-Tetrachloroethane	ND	2.5		µg/L	1	4/18/2016	R34102
1,1,2,2-Tetrachloroethane	ND	2.5		µg/L	1	4/18/2016	R34102
Tetrachloroethene (PCE)	ND	2.5		µg/L	1	4/18/2016	R34102
trans-1,2-DCE	ND	2.5		µg/L	1	4/18/2016	R34102
trans-1,3-Dichloropropene	ND	2.5		µg/L	1	4/18/2016	R34102
1,2,3-Trichlorobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,2,4-Trichlorobenzene	ND	2.5		µg/L	1	4/18/2016	R34102
1,1,1-Trichloroethane	ND	2.5		µg/L	1	4/18/2016	R34102
1,1,2-Trichloroethane	ND	2.5		µg/L	1	4/18/2016	R34102
Trichloroethene (TCE)	ND	2.5		µg/L	1	4/18/2016	R34102
Trichlorofluoromethane	ND	2.5		µg/L	1	4/18/2016	R34102
1,2,3-Trichloropropane	ND	2.5		µg/L	1	4/18/2016	R34102
Vinyl chloride	ND	2.5		µg/L	1	4/18/2016	R34102
mp-Xylenes	ND	5.0		µg/L	1	4/18/2016	R34102
o-Xylene	ND	2.5		µg/L	1	4/18/2016	R34102

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
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ND	Not Detected at the Reporting Limit	P Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
tert-Amyl methyl ether	ND	10		µg/L	1	4/18/2016	R34102
tert-Butyl alcohol	ND	20		µg/L	1	4/18/2016	R34102
Acrolein	ND	12		µg/L	1	4/18/2016	R34102
Acrylonitrile	ND	12		µg/L	1	4/18/2016	R34102
Bromochloromethane	ND	2.5		µg/L	1	4/18/2016	R34102
2-Chloroethyl vinyl ether	ND	10		µg/L	1	4/18/2016	R34102
Iodomethane	ND	2.5		µg/L	1	4/18/2016	R34102
trans-1,4-Dichloro-2-butene	ND	2.5		µg/L	1	4/18/2016	R34102
Vinyl acetate	ND	2.5		µg/L	1	4/18/2016	R34102
1,4-Dioxane	ND	100		µg/L	1	4/18/2016	R34102
Surr: 1,2-Dichlorobenzene-d4	101	70-130		%Rec	1	4/18/2016	R34102
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	4/18/2016	R34102
Surr: Toluene-d8	102	70-130		%Rec	1	4/18/2016	R34102
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
1,1-Biphenyl	ND	5.0		µg/L	1	4/14/2016	R34102
Atrazine	ND	5.0		µg/L	1	4/14/2016	R34102
Benzaldehyde	ND	5.0		µg/L	1	4/14/2016	R34102
Caprolactam	ND	5.0		µg/L	1	4/14/2016	R34102
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	4/14/2016	R34102
Acetophenone	ND	5.0		µg/L	1	4/14/2016	R34102
1-Methylnaphthalene	ND	5.0		µg/L	1	4/14/2016	R34102
2,3,4,6-Tetrachlorophenol	ND	5.0		µg/L	1	4/14/2016	R34102
2,4,5-Trichlorophenol	ND	5.0		µg/L	1	4/14/2016	R34102
2,4,6-Trichlorophenol	ND	5.0		µg/L	1	4/14/2016	R34102
2,4-Dichlorophenol	ND	5.0		µg/L	1	4/14/2016	R34102
2,4-Dimethylphenol	ND	5.0		µg/L	1	4/14/2016	R34102
2,4-Dinitrophenol	ND	5.0		µg/L	1	4/14/2016	R34102
2,4-Dinitrotoluene	ND	5.0		µg/L	1	4/14/2016	R34102
2,6-Dinitrotoluene	ND	5.0		µg/L	1	4/14/2016	R34102
2-Chloronaphthalene	ND	5.0		µg/L	1	4/14/2016	R34102
2-Chlorophenol	ND	5.0		µg/L	1	4/14/2016	R34102
2-Methylnaphthalene	ND	5.0		µg/L	1	4/14/2016	R34102
2-Methylphenol	ND	5.0		µg/L	1	4/14/2016	R34102
2-Nitroaniline	ND	5.0		µg/L	1	4/14/2016	R34102
2-Nitrophenol	ND	5.0		µg/L	1	4/14/2016	R34102
3,3'-Dichlorobenzidine	ND	5.0		µg/L	1	4/14/2016	R34102
3-Nitroaniline	ND	5.0		µg/L	1	4/14/2016	R34102
4,6-Dinitro-2-methylphenol	ND	5.0		µg/L	1	4/14/2016	R34102
4-Bromophenyl phenyl ether	ND	5.0		µg/L	1	4/14/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	4/14/2016	R34102
4-Chloroaniline	ND	5.0		µg/L	1	4/14/2016	R34102
4-Chlorophenyl phenyl ether	ND	5.0		µg/L	1	4/14/2016	R34102
4-Nitroaniline	ND	5.0		µg/L	1	4/14/2016	R34102
4-Nitrophenol	ND	5.0		µg/L	1	4/14/2016	R34102
Acenaphthene	ND	5.0		µg/L	1	4/14/2016	R34102
Acenaphthylene	ND	5.0		µg/L	1	4/14/2016	R34102
Anthracene	ND	5.0		µg/L	1	4/14/2016	R34102
Benzo(g,h,i)perylene	ND	5.0		µg/L	1	4/14/2016	R34102
Benz(a)anthracene	ND	0.50		µg/L	1	4/14/2016	R34102
Benzo(a)pyrene	ND	0.50		µg/L	1	4/14/2016	R34102
Benzo(b)fluoranthene	ND	0.50		µg/L	1	4/14/2016	R34102
Benzo(k)fluoranthene	ND	0.50		µg/L	1	4/14/2016	R34102
Bis(2-chloroethoxy)methane	ND	5.0		µg/L	1	4/14/2016	R34102
Bis(2-chloroethyl)ether	ND	5.0		µg/L	1	4/14/2016	R34102
Bis(2-chloroisopropyl)ether	ND	5.0		µg/L	1	4/14/2016	R34102
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	4/14/2016	R34102
Butyl benzyl phthalate	ND	5.0		µg/L	1	4/14/2016	R34102
Carbazole	ND	5.0		µg/L	1	4/14/2016	R34102
Chrysene	ND	0.50		µg/L	1	4/14/2016	R34102
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	4/14/2016	R34102
Dibenzofuran	ND	5.0		µg/L	1	4/14/2016	R34102
Diethyl phthalate	ND	5.0		µg/L	1	4/14/2016	R34102
Dimethyl phthalate	ND	5.0		µg/L	1	4/14/2016	R34102
Di-n-butyl phthalate	ND	5.0		µg/L	1	4/14/2016	R34102
Di-n-octyl phthalate	ND	5.0		µg/L	1	4/14/2016	R34102
Fluoranthene	ND	5.0		µg/L	1	4/14/2016	R34102
Fluorene	ND	5.0		µg/L	1	4/14/2016	R34102
Hexachlorobenzene	ND	5.0		µg/L	1	4/14/2016	R34102
Hexachlorobutadiene	ND	5.0		µg/L	1	4/14/2016	R34102
Hexachlorocyclopentadiene	ND	5.0		µg/L	1	4/14/2016	R34102
Hexachloroethane	ND	5.0		µg/L	1	4/14/2016	R34102
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	4/14/2016	R34102
Isophorone	ND	5.0		µg/L	1	4/14/2016	R34102
Naphthalene	ND	5.0		µg/L	1	4/14/2016	R34102
Nitrobenzene	ND	5.0		µg/L	1	4/14/2016	R34102
N-Nitrosodi-n-propylamine	ND	5.0		µg/L	1	4/14/2016	R34102
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	4/14/2016	R34102
Pentachlorophenol	ND	5.0		µg/L	1	4/14/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 4/5/2016 7:00:00 AM

Lab ID: 1604185-001

Matrix: AQUEOUS

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
Phenanthrene	ND	5.0		µg/L	1	4/14/2016	R34102
Phenol	ND	5.0		µg/L	1	4/14/2016	R34102
Pyrene	ND	5.0		µg/L	1	4/14/2016	R34102
o-Toluidine	ND	2.0		µg/L	1	4/14/2016	R34102
Pyridine	ND	5.0		µg/L	1	4/14/2016	R34102
1,2,4,5-Tetrachlorobenzene	ND	5.0		µg/L	1	4/14/2016	R34102
Surr: 2,4,6-Tribromophenol	108	63-110		%Rec	1	4/14/2016	R34102
Surr: 2-Fluorobiphenyl	94.0	58-112		%Rec	1	4/14/2016	R34102
Surr: 2-Fluorophenol	97.0	47-109		%Rec	1	4/14/2016	R34102
Surr: Nitrobenzene-d5	88.0	58-110		%Rec	1	4/14/2016	R34102
Surr: Phenol-d5	99.2	52-105		%Rec	1	4/14/2016	R34102
Surr: Terphenyl-d14	37.4	22-133		%Rec	1	4/14/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1604185-002

Matrix: TRIP BLANK

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acetonitrile	ND	2.5		µg/L	1	4/18/2016	R34102
Allyl chloride	ND	0.50		µg/L	1	4/18/2016	R34102
Chloroprene	ND	2.0		µg/L	1	4/18/2016	R34102
Cyclohexane	ND	2.0		µg/L	1	4/18/2016	R34102
Diethyl ether	ND	0.50		µg/L	1	4/18/2016	R34102
Diisopropyl ether	ND	2.0		µg/L	1	4/18/2016	R34102
Epichlorohydrin	ND	5.0		µg/L	1	4/18/2016	R34102
Ethyl acetate	ND	0.50		µg/L	1	4/18/2016	R34102
Ethyl methacrylate	ND	2.5		µg/L	1	4/18/2016	R34102
Ethyl tert-butyl ether	ND	2.0		µg/L	1	4/18/2016	R34102
Freon-113	ND	0.50		µg/L	1	4/18/2016	R34102
Isobutanol	ND	10		µg/L	1	4/18/2016	R34102
Isopropyl acetate	ND	0.50		µg/L	1	4/18/2016	R34102
Methacrylonitrile	ND	2.5		µg/L	1	4/18/2016	R34102
Methyl acetate	ND	0.50		µg/L	1	4/18/2016	R34102
Methyl ethyl ketone	ND	2.5		µg/L	1	4/18/2016	R34102
Methyl isobutyl ketone	ND	2.5		µg/L	1	4/18/2016	R34102
Methyl methacrylate	ND	2.5		µg/L	1	4/18/2016	R34102
Methylcyclohexane	ND	2.0		µg/L	1	4/18/2016	R34102
n-Amyl acetate	ND	0.50		µg/L	1	4/18/2016	R34102
n-Hexane	ND	2.0		µg/L	1	4/18/2016	R34102
Nitrobenzene	ND	5.0		µg/L	1	4/18/2016	R34102
Pentachloroethane	ND	5.0		µg/L	1	4/18/2016	R34102
p-isopropyltoluene	ND	0.50		µg/L	1	4/18/2016	R34102
Propionitrile	ND	2.5		µg/L	1	4/18/2016	R34102
Tetrahydrofuran	ND	2.0		µg/L	1	4/18/2016	R34102
Benzene	ND	0.50		µg/L	1	4/18/2016	R34102
Toluene	ND	0.50		µg/L	1	4/18/2016	R34102
Ethylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	4/18/2016	R34102
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	4/18/2016	R34102
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	4/18/2016	R34102
Naphthalene	ND	0.50		µg/L	1	4/18/2016	R34102
Acetone	ND	2.5		µg/L	1	4/18/2016	R34102
Bromobenzene	ND	0.50		µg/L	1	4/18/2016	R34102
Bromodichloromethane	ND	0.50		µg/L	1	4/18/2016	R34102
Bromoform	ND	0.50		µg/L	1	4/18/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1604185

Date Reported: 5/12/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1604185-002

