GW - 001

RIVER TERRACE VOLUNTARY CORRECTIVE MEASURES

2019

From:	Scott Crouch
To:	Cobrain, Dave, NMENV; Chavez, Carl J, EMNRD
Cc:	Gregory J. McCartney (gjmccartney@marathonpetroleum.com)
Subject:	[EXT] Response to July 2020 Approval of Bloomfield Terminal 2019 River Terrace Annual Groundwater Report
Date:	Friday, October 2, 2020 12:38:41 PM
Attachments:	image001.png WRB Response to Approval of 2019 River Terrace Annual GW Rpt.pdf

Dave, Carl:

Please find an electronic copy of the referenced response attached. Hard copies will be sent out next week to NMED.

Scott T. Crouch, PG
Senior Geologist

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Western Refining

October 2, 2020

Kevin Pierard
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Carl Chavez
NM Energy, Minerals & Natural Resources
Oil Conservation Division, Env Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

FEDEX delivery to NMED
FEDEX delivery to OCD

RE: **Response to July 2020 Approval with Mods of River Terrace Annual Report**
Voluntary Bioventing / Air Sparging System
January – December 2019
Western Refining Southwest, Inc. - Bloomfield Terminal
EPA ID# NMD089416416
OCD Discharge Permit GW-001
HWB-WRB-20-001

Dear Mr. Pierard and Mr. Chavez,

Western Refining Southwest, Inc. - Bloomfield Terminal (Western) submits the enclosed responses to comments (dated July 2, 2020) on the reference annual report. If you have any questions or need additional information, please feel free to contact me at (419) 421- 2338 at your convenience.

Sincerely,

Western Refining Southwest, Inc.

Gregory J. McCartney P.E.
Senior Environmental Professional

Comment 1

Western's Response to Comment 3 in NMED's *Approval with Modifications Bloomfield Terminal River Terrace Annual Report Voluntary Bioventing System/Air Sparging (January-December 2018),* dated February 27, 2020 states, "[a]dditional site location information will be added." Although Figure 2 (Facility Site Plan) was updated to present designations for various site features, the font used to present the designations are too small and illegible. Provide a larger copy of the site plan figure in future reports and ensure the font size is legible.

Western Response:

The comment is acknowledged.

Comment 2

Western's Response to Comment 8 states that "the [GAC] filter have not been replaced for at least 5 years. The carbon at these low inlet concentrations (less than 1 ppm hydrocarbons) is providing a final polish and should last indefinitely." According to Table 5 (GAC Filter Monitoring Data Summary), none of the dissolved phase hydrocarbon constituents in the samples collected from the effluent of lag granular activated carbon filter (GAC-LAG) were detectable. At this time, continue monitor the GAC influent and effluent concentrations without replacing the filters. However, it must be noted that GAC filters do not last indefinitely. Section 2 (Background), pages 8 and 10, indicates that the lead GAC filters were replaced in 2007 and 2012 due to contaminant breakthrough. The filters have not been replaced since 2012. The filters must be replaced as necessary. No response required.

Western Response:

The comment is acknowledged.

Comment 3

Western's Response to Comment 10 states, "[t]he comment is acknowledged and we will review the data collected in 2020 to further assess any potential modifications [to address TPH-DRO exceedances] to the existing remediation system." Section 4.2 (Recommendation), page 20, paragraph 4, states, "[c]oncentrations in the extracted groundwater and at most of the monitoring wells remain relatively low, with xylenes, TPH-DRO, and TPH-GRO being the most persistent organic constituents. Western will continue to look for means of optimizing the air sparging system to increase remediation efficiency." These "most persistent organic constituents" (i.e., xylenes, TPH-DRO and TPH-GRO) may not be amenable to the existing remediation system. Discuss the potential means of optimizing the existing remediation system to address these constituents in a response letter.

Western Response:

NMED notes the concern that some constituents "(i.e., xylenes, TPH-DRO and TPH-GRO) may not be amenable to the existing remediation system." This concern is addressed below in two parts: (1)

a review of remediation technologies that are commonly applied for petroleum hydrocarbon (e.g., xylenes, TPH-DRO and TPG-GRO) in groundwater and (2) an examination of the effectiveness of the chosen remedies under actual site conditions at the River Terrace.