Matrix: TRIP BLANK

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Bromomethane	ND	0.50		µg/L	1	4/18/2016	R34102
Carbon disulfide	ND	0.50		µg/L	1	4/18/2016	R34102
Carbon Tetrachloride	ND	0.50		µg/L	1	4/18/2016	R34102
Chlorobenzene	ND	0.50		µg/L	1	4/18/2016	R34102
Chloroethane	ND	0.50		µg/L	1	4/18/2016	R34102
Chloroform	ND	0.50		µg/L	1	4/18/2016	R34102
Chloromethane	ND	0.50		µg/L	1	4/18/2016	R34102
2-Chlorotoluene	ND	0.50		µg/L	1	4/18/2016	R34102
4-Chlorotoluene	ND	0.50		µg/L	1	4/18/2016	R34102
cis-1,2-DCE	ND	0.50		µg/L	1	4/18/2016	R34102
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	4/18/2016	R34102
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	4/18/2016	R34102
Dibromochloromethane	ND	0.50		µg/L	1	4/18/2016	R34102
Dibromomethane	ND	0.50		µg/L	1	4/18/2016	R34102
1,2-Dichlorobenzene	ND	0.50		µg/L	1	4/18/2016	R34102
1,3-Dichlorobenzene	ND	0.50		µg/L	1	4/18/2016	R34102
1,4-Dichlorobenzene	ND	0.50		µg/L	1	4/18/2016	R34102
Dichlorodifluoromethane	ND	0.50		µg/L	1	4/18/2016	R34102
1,1-Dichloroethane	ND	0.50		µg/L	1	4/18/2016	R34102
1,1-Dichloroethene	ND	0.50		µg/L	1	4/18/2016	R34102
1,2-Dichloropropane	ND	0.50		µg/L	1	4/18/2016	R34102
1,3-Dichloropropane	ND	0.50		µg/L	1	4/18/2016	R34102
2,2-Dichloropropane	ND	0.50		µg/L	1	4/18/2016	R34102
1,1-Dichloropropene	ND	0.50		µg/L	1	4/18/2016	R34102
Hexachlorobutadiene	ND	0.50		µg/L	1	4/18/2016	R34102
2-Hexanone	ND	0.50		µg/L	1	4/18/2016	R34102
Isopropylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
Methylene Chloride	ND	2.5		µg/L	1	4/18/2016	R34102
n-Butylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
n-Propylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
sec-Butylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
Styrene	ND	0.50		µg/L	1	4/18/2016	R34102
tert-Butylbenzene	ND	0.50		µg/L	1	4/18/2016	R34102
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	4/18/2016	R34102
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	4/18/2016	R34102
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	4/18/2016	R34102
trans-1,2-DCE	ND	0.50		µg/L	1	4/18/2016	R34102
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	4/18/2016	R34102
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	4/18/2016	R34102

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1604185-002

Matrix: TRIP BLANK

Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	4/18/2016	R34102
1,1,1-Trichloroethane	ND	0.50		µg/L	1	4/18/2016	R34102
1,1,2-Trichloroethane	ND	0.50		µg/L	1	4/18/2016	R34102
Trichloroethene (TCE)	ND	0.50		µg/L	1	4/18/2016	R34102
Trichlorofluoromethane	ND	0.50		µg/L	1	4/18/2016	R34102
1,2,3-Trichloropropane	ND	0.50		µg/L	1	4/18/2016	R34102
Vinyl chloride	ND	0.50		µg/L	1	4/18/2016	R34102
mp-Xylenes	ND	1.0		µg/L	1	4/18/2016	R34102
o-Xylene	ND	0.50		µg/L	1	4/18/2016	R34102
tert-Amyl methyl ether	ND	0.50		µg/L	1	4/18/2016	R34102
tert-Butyl alcohol	ND	5.0		µg/L	1	4/18/2016	R34102
Acrolein	ND	2.0		µg/L	1	4/18/2016	R34102
Acrylonitrile	ND	2.5		µg/L	1	4/18/2016	R34102
Bromochloromethane	ND	0.50		µg/L	1	4/18/2016	R34102
2-Chloroethyl vinyl ether	ND	2.0		µg/L	1	4/18/2016	R34102
Iodomethane	ND	0.50		µg/L	1	4/18/2016	R34102
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	4/18/2016	R34102
Vinyl acetate	ND	0.50		µg/L	1	4/18/2016	R34102
1,4-Dioxane	ND	20		µg/L	1	4/18/2016	R34102
Surr: 1,2-Dichlorobenzene-d4	98.0	70-130		%Rec	1	4/18/2016	R34102
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	4/18/2016	R34102
Surr: Toluene-d8	102	70-130		%Rec	1	4/18/2016	R34102

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R33432		RunNo: 33432							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1028123		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R33432		RunNo: 33432							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1028124		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	103	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	92.9	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.9	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A33690		RunNo: 33690							
Prep Date:	Analysis Date: 4/20/2016		SeqNo: 1037843		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: A33690		RunNo: 33690							
Prep Date:	Analysis Date: 4/20/2016		SeqNo: 1037844		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.4	0.50	5.000	0	108	90	110			
Sulfate	11	0.50	10.00	0	109	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID: MB-R34102	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES
Client ID: PBW	Batch ID: R34102	RunNo: 34102
Prep Date:	Analysis Date: 4/18/2016	SeqNo: 1051264 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	2.5								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Cyclohexane	ND	0.50								
Diethyl ether	ND	0.50								
Diisopropyl ether	ND	0.50								
Epichlorohydrin	ND	0.50								
Ethyl acetate	ND	0.50								
Ethyl methacrylate	ND	2.5								
Ethyl tert-butyl ether	ND	0.50								
Freon-113	ND	0.50								
Isobutanol	ND	10								
Isopropyl acetate	ND	0.50								
Methacrylonitrile	ND	2.5								
Methyl acetate	ND	0.50								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	2.5								
Methylcyclohexane	ND	0.50								
n-Amyl acetate	ND	0.50								
n-Hexane	ND	0.50								
Nitrobenzene	ND	0.50								
Pentachloroethane	ND	5.0								
p-isopropyltoluene	ND	0.50								
Propionitrile	ND	2.5								
Tetrahydrofuran	ND	0.50								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
Methyl tert-butyl ether (MTBE)	ND	10								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Naphthalene	ND	0.50								
Acetone	ND	2.5								
Bromobenzene	ND	0.50								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								

Qualifiers:

- * 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	MB-R34102	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R34102	RunNo:	34102					
Prep Date:		Analysis Date:	4/18/2016	SeqNo:	1051264	Units:	µg/L			

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

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID MB-R34102	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R34102		RunNo: 34102							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1051264		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
tert-Amyl methyl ether	ND	0.50								
tert-Butyl alcohol	ND	0.50								
Acrolein	ND	2.5								
Acrylonitrile	ND	0.50								
Bromochloromethane	ND	0.50								
2-Chloroethyl vinyl ether	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								
1,4-Dioxane	ND	20								

Sample ID LCS-R34102	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R34102		RunNo: 34102							
Prep Date:	Analysis Date: 4/18/2016		SeqNo: 1051265		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	10	0	10.00	0	100	80	120			
Toluene	10	0	10.00	0	105	80	120			
Ethylbenzene	10	0	10.00	0	104	80	120			
Chlorobenzene	10	0	10.00	0	103	80	120			
1,1-Dichloroethene	10	0	10.00	0	99.8	80	120			
Tetrachloroethene (PCE)	10	0	10.00	0	102	80	120			
Trichloroethene (TCE)	10	0	10.00	0	102	80	120			
o-Xylene	11	0	10.00	0	106	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	MB-R34102	SampType:	MBLK	TestCode:	EPA 8270C: Semivolatiles/Mod					
Client ID:	PBW	Batch ID:	R34102	RunNo:	34102					
Prep Date:		Analysis Date:	4/14/2016	SeqNo:	1051268	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetophenone	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2,3,4,6-Tetrachlorophenol	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dichlorophenol	ND	5.0								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
2-Chloronaphthalene	ND	5.0								
2-Chlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3,3'-Dichlorobenzidine	ND	5.0								
3-Nitroaniline	ND	5.0								
4,6-Dinitro-2-methylphenol	ND	5.0								
4-Bromophenyl phenyl ether	ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
4-Chlorophenyl phenyl ether	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Bis(2-chloroethoxy)methane	ND	5.0								
Bis(2-chloroethyl)ether	ND	5.0								
Bis(2-chloroisopropyl)ether	ND	5.0								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	5.0								
Carbazole	ND	5.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	MB-R34102	SampType:	MBLK	TestCode:	EPA 8270C: Semivolatiles/Mod					
Client ID:	PBW	Batch ID:	R34102	RunNo:	34102					
Prep Date:		Analysis Date:	4/14/2016	SeqNo:	1051268	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	5.0								
Diethyl phthalate	ND	5.0								
Dimethyl phthalate	ND	5.0								
Di-n-butyl phthalate	ND	5.0								
Di-n-octyl phthalate	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	0.10								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
o-Toluidine	ND	2.0								
Pyridine	ND	5.0								
1,2,4,5-Tetrachlorobenzene	ND	5.0								

Sample ID	LCS-R34102	SampType:	LCS	TestCode:	EPA 8270C: Semivolatiles/Mod					
Client ID:	LCSW	Batch ID:	R34102	RunNo:	34102					
Prep Date:		Analysis Date:	4/14/2016	SeqNo:	1051269	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.1	0	5.000	0	102	49	134			
2-Chlorophenol	4.7	0	5.000	0	93.8	50	131			
4-Chloro-3-methylphenol	4.8	0	5.000	0	95.4	42	139			
4-Nitrophenol	2.0	0	5.000	0	39.8	19	137			
Acenaphthene	4.4	0	5.000	0	88.2	36	122			
Bis(2-ethylhexyl)phthalate	5.0	0	5.000	0	99.2	43	142			
N-Nitrosodi-n-propylamine	4.9	0	5.000	0	97.8	46	135			

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	LCS-R34102	SampType:	LCS	TestCode:	EPA 8270C: Semivolatiles/Mod					
Client ID:	LCSW	Batch ID:	R34102	RunNo:	34102					
Prep Date:		Analysis Date:	4/14/2016	SeqNo:	1051269	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	3.6	0	5.000	0	71.4	22	138			
Phenol	4.7	0	5.000	0	94.2	45	134			
Pyrene	4.5	0	5.000	0	89.4	45	138			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	1604185-001a dup	SampType:	dup	TestCode:	SM2510B: Specific Conductance					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	R33424	RunNo:	33424					
Prep Date:		Analysis Date:	4/8/2016	SeqNo:	1027850	Units:	µmhos/cm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	4400	0.010						0.673	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	MB-24854	SampType:	MBLK	TestCode:	EPA Method 7470: Mercury					
Client ID:	PBW	Batch ID:	24854	RunNo:	33624					
Prep Date:	4/18/2016	Analysis Date:	4/19/2016	SeqNo:	1034913	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-24854	SampType:	LCS	TestCode:	EPA Method 7470: Mercury					
Client ID:	LCSW	Batch ID:	24854	RunNo:	33624					
Prep Date:	4/18/2016	Analysis Date:	4/19/2016	SeqNo:	1034914	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

Sample ID	LCSD-24854	SampType:	LCSD	TestCode:	EPA Method 7470: Mercury					
Client ID:	LCSS02	Batch ID:	24854	RunNo:	33624					
Prep Date:	4/18/2016	Analysis Date:	4/19/2016	SeqNo:	1034916	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0054	0.00020	0.005000	0	108	80	120	3.66	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	MB-24855	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	24855	RunNo:	33622					
Prep Date:	4/18/2016	Analysis Date:	4/18/2016	SeqNo:	1034672	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-24855	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	24855	RunNo:	33622					
Prep Date:	4/18/2016	Analysis Date:	4/18/2016	SeqNo:	1034674	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID MB-24833	SampType: MBLK	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: PBW	Batch ID: 24833	RunNo: 33599								
Prep Date: 4/15/2016	Analysis Date: 4/18/2016	SeqNo: 1033844	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID LCS-24833	SampType: LCS	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: LCSW	Batch ID: 24833	RunNo: 33599								
Prep Date: 4/15/2016	Analysis Date: 4/18/2016	SeqNo: 1033845	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0	0.5000	0	98.1	80	120			
Barium	ND	100	0.5000	0	95.6	80	120			
Cadmium	ND	1.0	0.5000	0	96.0	80	120			
Chromium	ND	5.0	0.5000	0	94.8	80	120			
Lead	ND	5.0	0.5000	0	95.3	80	120			
Selenium	ND	1.0	0.5000	0	95.3	80	120			
Silver	ND	5.0	0.1000	0	95.6	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.48	0.020	0.5000	0	96.0	80	120			
Arsenic	0.49	0.020	0.5000	0	98.1	80	120			
Barium	0.48	0.020	0.5000	0	95.6	80	120			
Beryllium	0.50	0.0030	0.5000	0	101	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.0	80	120			
Calcium	51	1.0	50.00	0	101	80	120			
Chromium	0.47	0.0060	0.5000	0	94.8	80	120			
Cobalt	0.47	0.0060	0.5000	0	93.4	80	120			
Copper	0.50	0.0060	0.5000	0	99.1	80	120			
Iron	0.48	0.050	0.5000	0	97.0	80	120			
Lead	0.48	0.0050	0.5000	0	95.3	80	120			
Magnesium	49	1.0	50.00	0	97.6	80	120			
Nickel	0.47	0.010	0.5000	0	93.6	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	LCS-24833	SampType:	LCS	TestCode:	EPA 6010B: Total Metals					
Client ID:	LCSW	Batch ID:	24833	RunNo:	33599					
Prep Date:	4/15/2016	Analysis Date:	4/18/2016	SeqNo:	1033772	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	49	1.0	50.00	0	97.9	80	120			
Selenium	0.48	0.050	0.5000	0	95.3	80	120			
Silver	0.096	0.0050	0.1000	0	95.6	80	120			
Sodium	50	1.0	50.00	0	100	80	120			
Thallium	0.49	0.050	0.5000	0	97.5	80	120			
Vanadium	0.50	0.050	0.5000	0	100	80	120			
Zinc	0.47	0.020	0.5000	0	94.2	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID	1604185-001a dup	SampType:	dup	TestCode:	SM4500-H+B: pH					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	R33424	RunNo:	33424					
Prep Date:		Analysis Date:	4/8/2016	SeqNo:	1027876	Units:	pH units			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.86	1.68								H

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID MB-R34102	SampType: MBLK		TestCode: CYANIDE, Reactive							
Client ID: PBW	Batch ID: R34102		RunNo: 34102							
Prep Date:	Analysis Date: 4/19/2016		SeqNo: 1051273		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID LCS-R34102	SampType: LCS		TestCode: CYANIDE, Reactive							
Client ID: LCSW	Batch ID: R34102		RunNo: 34102							
Prep Date:	Analysis Date: 4/19/2016		SeqNo: 1051275		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.523		0.5000	0	105	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID MB-R34102	SampType: MBLK		TestCode: SULFIDE, Reactive							
Client ID: PBW	Batch ID: R34102		RunNo: 34102							
Prep Date:	Analysis Date: 4/12/2016		SeqNo: 1051296		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID LCS-R34102	SampType: LCS		TestCode: SULFIDE, Reactive							
Client ID: LCSW	Batch ID: R34102		RunNo: 34102							
Prep Date:	Analysis Date: 4/12/2016		SeqNo: 1051297		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.16		0.2000	0	80.0	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 | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID mb-1	SampType: mblk		TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R33424		RunNo: 33424							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027796		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID ics-1	SampType: ics		TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R33424		RunNo: 33424							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027797		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.96	20.00	80.00	0	97.5	90	110			

Sample ID 1604185-001ams	SampType: ms		TestCode: SM2320B: Alkalinity							
Client ID: WDW-1,2,&3 Effluen	Batch ID: R33424		RunNo: 33424							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027799		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	383.7	20.00	80.00	318.5	81.5	75	105			

Sample ID 1604185-001amsd	SampType: msd		TestCode: SM2320B: Alkalinity							
Client ID: WDW-1,2,&3 Effluen	Batch ID: R33424		RunNo: 33424							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027800		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	383.5	20.00	80.00	318.5	81.2	75	105	0.0521	20	

Sample ID mb-2	SampType: mblk		TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R33424		RunNo: 33424							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027820		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID ics-2	SampType: ics		TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R33424		RunNo: 33424							
Prep Date:	Analysis Date: 4/8/2016		SeqNo: 1027821		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.00	20.00	80.00	0	97.5	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1604185

12-May-16

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

Sample ID MB-24656	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: PBW	Batch ID: 24656	RunNo: 33372								
Prep Date: 4/6/2016	Analysis Date: 4/7/2016	SeqNo: 1025974	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-24656	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: LCSW	Batch ID: 24656	RunNo: 33372								
Prep Date: 4/6/2016	Analysis Date: 4/7/2016	SeqNo: 1025975	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1040	20.0	1000	0	104	80	120			

Qualifiers:

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



Hall Environmental Analysis Laboratory
 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: **1604185**

RcptNo: **1**

Received by/date: *[Signature]*
 Logged By: **Ashley Gallegos** 4/6/2016 9:40:00 AM *[Signature]*
 Completed By: **Ashley Gallegos** 4/6/2016 12:29:51 PM *[Signature]*
 Reviewed By: *[Signature]* 04/06/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 3 2
 (<2 or >12 unless noted)
 Adjusted? NO
 Checked by: *AS*

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
 By Whom: _____ Via: eMail Phone Fax In Person
 Regarding: _____
 Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Yes			



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Turn-Around Time:
 Standard Rush
 Project Name:

Quarterly WDW-1, 2, & 3 Inj Well
 Project #: P.O. # 167796

Project Manager:
 Micki Schultz / Scott Denton / Mike Holder

Sampler: Brady Hubbard
 On Ice: Yes No

Sample Temperature: 13

HEAL No. 11004185
 -001

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type
4/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4
4/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3
4/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	3	HCL
4/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat
4/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat
4/5/16	7:00	Liquid	Trip Blank	2	Neat
4/5/16	7:00	Liquid	Temperature Blank	1	Neat

Specific Gravity, HCO3, CO3, Cl, SO4, TDS, pH, cond., F, Cation/anion bal., Br, Eh/40
 VOCs/SW-846 Method 8260C (see attached list 'VOCs')
 SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')
 R,C, I/40 CFR part 261
 Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
 Ca, K, Mg, Na/40 CFR 136.3
 TCLP Metals, only /40 CFR Part 261/SW-846 Method 1311

Received by: Elizabeth Salazar Date: 4/5/16 Time: 12:00
 Received by: [Signature] Date: 4/5/16 Time: 09:00

Remarks: Send results to Scott Denton, Mike Holder, Micki Schultz, Robert Combs and Andrew Contreras.

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

Injection Well Quarterly Sample Details Attachment



The HollyFrontier Companies

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



Project Name: WDW-1, 2, & 3 Qrtly Inj Well
 Samplers Name: Brady Hubbard
 Samplers Affiliation: Navajo Refining Co. LLC
 Start Date and Time: 4/5/2016 @ 6:47 a.m.
 End Date and Time: 4/5/2016 @ 7:05 a.m.

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

P-856 sample point (third from east)
 P-857 sample point (fourth from east)

P-849 sample point (first from east)
 P-854 sample point (second from east)

Waste water effluent pumps to injection wells.

Outfall / Sample Location:

Container #	Size	Material	# of Containers	Preservatives										Analysis and/or Method Requested	
				None	HCl	HNO ₃	H ₂ SO ₄	NaOH	Na ₂ S ₂ O ₃	NaHSO ₄	Other				
3				X			X								VOCs/SW-846 Method 8260C (see attached list 'VOCs')
1							X								SVOCS/SW-846 Method 8270D (see attached list 'SVOCS')
3							X								R, C, I/40 CFR part 261
2							X								Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
2							X								Ca, K, Mg, Na/40 CFR 136.3
2							X								TCLP Metals, only 40 CFR Part 261/SW-846 Method 1311
1							X								

Storage Method:
 Ice
 Refrigerated
 Other

Shipping Media:
 Ice
 Other

Field Data (Weather, Observations, Etc): 4/5/2016 Temp. 42.8 °F, Humidity 49%, Wind Direction Calm, Wind Speed Calm, Overall Clear
 Date and Time:
 Field Temp. 39.0C Field pH 7.71



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

August 04, 2016

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

RE: Monthly RO Reject

OrderNo.: 1607298

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/7/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1607298

Date Reported: 8/4/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Monthly RO Reject

Collection Date: 7/5/2016 9:30:00 AM

Lab ID: 1607298-001

Matrix: AQUEOUS

Received Date: 7/7/2016 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS							Analyst: JLF
Arsenic	ND	0.0050		mg/L	5	7/18/2016 7:46:42 PM	B35777
Lead	ND	0.00050		mg/L	1	7/15/2016 3:55:53 PM	C35755
Selenium	0.0084	0.0050		mg/L	5	7/18/2016 7:46:42 PM	B35777
Uranium	0.0069	0.00050		mg/L	1	7/15/2016 3:55:53 PM	C35755
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED							Analyst: SUB
Radium-226	1.1	0.776		pCi/L	1	8/3/2016	R36230
Radium-226 ±	0.646	0.776		pCi/L	1	8/3/2016	R36230
Radium-228	1.21	0.822		pCi/L	1	8/3/2016	R36230
Radium-228 ±	0.502	0.822		pCi/L	1	8/3/2016	R36230
EPA METHOD 300.0: ANIONS							Analyst: LGT
Fluoride	3.3	0.10		mg/L	1	7/8/2016 1:40:32 AM	R35519
Chloride	390	10		mg/L	20	7/8/2016 1:52:57 AM	R35519
Sulfate	1700	50		mg/L	100	7/9/2016 12:09:50 AM	A35552
Nitrate+Nitrite as N	1.9	1.0		mg/L	5	7/8/2016 2:17:46 AM	R35519
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	4120	20.0	*	mg/L	1	7/8/2016 4:07:00 PM	26273
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: SUB
Cyanide	ND	0.0100		mg/L	1	7/19/2016	R36230
SM4500-H+B: PH							Analyst: JRR
pH	7.98	1.68	H	pH units	1	7/8/2016 3:31:19 PM	R35550
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS
Aluminum	ND	0.020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Barium	0.069	0.0020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Boron	0.10	0.040		mg/L	1	7/12/2016 11:49:34 AM	C35577
Cadmium	ND	0.0020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Chromium	ND	0.0060		mg/L	1	7/12/2016 11:49:34 AM	C35577
Cobalt	ND	0.0060		mg/L	1	7/12/2016 11:49:34 AM	C35577
Copper	ND	0.0060		mg/L	1	7/12/2016 11:49:34 AM	C35577
Iron	ND	0.020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Manganese	ND	0.0020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Molybdenum	0.0095	0.0080		mg/L	1	7/12/2016 11:49:34 AM	C35577
Nickel	ND	0.010		mg/L	1	7/12/2016 11:49:34 AM	C35577
Silver	ND	0.0050		mg/L	1	7/12/2016 11:49:34 AM	C35577
Zinc	0.048	0.010		mg/L	1	7/12/2016 11:49:34 AM	C35577
EPA METHOD 245.1: MERCURY							Analyst: pmf
Mercury	ND	0.00020		mg/L	1	7/14/2016 1:04:47 PM	26380

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1607298

Date Reported: 8/4/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Monthly RO Reject

Collection Date: 7/5/2016 9:30:00 AM

Lab ID: 1607298-001

Matrix: AQUEOUS

Received Date: 7/7/2016 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB							Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	7/14/2016 4:13:40 PM	26391
EPA METHOD 8082: PCB'S							Analyst: SCC
Aroclor 1016	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1221	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1232	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1242	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1248	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1254	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1260	ND	1.0		µg/L	1	7/12/2016 11:17:01 AM	26300
Surr: Decachlorobiphenyl	104	26.1-140		%Rec	1	7/12/2016 11:17:01 AM	26300
Surr: Tetrachloro-m-xylene	103	15-123		%Rec	1	7/12/2016 11:17:01 AM	26300
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/11/2016 4:26:11 PM	26318
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/11/2016 4:26:11 PM	26318
Surr: DNOP	117	77.1-144		%Rec	1	7/11/2016 4:26:11 PM	26318
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/7/2016 3:19:48 PM	A35501
Surr: BFB	92.1	66.4-120		%Rec	1	7/7/2016 3:19:48 PM	A35501
EPA METHOD 8310: PAHS							Analyst: SCC
Naphthalene	ND	2.0		µg/L	1	7/14/2016 3:06:07 PM	26301
1-Methylnaphthalene	ND	2.0		µg/L	1	7/14/2016 3:06:07 PM	26301
2-Methylnaphthalene	ND	2.0		µg/L	1	7/14/2016 3:06:07 PM	26301
Benzo(a)pyrene	ND	0.070		µg/L	1	7/14/2016 3:06:07 PM	26301
Surr: Benzo(e)pyrene	108	20-153		%Rec	1	7/14/2016 3:06:07 PM	26301
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Toluene	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Ethylbenzene	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Carbon Tetrachloride	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Chloroform	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1-Dichloroethane	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1-Dichloroethene	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Methylene Chloride	ND	3.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1607298

Date Reported: 8/4/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Monthly RO Reject

Collection Date: 7/5/2016 9:30:00 AM

Lab ID: 1607298-001

Matrix: AQUEOUS

Received Date: 7/7/2016 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Vinyl chloride	ND	1.0		µg/L	1	7/8/2016 8:56:29 PM	B35544
Xylenes, Total	ND	1.5		µg/L	1	7/8/2016 8:56:29 PM	B35544
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	7/8/2016 8:56:29 PM	B35544
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	7/8/2016 8:56:29 PM	B35544
Surr: Dibromofluoromethane	106	70-130		%Rec	1	7/8/2016 8:56:29 PM	B35544
Surr: Toluene-d8	95.8	70-130		%Rec	1	7/8/2016 8:56:29 PM	B35544
TOTAL PHENOLICS BY SW-846 9067							Analyst: SCC
Phenolics, Total Recoverable	ND	2.5		µg/L	1	8/1/2016	26705

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1607298

Date Reported: 8/4/2016

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Monthly RO Reject

Collection Date:

Lab ID: 1607298-002

Matrix: TRIP BLANK

Received Date: 7/7/2016 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB							Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	7/14/2016 4:29:16 PM	26391
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/7/2016 4:33:38 PM	A35501
Surr: BFB	91.0	66.4-120		%Rec	1	7/7/2016 4:33:38 PM	A35501
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Toluene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Ethylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Naphthalene	ND	2.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1-Methylnaphthalene	ND	4.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Methylnaphthalene	ND	4.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Acetone	ND	10		µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromodichloromethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromoform	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromomethane	ND	3.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Butanone	ND	10		µg/L	1	7/8/2016 9:25:02 PM	B35544
Carbon disulfide	ND	10		µg/L	1	7/8/2016 9:25:02 PM	B35544
Carbon Tetrachloride	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Chlorobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Chloroethane	ND	2.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Chloroform	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Chloromethane	ND	3.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Chlorotoluene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
4-Chlorotoluene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
cis-1,2-DCE	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Dibromochloromethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Dibromomethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1607298

Date Reported: 8/4/2016

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Monthly RO Reject

Collection Date:

Lab ID: 1607298-002

Matrix: TRIP BLANK

Received Date: 7/7/2016 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1-Dichloroethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1-Dichloroethene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dichloropropane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,3-Dichloropropane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
2,2-Dichloropropane	ND	2.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1-Dichloropropene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Hexachlorobutadiene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Hexanone	ND	10		µg/L	1	7/8/2016 9:25:02 PM	B35544
Isopropylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
4-Isopropyltoluene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
4-Methyl-2-pentanone	ND	10		µg/L	1	7/8/2016 9:25:02 PM	B35544
Methylene Chloride	ND	3.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
n-Butylbenzene	ND	3.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
n-Propylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
sec-Butylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Styrene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
tert-Butylbenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
trans-1,2-DCE	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Trichlorofluoromethane	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Vinyl chloride	ND	1.0		µg/L	1	7/8/2016 9:25:02 PM	B35544
Xylenes, Total	ND	1.5		µg/L	1	7/8/2016 9:25:02 PM	B35544
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	7/8/2016 9:25:02 PM	B35544
Surr: 4-Bromofluorobenzene	98.1	70-130		%Rec	1	7/8/2016 9:25:02 PM	B35544
Surr: Dibromofluoromethane	105	70-130		%Rec	1	7/8/2016 9:25:02 PM	B35544
Surr: Toluene-d8	96.1	70-130		%Rec	1	7/8/2016 9:25:02 PM	B35544

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-C	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: C35577		RunNo: 35577							
Prep Date:	Analysis Date: 7/12/2016		SeqNo: 1101649		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								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID LCS-C	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: C35577		RunNo: 35577							
Prep Date:	Analysis Date: 7/12/2016		SeqNo: 1101650		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	107	85	115			
Barium	0.48	0.0020	0.5000	0	96.1	85	115			
Boron	0.50	0.040	0.5000	0	99.4	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.6	85	115			
Chromium	0.49	0.0060	0.5000	0	97.1	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.0	85	115			
Copper	0.49	0.0060	0.5000	0	97.7	85	115			
Iron	0.47	0.020	0.5000	0	94.7	85	115			
Manganese	0.47	0.0020	0.5000	0	94.2	85	115			
Molybdenum	0.51	0.0080	0.5000	0	103	85	115			
Nickel	0.46	0.010	0.5000	0	92.6	85	115			
Silver	0.098	0.0050	0.1000	0	98.3	85	115			
Zinc	0.48	0.010	0.5000	0	96.2	85	115			

Sample ID LLLCS-C	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: C35577		RunNo: 35577							
Prep Date:	Analysis Date: 7/12/2016		SeqNo: 1101651		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	116	50	150			
Barium	ND	0.0020	0.002000	0	94.0	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	LLLCS-C	SampType:	LCSLL	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	BatchQC	Batch ID:	C35577	RunNo:	35577					
Prep Date:		Analysis Date:	7/12/2016	SeqNo:	1101651	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.041	0.040	0.04000	0	102	50	150			
Cadmium	ND	0.0020	0.002000	0	95.0	50	150			
Chromium	0.0062	0.0060	0.006000	0	104	50	150			
Cobalt	ND	0.0060	0.006000	0	95.2	50	150			
Copper	0.0079	0.0060	0.006000	0	131	50	150			
Iron	ND	0.020	0.02000	0	99.7	50	150			
Manganese	ND	0.0020	0.002000	0	94.5	50	150			
Molybdenum	0.011	0.0080	0.008000	0	142	50	150			
Nickel	ND	0.010	0.005000	0	95.0	50	150			
Silver	0.0053	0.0050	0.005000	0	106	50	150			
Zinc	ND	0.010	0.005000	0	96.8	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: C35755		RunNo: 35755							
Prep Date:	Analysis Date: 7/15/2016		SeqNo: 1106254		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	96.1	85	115			
Uranium	0.012	0.00050	0.01250	0	96.5	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: C35755		RunNo: 35755							
Prep Date:	Analysis Date: 7/15/2016		SeqNo: 1106256		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050	0.0005000	0	96.1	50	150			
Uranium	ND	0.00050	0.0005000	0	96.2	50	150			

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: C35755		RunNo: 35755							
Prep Date:	Analysis Date: 7/15/2016		SeqNo: 1106258		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								
Uranium	ND	0.00050								

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: B35777		RunNo: 35777							
Prep Date:	Analysis Date: 7/18/2016		SeqNo: 1107271		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	95.8	85	115			
Selenium	0.024	0.0010	0.02500	0	96.7	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: B35777		RunNo: 35777							
Prep Date:	Analysis Date: 7/18/2016		SeqNo: 1107272		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	95.3	50	150			
Selenium	0.0010	0.0010	0.001000	0	102	50	150			

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: B35777		RunNo: 35777							
Prep Date:	Analysis Date: 7/18/2016		SeqNo: 1107273		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	MB	SampType:	MBLK	TestCode:	EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID:	B35777	RunNo:	35777					
Prep Date:		Analysis Date:	7/18/2016	SeqNo:	1107273	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-26380	SampType: MBLK	TestCode: EPA Method 245.1: Mercury								
Client ID: PBW	Batch ID: 26380	RunNo: 35712								
Prep Date: 7/13/2016	Analysis Date: 7/14/2016	SeqNo: 1104894	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID LCS-26380	SampType: LCS	TestCode: EPA Method 245.1: Mercury								
Client ID: LCSW	Batch ID: 26380	RunNo: 35712								
Prep Date: 7/13/2016	Analysis Date: 7/14/2016	SeqNo: 1104895	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	105	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R35519		RunNo: 35519							
Prep Date:	Analysis Date: 7/7/2016		SeqNo: 1099779		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R35519		RunNo: 35519							
Prep Date:	Analysis Date: 7/7/2016		SeqNo: 1099780		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	100	90	110			
Chloride	4.7	0.50	5.000	0	93.8	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.1	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A35552		RunNo: 35552							
Prep Date:	Analysis Date: 7/8/2016		SeqNo: 1100904		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: A35552		RunNo: 35552							
Prep Date:	Analysis Date: 7/8/2016		SeqNo: 1100905		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.7	0.50	10.00	0	96.9	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-26391	SampType: MBLK		TestCode: EPA Method 8011/504.1: EDB							
Client ID: PBW	Batch ID: 26391		RunNo: 35717							
Prep Date: 7/14/2016	Analysis Date: 7/14/2016		SeqNo: 1105070	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-26391	SampType: LCS		TestCode: EPA Method 8011/504.1: EDB							
Client ID: LCSW	Batch ID: 26391		RunNo: 35717							
Prep Date: 7/14/2016	Analysis Date: 7/14/2016		SeqNo: 1105071	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.094	0.010	0.1000	0	93.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	1607298-001BMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	R.O. Reject	Batch ID:	26318	RunNo:	35548					
Prep Date:	7/11/2016	Analysis Date:	7/11/2016	SeqNo:	1101307	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.6	1.0	5.000	0	91.7	59.4	160			
Surr: DNOP	0.53		0.5000		106	77.1	144			

Sample ID	1607298-001BMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	R.O. Reject	Batch ID:	26318	RunNo:	35548					
Prep Date:	7/11/2016	Analysis Date:	7/11/2016	SeqNo:	1101308	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.5	1.0	5.000	0	89.1	59.4	160	2.85	20	
Surr: DNOP	0.49		0.5000		97.7	77.1	144	0	0	

Sample ID	LCS-26318	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW	Batch ID:	26318	RunNo:	35548					
Prep Date:	7/11/2016	Analysis Date:	7/11/2016	SeqNo:	1101310	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.0	1.0	5.000	0	79.7	71.3	139			
Surr: DNOP	0.44		0.5000		88.9	77.1	144			

Sample ID	MB-26318	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	PBW	Batch ID:	26318	RunNo:	35548					
Prep Date:	7/11/2016	Analysis Date:	7/11/2016	SeqNo:	1101311	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	0.99		1.000		98.7	77.1	144			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID 5ML RB	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: A35501		RunNo: 35501							
Prep Date:	Analysis Date: 7/7/2016		SeqNo: 1098949		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		88.5	66.4	120			

Sample ID 2.5UG GRO LCS	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: A35501		RunNo: 35501							
Prep Date:	Analysis Date: 7/7/2016		SeqNo: 1098950		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0	106	80	120			
Surr: BFB	17		20.00		87.3	66.4	120			

Sample ID 1607298-001AMS	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: R.O. Reject	Batch ID: A35501		RunNo: 35501							
Prep Date:	Analysis Date: 7/7/2016		SeqNo: 1098954		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.55	0.050	0.5000	0	110	70	130			
Surr: BFB	19		20.00		96.5	66.4	120			

Sample ID 1607298-001AMSD	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: R.O. Reject	Batch ID: A35501		RunNo: 35501							
Prep Date:	Analysis Date: 7/7/2016		SeqNo: 1098955		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.54	0.050	0.5000	0	108	70	130	2.24	20	
Surr: BFB	19		20.00		94.9	66.4	120	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-26300	SampType: MBLK		TestCode: EPA Method 8082: PCB's							
Client ID: PBW	Batch ID: 26300		RunNo: 35574							
Prep Date: 7/8/2016	Analysis Date: 7/12/2016		SeqNo: 1101522				Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.1		2.500		82.8	26.1	140			
Surr: Tetrachloro-m-xylene	1.7		2.500		68.4	15	123			

Sample ID LCS-26300	SampType: LCS		TestCode: EPA Method 8082: PCB's							
Client ID: LCSW	Batch ID: 26300		RunNo: 35574							
Prep Date: 7/8/2016	Analysis Date: 7/12/2016		SeqNo: 1101523				Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.1	1.0	5.000	0	62.6	15	147			
Aroclor 1260	5.2	1.0	5.000	0	104	15	200			
Surr: Decachlorobiphenyl	3.1		2.500		124	26.1	140			
Surr: Tetrachloro-m-xylene	2.7		2.500		109	15	123			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	B35544	RunNo:	35544					
Prep Date:		Analysis Date:	7/8/2016	SeqNo:	1100562	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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.
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: B35544			RunNo: 35544					
Prep Date:		Analysis Date: 7/8/2016			SeqNo: 1100562		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	9.8		10.00		98.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.6	70	130			
Surr: Toluene-d8	9.5		10.00		94.9	70	130			

Sample ID	100ng Ics	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: B35544			RunNo: 35544					
Prep Date:		Analysis Date: 7/8/2016			SeqNo: 1100565		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	111	70	130			
Toluene	20	1.0	20.00	0	99.1	70	130			
Chlorobenzene	19	1.0	20.00	0	93.6	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: B35544		RunNo: 35544							
Prep Date:	Analysis Date: 7/8/2016		SeqNo: 1100565		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.5		10.00		95.4	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 | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-26301	SampType: MBLK		TestCode: EPA Method 8310: PAHs							
Client ID: PBW	Batch ID: 26301		RunNo: 35690							
Prep Date: 7/8/2016	Analysis Date: 7/14/2016		SeqNo: 1104212		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	15		20.00		74.1	20	153			

Sample ID LCS-26301	SampType: LCS		TestCode: EPA Method 8310: PAHs							
Client ID: LCSW	Batch ID: 26301		RunNo: 35690							
Prep Date: 7/8/2016	Analysis Date: 7/14/2016		SeqNo: 1104213		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	71	2.0	80.00	0	88.2	55.6	124			
1-Methylnaphthalene	67	2.0	80.20	0	84.0	55.3	124			
2-Methylnaphthalene	64	2.0	80.00	0	80.4	55.4	124			
Benzo(a)pyrene	0.42	0.070	0.5020	0	83.7	51.3	137			
Surr: Benzo(e)pyrene	14		20.00		71.6	20	153			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-26705	SampType: MBLK	TestCode: Total Phenolics by SW-846 9067								
Client ID: PBW	Batch ID: 26705	RunNo: 36172								
Prep Date: 8/1/2016	Analysis Date: 8/1/2016	SeqNo: 1120184	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-26705	SampType: LCS	TestCode: Total Phenolics by SW-846 9067								
Client ID: LCSW	Batch ID: 26705	RunNo: 36172								
Prep Date: 8/1/2016	Analysis Date: 8/1/2016	SeqNo: 1120185	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	19	2.5	20.00	0	96.7	64.4	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	MB-R36230	SampType:	MBLK	TestCode:	EPA 335.4: Total Cyanide Subbed					
Client ID:	PBW	Batch ID:	R36230	RunNo:	36230					
Prep Date:		Analysis Date:	7/19/2016	SeqNo:	1122314	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	LCS-R36230	SampType:	LCS	TestCode:	EPA 335.4: Total Cyanide Subbed					
Client ID:	LCSW	Batch ID:	R36230	RunNo:	36230					
Prep Date:		Analysis Date:	7/19/2016	SeqNo:	1122315	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.527		0.5000	0	105	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	MB-R36230	SampType:	MBLK	TestCode:	EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed					
Client ID:	PBW	Batch ID:	R36230	RunNo:	36230					
Prep Date:		Analysis Date:	8/3/2016	SeqNo:	1122317	Units:	pCi/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.0741	0.971								
Radium-226 ±	0.482	0.971								
Radium-228	-0.0123	0.985								
Radium-228 ±	0.433	0.985								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1607298

04-Aug-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-26273	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 26273		RunNo: 35537							
Prep Date: 7/7/2016	Analysis Date: 7/8/2016		SeqNo: 1100261		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-26273	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 26273		RunNo: 35537							
Prep Date: 7/7/2016	Analysis Date: 7/8/2016		SeqNo: 1100262		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	80	120			

Qualifiers:

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

Sample Log-In Check List

Client Name: **NAVAJO REFINING CO**

Work Order Number: **1607298**

RcptNo: **1**

Received by/date: AS 07/07/16

Logged By: **Lindsay Mangin** 7/7/2016 10:15:00 AM *Lindsay Mangin*

Completed By: **Lindsay Mangin** 7/7/2016 12:06:14 PM *Lindsay Mangin*

Reviewed By: AS 7/7/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 6 1

<2 or >12 (unless noted)

Adjusted? No

Checked by: *[Signature]*

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:

Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refinery

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

X Standard Level 4 (Full Validation)

Other _____

EDD (Type) _____

UNITS/QUANTITY:

X Standard Rush

Project Name:

Monthly R.O. Reject

Project #: P.O. # 167796

Project Manager:

Robert Combs

Sampler: Brady Hubbard

On Ice: Yes No

Sample Temperature: 1.0°C

Container Type and #

Preservative Type

HEAL No

1-unpres H2SO4

HCL

HNO3

HNO3

NaOH

HNO3

Na2S2O3

unpres

unpres

HCl

unpres

H2SO4

HCL

Date

Time

Relinquished by: Brady Hubbard

Relinquished by: Brady Hubbard

Date

Time

7-5-16

9:30

liquid

R.O. Reject

Sample Request ID

7-5-16

9:30

liquid

R.O. Reject

7-5



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

November 16, 2016

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

RE: Quarterly RO Reject

OrderNo.: 1610613

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/13/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610613

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Quarterly RO Reject

Collection Date: 10/11/2016 11:00:00 AM

Lab ID: 1610613-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610613

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Quarterly RO Reject

Collection Date: 10/11/2016 11:00:00 AM

Lab ID: 1610613-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610613

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: R.O. Reject

Project: Quarterly RO Reject

Collection Date: 10/11/2016 11:00:00 AM

Lab ID: 1610613-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610613

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Quarterly RO Reject

Collection Date:

Lab ID: 1610613-002

Matrix: TRIP BLANK

Received Date: 10/13/2016 8:30:00 AM

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

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID MB-B	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: B38141		RunNo: 38141							
Prep Date:	Analysis Date: 10/21/2016		SeqNo: 1190207		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID LLCS-B	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: B38141		RunNo: 38141							
Prep Date:	Analysis Date: 10/21/2016		SeqNo: 1190211		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0026	0.0020	0.002000	0	130	50	150			
Boron	0.040	0.040	0.04000	0	101	50	150			
Cadmium	ND	0.0020	0.002000	0	84.5	50	150			
Chromium	0.0062	0.0060	0.006000	0	103	50	150			
Cobalt	0.0064	0.0060	0.006000	0	106	50	150			
Manganese	0.0021	0.0020	0.002000	0	106	50	150			
Molybdenum	ND	0.0080	0.008000	0	97.5	50	150			
Nickel	ND	0.010	0.005000	0	96.6	50	150			
Silver	ND	0.0050	0.005000	0	99.4	50	150			
Zinc	ND	0.010	0.005000	0	105	50	150			

Sample ID LCS-B	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: B38141		RunNo: 38141							
Prep Date:	Analysis Date: 10/21/2016		SeqNo: 1190212		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.0020	0.5000	0	101	85	115			
Boron	0.53	0.040	0.5000	0	106	85	115			
Cadmium	0.52	0.0020	0.5000	0	104	85	115			
Chromium	0.50	0.0060	0.5000	0	101	85	115			
Cobalt	0.49	0.0060	0.5000	0	97.8	85	115			
Manganese	0.50	0.0020	0.5000	0	100	85	115			
Molybdenum	0.53	0.0080	0.5000	0	105	85	115			
Nickel	0.48	0.010	0.5000	0	96.3	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

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

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

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

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: B38214		RunNo: 38214							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1192768		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	95.6	85	115			
Selenium	0.025	0.0010	0.02500	0	99.1	85	115			
Uranium	0.012	0.00050	0.01250	0	96.0	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: B38214		RunNo: 38214							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1192770		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00051	0.00050	0.0005000	0	101	50	150			
Selenium	0.0011	0.0010	0.001000	0	113	50	150			
Uranium	ND	0.00050	0.0005000	0	97.5	50	150			

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: B38214		RunNo: 38214							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1192772		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								
Selenium	ND	0.0010								
Uranium	ND	0.00050								

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: A38300		RunNo: 38300							
Prep Date:	Analysis Date: 10/28/2016		SeqNo: 1195760		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.3	85	115			

Sample ID LLLCS	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: A38300		RunNo: 38300							
Prep Date:	Analysis Date: 10/28/2016		SeqNo: 1195761		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	99.2	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	MB	SampType:	MBLK	TestCode:	EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID:	A38300	RunNo:	38300					
Prep Date:		Analysis Date:	10/28/2016	SeqNo:	1195762	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	MB-28201	SampType:	MBLK	TestCode:	EPA Method 245.1: Mercury					
Client ID:	PBW	Batch ID:	28201	RunNo:	38122					
Prep Date:	10/20/2016	Analysis Date:	10/21/2016	SeqNo:	1189575	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-28201	SampType:	LCS	TestCode:	EPA Method 245.1: Mercury					
Client ID:	LCSW	Batch ID:	28201	RunNo:	38122					
Prep Date:	10/20/2016	Analysis Date:	10/21/2016	SeqNo:	1189576	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.4	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R37942		RunNo: 37942							
Prep Date:	Analysis Date: 10/13/2016		SeqNo: 1182401		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R37942		RunNo: 37942							
Prep Date:	Analysis Date: 10/13/2016		SeqNo: 1182402		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	107	90	110			
Chloride	4.7	0.50	5.000	0	93.9	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.3	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R38212		RunNo: 38212							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1192608		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R38212		RunNo: 38212							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1192609		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.7	0.50	10.00	0	96.9	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID MB-28082	SampType: MBLK		TestCode: EPA Method 8011/504.1: EDB							
Client ID: PBW	Batch ID: 28082		RunNo: 37992							
Prep Date: 10/17/2016	Analysis Date: 10/17/2016		SeqNo: 1183982		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID LCS-28082	SampType: LCS		TestCode: EPA Method 8011/504.1: EDB							
Client ID: LCSW	Batch ID: 28082		RunNo: 37992							
Prep Date: 10/17/2016	Analysis Date: 10/17/2016		SeqNo: 1183984		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.093	0.010	0.1000	0	93.2	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	1610613-001AMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	R.O. Reject	Batch ID:	28063	RunNo:	37940					
Prep Date:	10/14/2016	Analysis Date:	10/14/2016	SeqNo:	1183256	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.1	1.0	5.000	0	121	79.6	148			
Surr: DNOP	0.51		0.5000		103	77.1	144			

Sample ID	1610613-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	R.O. Reject	Batch ID:	28063	RunNo:	37940					
Prep Date:	10/14/2016	Analysis Date:	10/14/2016	SeqNo:	1183257	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	115	79.6	148	5.02	20	
Surr: DNOP	0.49		0.5000		98.6	77.1	144	0	0	

Sample ID	LCS-28063	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW	Batch ID:	28063	RunNo:	37940					
Prep Date:	10/14/2016	Analysis Date:	10/14/2016	SeqNo:	1183264	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	63.2	155			
Surr: DNOP	0.49		0.5000		97.8	77.1	144			

Sample ID	MB-28063	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	PBW	Batch ID:	28063	RunNo:	37940					
Prep Date:	10/14/2016	Analysis Date:	10/14/2016	SeqNo:	1183265	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		114	77.1	144			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	MB-28040	SampType:	MBLK	TestCode:	EPA Method 8082: PCB's					
Client ID:	PBW	Batch ID:	28040	RunNo:	38063					
Prep Date:	10/13/2016	Analysis Date:	10/18/2016	SeqNo:	1187392	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.7		2.500		110	26.1	140			
Surr: Tetrachloro-m-xylene	2.7		2.500		108	15	123			

Sample ID	LCS-28040	SampType:	LCS	TestCode:	EPA Method 8082: PCB's					
Client ID:	LCSW	Batch ID:	28040	RunNo:	38063					
Prep Date:	10/13/2016	Analysis Date:	10/18/2016	SeqNo:	1187408	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	5.2	1.0	5.000	0	103	15	147			
Aroclor 1260	5.2	1.0	5.000	0	105	15	200			
Surr: Decachlorobiphenyl	2.8		2.500		112	26.1	140			
Surr: Tetrachloro-m-xylene	2.8		2.500		112	15	123			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES						
Client ID:	LCSW	Batch ID:	R37973	RunNo:	37973						
Prep Date:		Analysis Date:	10/14/2016	SeqNo:	1183336	Units:	µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	20	1.0	20.00	0	100	70	130				
Toluene	20	1.0	20.00	0	98.9	70	130				
1,1-Dichloroethene	18	1.0	20.00	0	90.7	70	130				
Trichloroethene (TCE)	16	1.0	20.00	0	78.5	70	130				
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.5	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130				
Surr: Dibromofluoromethane	9.7		10.00		97.1	70	130				
Surr: Toluene-d8	10		10.00		103	70	130				

Sample ID	1610613-001bms	SampType:	MS	TestCode:	EPA Method 8260B: VOLATILES						
Client ID:	R.O. Reject	Batch ID:	R37973	RunNo:	37973						
Prep Date:		Analysis Date:	10/14/2016	SeqNo:	1183339	Units:	µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	20	1.0	20.00	0	98.2	70	130				
Toluene	19	1.0	20.00	0	97.4	70	130				
1,1-Dichloroethene	18	1.0	20.00	0	88.0	70	130				
Trichloroethene (TCE)	16	1.0	20.00	0	77.8	70	130				
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130				
Surr: 4-Bromofluorobenzene	9.6		10.00		96.3	70	130				
Surr: Dibromofluoromethane	9.9		10.00		99.3	70	130				
Surr: Toluene-d8	10		10.00		100	70	130				

Sample ID	1610613-001bmsd	SampType:	MSD	TestCode:	EPA Method 8260B: VOLATILES						
Client ID:	R.O. Reject	Batch ID:	R37973	RunNo:	37973						
Prep Date:		Analysis Date:	10/14/2016	SeqNo:	1183340	Units:	µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	19	1.0	20.00	0	97.0	70	130	1.25	20		
Toluene	18	1.0	20.00	0	92.4	70	130	5.28	20		
1,1-Dichloroethene	17	1.0	20.00	0	86.1	70	130	2.18	20		
Trichloroethene (TCE)	15	1.0	20.00	0	76.1	70	130	2.11	20		
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.9	70	130	0	0		
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130	0	0		
Surr: Dibromofluoromethane	9.9		10.00		98.9	70	130	0	0		
Surr: Toluene-d8	9.7		10.00		97.3	70	130	0	0		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R37973	RunNo:	37973					
Prep Date:		Analysis Date:	10/14/2016	SeqNo:	1183360	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.6	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID MB-28041	SampType: MBLK		TestCode: EPA Method 8310: PAHs							
Client ID: PBW	Batch ID: 28041		RunNo: 38100							
Prep Date: 10/13/2016	Analysis Date: 10/20/2016		SeqNo: 1188744				Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.1	20	153			

Sample ID LCS-28041	SampType: LCS		TestCode: EPA Method 8310: PAHs							
Client ID: LCSW	Batch ID: 28041		RunNo: 38100							
Prep Date: 10/13/2016	Analysis Date: 10/20/2016		SeqNo: 1188746				Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	81	2.0	80.00	0	101	55.6	124			
1-Methylnaphthalene	82	2.0	80.20	0	102	55.3	124			
2-Methylnaphthalene	79	2.0	80.00	0	99.2	55.4	124			
Acenaphthylene	85	2.5	80.20	0	106	60.2	119			
Acenaphthene	81	2.0	80.00	0	101	56	126			
Fluorene	7.5	0.80	8.020	0	93.9	51.6	129			
Phenanthrene	3.4	0.60	4.020	0	84.6	58.8	129			
Anthracene	4.0	0.60	4.020	0	98.8	59.9	121			
Fluoranthene	7.4	0.30	8.020	0	92.4	48	145			
Pyrene	8.2	0.30	8.020	0	102	56.2	130			
Benz(a)anthracene	0.81	0.070	0.8020	0	101	50.4	142			
Chrysene	3.9	0.20	4.020	0	95.8	54.7	134			
Benzo(b)fluoranthene	0.93	0.10	1.002	0	92.8	61.8	120			
Benzo(k)fluoranthene	0.49	0.070	0.5000	0	98.0	55.9	134			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	LCS-28041	SampType:	LCS	TestCode:	EPA Method 8310: PAHs					
Client ID:	LCSW	Batch ID:	28041	RunNo:	38100					
Prep Date:	10/13/2016	Analysis Date:	10/20/2016	SeqNo:	1188746	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.51	0.070	0.5020	0	102	51.3	137			
Dibenz(a,h)anthracene	0.98	0.12	1.002	0	97.8	57.8	134			
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	100	57.2	134			
Indeno(1,2,3-cd)pyrene	2.2	0.25	2.004	0	108	58.2	137			
Surr: Benzo(e)pyrene	20		20.00		100	20	153			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	MB-28115	SampType:	MBLK	TestCode:	Total Phenolics by SW-846 9067					
Client ID:	PBW	Batch ID:	28115	RunNo:	38004					
Prep Date:	10/18/2016	Analysis Date:	10/18/2016	SeqNo:	1184471	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND	2.5								

Sample ID	LCS-28115	SampType:	LCS	TestCode:	Total Phenolics by SW-846 9067					
Client ID:	LCSW	Batch ID:	28115	RunNo:	38004					
Prep Date:	10/18/2016	Analysis Date:	10/18/2016	SeqNo:	1184472	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	22	2.5	20.00	0	109	64.4	135			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

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

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID 1610613-001bms	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: R.O. Reject	Batch ID: W38060		RunNo: 38060							
Prep Date:	Analysis Date: 10/20/2016		SeqNo: 1187259		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	97.8	53.8	128			
Surr: BFB	9.2		10.00		92.3	70	130			

Sample ID 1610613-001bmsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: R.O. Reject	Batch ID: W38060		RunNo: 38060							
Prep Date:	Analysis Date: 10/20/2016		SeqNo: 1187260		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	88.0	53.8	128	10.6	20	
Surr: BFB	8.6		10.00		86.5	70	130	0	0	

Sample ID rb	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: W38060		RunNo: 38060							
Prep Date:	Analysis Date: 10/19/2016		SeqNo: 1187443		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	8.9		10.00		88.8	70	130			

Sample ID 2.5ug gro lcs	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: W38060		RunNo: 38060							
Prep Date:	Analysis Date: 10/19/2016		SeqNo: 1188464		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0	105	75.4	118			
Surr: BFB	9.3		10.00		93.3	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID	MB-R38749	SampType:	MBLK	TestCode:	EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed					
Client ID:	PBW	Batch ID:	R38749	RunNo:	38749					
Prep Date:		Analysis Date:	11/16/2016	SeqNo:	1210512	Units:	pCi/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0	0.518								
Radium-226 ±	0.321	0.518								
Radium-228	0.2	0.627								
Radium-228 ±	0.292	0.627								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610613

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly RO Reject

Sample ID MB-28134	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 28134		RunNo: 38086							
Prep Date: 10/18/2016	Analysis Date: 10/20/2016		SeqNo: 1188295		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID LCS-28134	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 28134		RunNo: 38086							
Prep Date: 10/18/2016	Analysis Date: 10/20/2016		SeqNo: 1188296		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

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

Sample Log-In Check List

Client Name: **NAVAJO-REFINING CO** Wprk Order Number: **1610613** RcptNo: **1**

Received by/date: AG 10/13/16

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

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

Reviewed By: AG 10/13/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 51
 (2 or 12 unless noted)

Adjusted? NO

Checked by: AG

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			



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

November 16, 2016

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

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

OrderNo.: 1610612

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/13/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



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

Case Narrative

WO#: 1610612
Date: 11/16/2016

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

Analytical Comments for WDW-1,2, & 3 Effluent:

The above referenced water sample was analyzed by EPA 8260C and the corresponding analytical report is attached in the following pages. The analyst also performed an NIST library review of the sample and the tentatively identified compounds (TIC's) are listed with estimated concentrations; 3-chloro-2-methyl-1-propene (~1 ppb), dibromofluoromethane (~9 ppb) and dimethyl disulfide (~1 ppb). The above referenced water sample was also analyzed by EPA 8270D and the corresponding analytical report is attached in the following pages.

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010							
Ignitability	>200	0		°F	1	10/18/2016	R38745
SULFIDE, REACTIVE							
Reactive Sulfide	ND	0.40		mg/L	1	10/18/2016	R38745
SPECIFIC GRAVITY							
Specific Gravity	0.9997	0			1	10/27/2016 10:52:00 AM	R38258
EPA METHOD 300.0: ANIONS							
Fluoride	35	2.0	*	mg/L	20	10/14/2016 12:19:11 AM	R37942
Chloride	360	25		mg/L	50	10/25/2016 9:50:38 PM	R38187
Bromide	0.72	0.10		mg/L	1	10/14/2016 12:06:47 AM	R37942
Phosphorus, Orthophosphate (As P)	ND	10	H	mg/L	20	10/14/2016 12:19:11 AM	R37942
Sulfate	1500	25		mg/L	50	10/25/2016 9:50:38 PM	R38187
Nitrate+Nitrite as N	ND	1.0		mg/L	5	10/14/2016 1:21:13 AM	R37942
SM2510B: SPECIFIC CONDUCTANCE							
Conductivity	4900	1.0		µmhos/cm	1	10/18/2016 4:54:00 PM	R38048
SM2320B: ALKALINITY							
Bicarbonate (As CaCO3)	288.8	20.00		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
Total Alkalinity (as CaCO3)	288.8	20.00		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
SM2540C MOD: TOTAL DISSOLVED SOLIDS							
Total Dissolved Solids	3210	20.0	*	mg/L	1	10/18/2016 6:58:00 PM	28098
CORROSIVITY							
pH	8.23			pH Units	1	10/17/2016	R38745
CYANIDE, REACTIVE							
Cyanide, Reactive	0.0250	0.0100		mg/L	1	10/25/2016	R38745
SM4500-H+B: PH							
pH	8.10	1.68	H	pH units	1	10/18/2016 4:54:00 PM	R38048
EPA METHOD 7470: MERCURY							
Mercury	ND	0.00020		mg/L	1	10/18/2016 5:17:17 PM	28113
MERCURY, TCLP							
Mercury	ND	0.020		mg/L	1	10/19/2016 5:06:28 PM	28165
EPA METHOD 6010B: TCLP METALS							
Arsenic	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Barium	ND	100		mg/L	1	10/24/2016 8:45:55 AM	28191

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS							Analyst: MED
Cadmium	ND	1.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Chromium	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Lead	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Selenium	ND	1.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Silver	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
EPA 6010B: METALS							Analyst: MED
Aluminum	0.31	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
Antimony	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Arsenic	0.040	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
Barium	ND	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
Beryllium	ND	0.0030		mg/L	1	10/31/2016 10:15:38 AM	28190
Cadmium	ND	0.0020		mg/L	1	10/31/2016 10:15:38 AM	28190
Calcium	96	5.0		mg/L	5	11/7/2016 12:08:14 PM	28190
Chromium	ND	0.0060		mg/L	1	10/31/2016 10:15:38 AM	28190
Cobalt	ND	0.0060		mg/L	1	10/31/2016 10:15:38 AM	28190
Copper	0.017	0.0060		mg/L	1	10/31/2016 10:15:38 AM	28190
Iron	0.14	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Lead	ND	0.0050		mg/L	1	10/31/2016 10:15:38 AM	28190
Magnesium	36	1.0		mg/L	1	11/7/2016 12:04:39 PM	28190
Manganese	0.052	0.0020		mg/L	1	10/31/2016 10:15:38 AM	28190
Nickel	ND	0.010		mg/L	1	10/31/2016 10:15:38 AM	28190
Potassium	120	5.0		mg/L	5	10/31/2016 10:22:16 AM	28190
Selenium	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Silver	ND	0.0050		mg/L	1	10/31/2016 10:15:38 AM	28190
Sodium	800	10		mg/L	10	11/7/2016 12:15:14 PM	28190
Thallium	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Vanadium	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Zinc	0.027	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
EPA METHOD 8260B: VOLATILES							Analyst: SUB
2-isopropyltoluene	ND	0.50		µg/L	1	10/20/2016	R38745
Acetonitrile	58	5.0		µg/L	1	10/20/2016	R38745
Allyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroprene	ND	0.50		µg/L	1	10/20/2016	R38745
Cyclohexane	ND	0.50		µg/L	1	10/20/2016	R38745
Diethyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Epichlorohydrin	ND	100		µg/L	1	10/20/2016	R38745
Ethyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Ethyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Ethyl tert-butyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Freon-113	ND	0.50		µg/L	1	10/20/2016	R38745
Isobutanol	ND	100		µg/L	1	10/20/2016	R38745
Isopropyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methacrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl ethyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl isobutyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745
Methylcyclohexane	ND	1.0		µg/L	1	10/20/2016	R38745
n-Amyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
n-Hexane	ND	0.50		µg/L	1	10/20/2016	R38745
Nitrobenzene	ND	5.0		µg/L	1	10/20/2016	R38745
Pentachloroethane	ND	5.0		µg/L	1	10/20/2016	R38745
p-isopropyltoluene	ND	0.50		µg/L	1	10/20/2016	R38745
Propionitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Tetrahydrofuran	ND	0.50		µg/L	1	10/20/2016	R38745
Benzene	ND	0.50		µg/L	1	10/20/2016	R38745
Toluene	ND	0.50		µg/L	1	10/20/2016	R38745
Ethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	10/20/2016	R38745
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	10/20/2016	R38745
Naphthalene	ND	0.50		µg/L	1	10/20/2016	R38745
Acetone	4.2	2.5		µg/L	1	10/20/2016	R38745
Bromobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Bromodichloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Bromoform	ND	0.50		µg/L	1	10/20/2016	R38745
Bromomethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Butanone	ND	2.5		µg/L	1	10/20/2016	R38745
Carbon disulfide	0.96	0.50		µg/L	1	10/20/2016	R38745
Carbon Tetrachloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroform	ND	0.50		µg/L	1	10/20/2016	R38745
Chloromethane	1.1	0.50		µg/L	1	10/20/2016	R38745
2-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
4-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromomethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,4-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Dichlorodifluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
2,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
Hexachlorobutadiene	ND	0.50		µg/L	1	10/20/2016	R38745
2-Hexanone	ND	0.50		µg/L	1	10/20/2016	R38745
Isopropylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methylene Chloride	ND	2.5		µg/L	1	10/20/2016	R38745
n-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
n-Propylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
sec-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Styrene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Trichloroethene (TCE)	ND	0.50		µg/L	1	10/20/2016	R38745
Trichlorofluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
mp-Xylenes	ND	1.0		µg/L	1	10/20/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
o-Xylene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Amyl methyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butyl alcohol	ND	0.50		µg/L	1	10/20/2016	R38745
Acrolein	ND	2.5		µg/L	1	10/20/2016	R38745
Acrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Bromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Iodomethane	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Surr: 1,2-Dichlorobenzene-d4	105	0-0	S	%Rec	1	10/20/2016	R38745
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	10/20/2016	R38745
Surr: Toluene-d8	100	70-130		%Rec	1	10/20/2016	R38745
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
1,1-Biphenyl	ND	1.0		µg/L	1	10/29/2016	R38745
Atrazine	ND	1.0		µg/L	1	10/29/2016	R38745
Benzaldehyde	2.5	1.0		µg/L	1	10/29/2016	R38745
Caprolactam	ND	1.0		µg/L	1	10/29/2016	R38745
N-Nitroso-di-n-butylamine	ND	1.0		µg/L	1	10/29/2016	R38745
Acetophenone	ND	5.0		µg/L	1	10/29/2016	R38745
1-Methylnaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2,3,4,6-Tetrachlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4,5-Trichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4,6-Trichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dimethylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dinitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dinitrotoluene	ND	5.0		µg/L	1	10/29/2016	R38745
2,6-Dinitrotoluene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Chloronaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Chlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2-Methylnaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
2-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
2-Nitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
3,3'-Dichlorobenzidine	ND	5.0		µg/L	1	10/29/2016	R38745
3-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4,6-Dinitro-2-methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
4-Bromophenyl phenyl ether	ND	5.0		µg/L	1	10/29/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
4-Chloroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4-Chlorophenyl phenyl ether	ND	5.0		µg/L	1	10/29/2016	R38745
4-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4-Nitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
Acenaphthene	ND	5.0		µg/L	1	10/29/2016	R38745
Acenaphthylene	ND	5.0		µg/L	1	10/29/2016	R38745
Anthracene	ND	5.0		µg/L	1	10/29/2016	R38745
Benzo(g,h,i)perylene	ND	5.0		µg/L	1	10/29/2016	R38745
Benz(a)anthracene	ND	0.10		µg/L	1	10/29/2016	R38745
Benzo(a)pyrene	ND	0.10		µg/L	1	10/29/2016	R38745
Benzo(b)fluoranthene	ND	0.10		µg/L	1	10/29/2016	R38745
Benzo(k)fluoranthene	ND	0.10		µg/L	1	10/29/2016	R38745
Bis(2-chloroethoxy)methane	ND	5.0		µg/L	1	10/29/2016	R38745
Bis(2-chloroethyl)ether	ND	5.0		µg/L	1	10/29/2016	R38745
Bis(2-chloroisopropyl)ether	ND	5.0		µg/L	1	10/29/2016	R38745
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Butyl benzyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Carbazole	ND	5.0		µg/L	1	10/29/2016	R38745
Chrysene	ND	0.10		µg/L	1	10/29/2016	R38745
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	10/29/2016	R38745
Dibenzofuran	ND	5.0		µg/L	1	10/29/2016	R38745
Diethyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Dimethyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Di-n-butyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Di-n-octyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Fluoranthene	ND	5.0		µg/L	1	10/29/2016	R38745
Fluorene	ND	5.0		µg/L	1	10/29/2016	R38745
Hexachlorobenzene	ND	1.0		µg/L	1	10/29/2016	R38745
Hexachlorobutadiene	ND	5.0		µg/L	1	10/29/2016	R38745
Hexachlorocyclopentadiene	ND	5.0		µg/L	1	10/29/2016	R38745
Hexachloroethane	ND	5.0		µg/L	1	10/29/2016	R38745
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	10/29/2016	R38745
Isophorone	ND	5.0		µg/L	1	10/29/2016	R38745
Naphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
Nitrobenzene	ND	5.0		µg/L	1	10/29/2016	R38745
N-Nitrosodi-n-propylamine	ND	5.0		µg/L	1	10/29/2016	R38745
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	10/29/2016	R38745
Pentachlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

Collection Date: 10/11/2016 9:00:00 AM

Lab ID: 1610612-001

Matrix: AQUEOUS

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
Phenanthrene	ND	5.0		µg/L	1	10/29/2016	R38745
Phenol	ND	5.0		µg/L	1	10/29/2016	R38745
Pyrene	ND	5.0		µg/L	1	10/29/2016	R38745
o-Toluidine	ND	2.0		µg/L	1	10/29/2016	R38745
Pyridine	ND	5.0		µg/L	1	10/29/2016	R38745
1,2,4,5-Tetrachlorobenzene	ND	5.0		µg/L	1	10/29/2016	R38745
Surr: 2,4,6-Tribromophenol	103	63-110		%Rec	1	10/29/2016	R38745
Surr: 2-Fluorobiphenyl	92.4	58-112		%Rec	1	10/29/2016	R38745
Surr: 2-Fluorophenol	87.2	47-109		%Rec	1	10/29/2016	R38745
Surr: Nitrobenzene-d5	83.6	58-110		%Rec	1	10/29/2016	R38745
Surr: Phenol-d5	85.4	52-105		%Rec	1	10/29/2016	R38745
Surr: Terphenyl-d14	46.0	22-133		%Rec	1	10/29/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1610612-002

Matrix: TRIP BLANK

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acetonitrile	ND	5.0		µg/L	1	10/20/2016	R38745
Allyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroprene	ND	0.50		µg/L	1	10/20/2016	R38745
Cyclohexane	ND	0.50		µg/L	1	10/20/2016	R38745
Diethyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Epichlorohydrin	ND	100		µg/L	1	10/20/2016	R38745
Ethyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Ethyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745
Ethyl tert-butyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Freon-113	ND	0.50		µg/L	1	10/20/2016	R38745
Isobutanol	ND	100		µg/L	1	10/20/2016	R38745
Isopropyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methacrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl ethyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl isobutyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745
Methylcyclohexane	ND	1.0		µg/L	1	10/20/2016	R38745
n-Amyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
n-Hexane	ND	0.50		µg/L	1	10/20/2016	R38745
Nitrobenzene	ND	5.0		µg/L	1	10/20/2016	R38745
Pentachloroethane	ND	5.0		µg/L	1	10/20/2016	R38745
p-isopropyltoluene	ND	0.50		µg/L	1	10/20/2016	R38745
Propionitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Tetrahydrofuran	ND	0.50		µg/L	1	10/20/2016	R38745
Benzene	ND	0.50		µg/L	1	10/20/2016	R38745
Toluene	ND	0.50		µg/L	1	10/20/2016	R38745
Ethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	10/20/2016	R38745
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	10/20/2016	R38745
Naphthalene	ND	0.50		µg/L	1	10/20/2016	R38745
Acetone	ND	2.5		µg/L	1	10/20/2016	R38745
Bromobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Bromodichloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Bromoform	ND	0.50		µg/L	1	10/20/2016	R38745
Bromomethane	ND	0.50		µg/L	1	10/20/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1610612-002

Matrix: TRIP BLANK

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
2-Butanone	ND	2.5		µg/L	1	10/20/2016	R38745
Carbon disulfide	ND	0.50		µg/L	1	10/20/2016	R38745
Carbon Tetrachloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroform	ND	0.50		µg/L	1	10/20/2016	R38745
Chloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745
4-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromomethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,4-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Dichlorodifluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
2,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
Hexachlorobutadiene	ND	0.50		µg/L	1	10/20/2016	R38745
2-Hexanone	ND	0.50		µg/L	1	10/20/2016	R38745
Isopropylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methylene Chloride	ND	2.5		µg/L	1	10/20/2016	R38745
n-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
n-Propylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
sec-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Styrene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1610612

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Client Sample ID: TRIP BLANK

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

Collection Date:

Lab ID: 1610612-002

Matrix: TRIP BLANK

Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Trichloroethene (TCE)	ND	0.50		µg/L	1	10/20/2016	R38745
Trichlorofluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
mp-Xylenes	ND	1.0		µg/L	1	10/20/2016	R38745
o-Xylene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Amyl methyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butyl alcohol	ND	0.50		µg/L	1	10/20/2016	R38745
Acrolein	ND	2.5		µg/L	1	10/20/2016	R38745
Acrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Bromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Iodomethane	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Surr: 1,2-Dichlorobenzene-d4	102	0-0	S	%Rec	1	10/20/2016	R38745
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	10/20/2016	R38745
Surr: Toluene-d8	98.0	70-130		%Rec	1	10/20/2016	R38745

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R37942		RunNo: 37942							
Prep Date:	Analysis Date: 10/13/2016		SeqNo: 1182401		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R37942		RunNo: 37942							
Prep Date:	Analysis Date: 10/13/2016		SeqNo: 1182402		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	107	90	110			
Bromide	2.6	0.10	2.500	0	103	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.6	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.3	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R38187		RunNo: 38187							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1193019		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R38187		RunNo: 38187							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1193020		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.7	90	110			
Sulfate	9.9	0.50	10.00	0	99.1	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	MB-R38745	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R38745	RunNo:	38745					
Prep Date:		Analysis Date:	10/20/2016	SeqNo:	1210379	Units:	µg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.50								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Ethyl methacrylate	ND	2.5								
Isobutanol	ND	10								
Methacrylonitrile	ND	2.5								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	2.5								
Propionitrile	ND	2.5								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Acetone	ND	2.5								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								
Bromomethane	ND	0.50								
2-Butanone	ND	2.5								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	MB-R38745	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R38745	RunNo:	38745					
Prep Date:		Analysis Date:	10/20/2016	SeqNo:	1210379	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.50								
2-Hexanone	ND	0.50								
Methylene Chloride	ND	2.5								
Styrene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
Acrolein	ND	2.5								
Acrylonitrile	ND	2.5								
Bromochloromethane	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								

Sample ID	LCS-R38745	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	R38745	RunNo:	38745					
Prep Date:		Analysis Date:	10/20/2016	SeqNo:	1210380	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.7	0	10.00	0	96.7	80	120			
Toluene	9.7	0	10.00	0	97.2	80	120			
Ethylbenzene	9.8	0	10.00	0	98.0	80	120			
Chlorobenzene	9.8	0	10.00	0	97.8	80	120			
1,1-Dichloroethene	9.7	0	10.00	0	96.7	80	120			
Tetrachloroethene (PCE)	9.5	0	10.00	0	95.0	80	120			
Trichloroethene (TCE)	9.7	0	10.00	0	96.6	80	120			
o-Xylene	10	0	10.00	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	MB-R38745	SampType:	MBLK	TestCode:	EPA 8270C: Semivolatiles/Mod					
Client ID:	PBW	Batch ID:	R38745	RunNo:	38745					
Prep Date:		Analysis Date:	10/29/2016	SeqNo:	1210383	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetophenone	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2,3,4,6-Tetrachlorophenol	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dichlorophenol	ND	5.0								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
2-Chloronaphthalene	ND	5.0								
2-Chlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3,3'-Dichlorobenzidine	ND	5.0								
3-Nitroaniline	ND	5.0								
4,6-Dinitro-2-methylphenol	ND	5.0								
4-Bromophenyl phenyl ether	ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
4-Chlorophenyl phenyl ether	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Bis(2-chloroethoxy)methane	ND	5.0								
Bis(2-chloroethyl)ether	ND	5.0								
Bis(2-chloroisopropyl)ether	ND	5.0								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	5.0								
Carbazole	ND	5.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID MB-R38745	SampType: MBLK	TestCode: EPA 8270C: Semivolatiles/Mod
Client ID: PBW	Batch ID: R38745	RunNo: 38745
Prep Date:	Analysis Date: 10/29/2016	SeqNo: 1210383 Units: µg/L

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

Sample ID LCS-R38745	SampType: LCS	TestCode: EPA 8270C: Semivolatiles/Mod
Client ID: LCSW	Batch ID: R38745	RunNo: 38745
Prep Date:	Analysis Date: 10/29/2016	SeqNo: 1210384 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.5	0	5.000	0	110	49	134			
2-Chlorophenol	4.6	0	5.000	0	91.4	50	131			
4-Chloro-3-methylphenol	5.1	0	5.000	0	102	42	139			
4-Nitrophenol	5.5	0	5.000	0	110	19	137			
Acenaphthene	5.0	0	5.000	0	101	36	122			
Bis(2-ethylhexyl)phthalate	4.9	0	5.000	0	98.6	43	142			
N-Nitrosodi-n-propylamine	4.3	0	5.000	0	86.8	46	140			

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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	LCS-R38745	SampType:	LCS	TestCode:	EPA 8270C: Semivolatiles/Mod					
Client ID:	LCSW	Batch ID:	R38745	RunNo:	38745					
Prep Date:		Analysis Date:	10/29/2016	SeqNo:	1210384	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	5.5	0	5.000	0	111	22	138			
Phenol	4.7	0	5.000	0	94.4	45	134			
Pyrene	4.5	0	5.000	0	90.8	45	138			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	MB-28113	SampType:	MBLK	TestCode:	EPA Method 7470: Mercury					
Client ID:	PBW	Batch ID:	28113	RunNo:	38030					
Prep Date:	10/17/2016	Analysis Date:	10/18/2016	SeqNo:	1185736	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-28113	SampType:	LCS	TestCode:	EPA Method 7470: Mercury					
Client ID:	LCSW	Batch ID:	28113	RunNo:	38030					
Prep Date:	10/17/2016	Analysis Date:	10/18/2016	SeqNo:	1185737	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	80	120			

Sample ID	1610612-001BMS	SampType:	MS	TestCode:	EPA Method 7470: Mercury					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	28113	RunNo:	38030					
Prep Date:	10/17/2016	Analysis Date:	10/18/2016	SeqNo:	1185804	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0061	0.00020	0.005000	0.0001625	118	75	125			

Sample ID	1610612-001BMSD	SampType:	MSD	TestCode:	EPA Method 7470: Mercury					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	28113	RunNo:	38030					
Prep Date:	10/17/2016	Analysis Date:	10/18/2016	SeqNo:	1185805	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0059	0.00020	0.005000	0.0001625	114	75	125	3.16	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	MB-28165	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	28165	RunNo:	38056					
Prep Date:	10/19/2016	Analysis Date:	10/19/2016	SeqNo:	1186813	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-28165	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	28165	RunNo:	38056					
Prep Date:	10/19/2016	Analysis Date:	10/19/2016	SeqNo:	1186814	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID MB-28191	SampType: MBLK	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: PBW	Batch ID: 28191	RunNo: 38144								
Prep Date: 10/20/2016	Analysis Date: 10/24/2016	SeqNo: 1190360	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID LCS-28191	SampType: LCS	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: LCSW	Batch ID: 28191	RunNo: 38144								
Prep Date: 10/20/2016	Analysis Date: 10/24/2016	SeqNo: 1190361	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0	0.5000	0	108	80	120			
Barium	ND	100	0.5000	0	96.0	80	120			
Cadmium	ND	1.0	0.5000	0	101	80	120			
Chromium	ND	5.0	0.5000	0	97.0	80	120			
Lead	ND	5.0	0.5000	0	93.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	106	80	120			

Sample ID TCLP FL#2-2661	SampType: MBLK	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: PBW	Batch ID: 28191	RunNo: 38144								
Prep Date: 10/20/2016	Analysis Date: 10/24/2016	SeqNo: 1190451	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	MB-28190	SampType:	MBLK	TestCode:	EPA 6010B: Metals					
Client ID:	PBW	Batch ID:	28190	RunNo:	38332					
Prep Date:	10/20/2016	Analysis Date:	10/31/2016	SeqNo:	1196520	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID	LCS-28190	SampType:	LCS	TestCode:	EPA 6010B: Metals					
Client ID:	LCSW	Batch ID:	28190	RunNo:	38332					
Prep Date:	10/20/2016	Analysis Date:	10/31/2016	SeqNo:	1196521	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.55	0.020	0.5000	0	109	80	120			
Antimony	0.49	0.050	0.5000	0	98.4	80	120			
Arsenic	0.52	0.020	0.5000	0	104	80	120			
Barium	0.50	0.020	0.5000	0	100	80	120			
Beryllium	0.53	0.0030	0.5000	0	106	80	120			
Cadmium	0.51	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	99.5	80	120			
Cobalt	0.49	0.0060	0.5000	0	97.7	80	120			
Copper	0.50	0.0060	0.5000	0	99.6	80	120			
Iron	0.50	0.050	0.5000	0	101	80	120			
Lead	0.50	0.0050	0.5000	0	99.5	80	120			
Manganese	0.50	0.0020	0.5000	0	100	80	120			
Nickel	0.50	0.010	0.5000	0	99.9	80	120			
Potassium	50	1.0	50.00	0	100	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	LCS-28190		SampType:	LCS		TestCode:	EPA 6010B: Metals				
Client ID:	LCSW		Batch ID:	28190		RunNo:	38332				
Prep Date:	10/20/2016	Analysis Date:	10/31/2016		SeqNo:	1196521	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	0.49	0.050	0.5000	0	99.0	80	120				
Silver	0.10	0.0050	0.1000	0	103	80	120				
Thallium	0.49	0.050	0.5000	0	98.9	80	120				
Vanadium	0.53	0.050	0.5000	0	105	80	120				
Zinc	0.50	0.020	0.5000	0	101	80	120				

Sample ID	1610612-001BMS		SampType:	MS		TestCode:	EPA 6010B: Metals				
Client ID:	WDW-1,2,&3 Effluen		Batch ID:	28190		RunNo:	38332				
Prep Date:	10/20/2016	Analysis Date:	10/31/2016		SeqNo:	1196523	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aluminum	0.89	0.020	0.5000	0.3134	115	75	125				
Antimony	0.47	0.050	0.5000	0	94.3	75	125				
Arsenic	0.57	0.020	0.5000	0.04017	106	75	125				
Barium	0.50	0.020	0.5000	0.01602	96.0	75	125				
Beryllium	0.51	0.0030	0.5000	0	102	75	125				
Cadmium	0.50	0.0020	0.5000	0	99.7	75	125				
Chromium	0.47	0.0060	0.5000	0	94.3	75	125				
Cobalt	0.47	0.0060	0.5000	0.003260	93.6	75	125				
Copper	0.53	0.0060	0.5000	0.01704	103	75	125				
Iron	0.63	0.050	0.5000	0.1353	98.3	75	125				
Lead	0.47	0.0050	0.5000	0	94.8	75	125				
Manganese	0.53	0.0020	0.5000	0.05227	95.7	75	125				
Nickel	0.49	0.010	0.5000	0.006520	95.7	75	125				
Selenium	0.52	0.050	0.5000	0	103	75	125				
Silver	0.10	0.0050	0.1000	0	104	75	125				
Thallium	0.46	0.050	0.5000	0.01260	89.8	75	125				
Vanadium	0.52	0.050	0.5000	0.006120	103	75	125				
Zinc	0.53	0.020	0.5000	0.02719	99.6	75	125				

Sample ID	1610612-001BMSD		SampType:	MSD		TestCode:	EPA 6010B: Metals				
Client ID:	WDW-1,2,&3 Effluen		Batch ID:	28190		RunNo:	38332				
Prep Date:	10/20/2016	Analysis Date:	10/31/2016		SeqNo:	1196524	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aluminum	0.88	0.020	0.5000	0.3134	114	75	125	0.858	20		
Antimony	0.45	0.050	0.5000	0	90.8	75	125	3.77	20		
Arsenic	0.55	0.020	0.5000	0.04017	103	75	125	2.57	20		
Barium	0.49	0.020	0.5000	0.01602	94.6	75	125	1.42	20		
Beryllium	0.51	0.0030	0.5000	0	101	75	125	1.17	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID 1610612-001BMSD		SampType: MSD		TestCode: EPA 6010B: Metals						
Client ID: WDW-1,2,&3 Effluen		Batch ID: 28190		RunNo: 38332						
Prep Date: 10/20/2016		Analysis Date: 10/31/2016		SeqNo: 1196524		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.49	0.0020	0.5000	0	98.2	75	125	1.47	20	
Chromium	0.46	0.0060	0.5000	0	92.6	75	125	1.81	20	
Cobalt	0.46	0.0060	0.5000	0.003260	91.8	75	125	1.92	20	
Copper	0.54	0.0060	0.5000	0.01704	104	75	125	0.996	20	
Iron	0.64	0.050	0.5000	0.1353	102	75	125	2.59	20	
Lead	0.47	0.0050	0.5000	0	93.8	75	125	1.05	20	
Manganese	0.52	0.0020	0.5000	0.05227	94.4	75	125	1.23	20	
Nickel	0.48	0.010	0.5000	0.006520	94.3	75	125	1.45	20	
Selenium	0.51	0.050	0.5000	0	102	75	125	1.76	20	
Silver	0.10	0.0050	0.1000	0	103	75	125	1.49	20	
Thallium	0.45	0.050	0.5000	0.01260	86.9	75	125	3.22	20	
Vanadium	0.51	0.050	0.5000	0.006120	101	75	125	1.60	20	
Zinc	0.52	0.020	0.5000	0.02719	98.2	75	125	1.35	20	

Sample ID 1610612-001BMS		SampType: MS		TestCode: EPA 6010B: Metals						
Client ID: WDW-1,2,&3 Effluen		Batch ID: 28190		RunNo: 38332						
Prep Date: 10/20/2016		Analysis Date: 10/31/2016		SeqNo: 1196526		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	180	5.0	50.00	123.0	104	75	125			

Sample ID 1610612-001BMSD		SampType: MSD		TestCode: EPA 6010B: Metals						
Client ID: WDW-1,2,&3 Effluen		Batch ID: 28190		RunNo: 38332						
Prep Date: 10/20/2016		Analysis Date: 10/31/2016		SeqNo: 1196527		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	180	5.0	50.00	123.0	123	75	125	5.31	20	

Sample ID MB-28190		SampType: MBLK		TestCode: EPA 6010B: Metals						
Client ID: PBW		Batch ID: 28190		RunNo: 38490						
Prep Date: 10/20/2016		Analysis Date: 11/7/2016		SeqNo: 1202197		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Sodium	ND	1.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	LCS-28190	SampType:	LCS	TestCode:	EPA 6010B: Metals					
Client ID:	LCSW	Batch ID:	28190	RunNo:	38490					
Prep Date:	10/20/2016	Analysis Date:	11/7/2016	SeqNo:	1202198	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	52	1.0	50.00	0	103	80	120			
Sodium	51	1.0	50.00	0	102	80	120			

Sample ID	1610612-001BMS	SampType:	MS	TestCode:	EPA 6010B: Metals					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	28190	RunNo:	38490					
Prep Date:	10/20/2016	Analysis Date:	11/7/2016	SeqNo:	1202200	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	86	1.0	50.00	35.82	100	75	125			

Sample ID	1610612-001BMSD	SampType:	MSD	TestCode:	EPA 6010B: Metals					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	28190	RunNo:	38490					
Prep Date:	10/20/2016	Analysis Date:	11/7/2016	SeqNo:	1202201	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	86	1.0	50.00	35.82	101	75	125	0.560	20	

Sample ID	1610612-001BMS	SampType:	MS	TestCode:	EPA 6010B: Metals					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	28190	RunNo:	38490					
Prep Date:	10/20/2016	Analysis Date:	11/7/2016	SeqNo:	1202203	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	140	5.0	50.00	95.77	95.5	75	125			

Sample ID	1610612-001BMSD	SampType:	MSD	TestCode:	EPA 6010B: Metals					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	28190	RunNo:	38490					
Prep Date:	10/20/2016	Analysis Date:	11/7/2016	SeqNo:	1202211	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	150	5.0	50.00	95.77	105	75	125	3.14	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID MB-R38745	SampType: MBLK		TestCode: CYANIDE, Reactive							
Client ID: PBW	Batch ID: R38745		RunNo: 38745							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1210388		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID LCS-R38745	SampType: LCS		TestCode: CYANIDE, Reactive							
Client ID: LCSW	Batch ID: R38745		RunNo: 38745							
Prep Date:	Analysis Date: 10/25/2016		SeqNo: 1210389		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.542		0.5000	0	108	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID MB-R38745	SampType: MBLK		TestCode: SULFIDE, Reactive							
Client ID: PBW	Batch ID: R38745		RunNo: 38745							
Prep Date:	Analysis Date: 10/18/2016		SeqNo: 1210391		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID LCS-R38745	SampType: LCS		TestCode: SULFIDE, Reactive							
Client ID: LCSW	Batch ID: R38745		RunNo: 38745							
Prep Date:	Analysis Date: 10/18/2016		SeqNo: 1210392		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.16		0.2000	0	80.0	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 | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID mb-1	SampType: mblk		TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R38048		RunNo: 38048							
Prep Date:	Analysis Date: 10/18/2016		SeqNo: 1186486		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID ics-1	SampType: ics		TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R38048		RunNo: 38048							
Prep Date:	Analysis Date: 10/18/2016		SeqNo: 1186487		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80.60	20.00	80.00	0	101	90	110			

Sample ID mb-2	SampType: mblk		TestCode: SM2320B: Alkalinity							
Client ID: PBW	Batch ID: R38048		RunNo: 38048							
Prep Date:	Analysis Date: 10/18/2016		SeqNo: 1186510		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID ics-2	SampType: ics		TestCode: SM2320B: Alkalinity							
Client ID: LCSW	Batch ID: R38048		RunNo: 38048							
Prep Date:	Analysis Date: 10/18/2016		SeqNo: 1186511		Units: mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	81.52	20.00	80.00	0	102	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID	1610612-001ADUP	SampType:	DUP	TestCode:	Specific Gravity					
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	R38258	RunNo:	38258					
Prep Date:		Analysis Date:	10/27/2016	SeqNo:	1193976	Units:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9993	0						0.0400	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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

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

Sample ID MB-28098	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: PBW	Batch ID: 28098	RunNo: 38034								
Prep Date: 10/17/2016	Analysis Date: 10/18/2016	SeqNo: 1185818	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-28098	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: LCSW	Batch ID: 28098	RunNo: 38034								
Prep Date: 10/17/2016	Analysis Date: 10/18/2016	SeqNo: 1185819	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1050	20.0	1000	0	105	80	120			

Qualifiers:

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

Sample Log-In Check List

Client Name: **NAVAJO REFINING CO**

Work Order Number: **1610612**

RcptNo: **1**

Received by/date: AC 10/13/16

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

Completed By: **Ashley Gallegos** 10/13/2016 11:20:49 AM AG

Reviewed By: JC 10/23/16 10/13/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 22
 (2 or 12 unless noted)
 Adjusted? No
 Checked by: AS

Special Handling (if applicable)

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

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