The existing remediation system on the River Terrace as it relates specifically to groundwater impacts incorporates physical treatment, including groundwater extraction and treatment, and air sparging. Air sparging adds oxygen to groundwater and the overlying soils, thus enhancing aerobic biodegradation of petroleum hydrocarbons (e.g., xylenes, TPH-DRO and TPH-GRO) below and above the water table (US EPA, 2020[1]). In addition, natural biodegradation of petroleum hydrocarbons is anticipated to be active within the shallow groundwater present in the River Terrace deposits. A search for common groundwater remedies for petroleum hydrocarbons identified a guidance document prepared by the Department of Ecology in the State of Washington[2]. In summary, the guidance document developed by the State of Washington provides the following.

"The primary remedy consists of source removal, including free product and contaminated soil to the greatest degree practicable. This can be combined with any of the following remedial actions and will be considered a model remedy provided the eligibility criteria are satisfied . . . :

a) Soil vapor extraction;
b) Groundwater removal and treatment;
c) Air sparging;
d) Chemical/biological treatment; or
e) Natural attenuation."

Source removal was conducted at the site with the removal of contaminated soil. The current groundwater remedy incorporates groundwater removal and treatment and air sparging. Natural biodegradation of hydrocarbons has been demonstrated to be occurring in the vadose zone and is likely occurring in the shallow groundwater, although the groundwater remediation system is not reliant upon natural biodegradation. Therefore, we believe xylenes, TPH-DRO, and TPH-GRO are amenable to the existing remediation system.

The second part of the evaluation looks at actual site data to determine if xylenes, TPH-DRO, and TPH-GRO are amenable to the existing remediation system. Graphs of the groundwater concentrations of xylenes, TPH-DRO and TPH-GRO are enclosed. From all three graphs there is very clear evidence that the existing remediation system is being successful, as the concentrations of all three have been significantly reduced since the remediation system was installed in 2006. It is noted that the system has been revised in the past to increase the effectiveness, but no further revisions are warranted at this time, as we are currently employing three remedial actions (extraction

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[1] US EPA Super Remedy Report 16th Edition; EPA-542-R-20-001, July 2020.
[2] Department of Ecology State of Washington, Model Remedies for Sites with Petroleum Impacts to Groundwater, Publication No. 16-09-057, Dec. 2017.

and treatment, air sparging, and natural biodegradation) that all well documented to be effective strategies for petroleum hydrocarbons.

Comment4

Western's Response to Comment 12 states, "[t]he laboratory has requested a larger sample size in order to achieved [sic] a lower detection limit." The detection limits were still reported higher than the groundwater screening levels of total petroleum hydrocarbon gasoline range organics (TPH-GRO), diesel range organics (TPH-DRO), and oil range organics (TPH-MRO) according to Tables 3 and 5. The detection limits must be lower than the screening levels because detection limits higher than the screening levels do not allow to evaluate the risk associated with the compounds. Solicit analytical laboratories capable of achieving the detection limits lower than the screening levels and resolve this recurring issue. Otherwise, address the concentrations where the detection limits are higher as a data gap and include the discussion in future reports. Western must also explain how removing these data will change the evaluation and conclusions of the Report.

Western Response:

Western discussed the issue with Hall Environmental Analysis Laboratory ("Hall"), the lab that conducted the subject analyses. Pursuant to Western's request, Hall then contacted a number of large national environmental laboratories to find a lab capable to achieving detection limits at or below all of the applicable NMED TPH screening levels. None of the labs were capable to achieving all of the required limits. However, Hall has revised the laboratory procedures to achieve the lowest possible limits per the EPA methods. For example, the method detection limit for TPH-DRO has decreased from 0.31 mg/l in August 2018 to 0.067 mg/l for samples collected in August 2020. The reporting limit for TPH-DRO has decreased from 0.40 mg/l in August 2018 to 0.07 mg/l in August 2020.

Comment 5

In Section 3.1.1 (Fluid Level Measurements), page 13, paragraph 3, Western states, "[n]o separate phase hydrocarbon was detected in any of the wells." According to Table 1 (Fluid Levels), depth-to-water readings and total well depths are reported in feet below top of casing (TOC) but screened intervals are reported in feet below ground surface (bgs). The data presented in Table 1 does not allow NMED to evaluate the appropriateness of the screened intervals for separate phase hydrocarbon (SPH) measurement. All data reported in feet below TOC must be converted to feet bgs in future reports for consistency. Conduct an elevation survey, if necessary.

Western Response:

The comment is acknowledged and will be addressed in future reports. When evaluating for the presence of SPH, in addition to the comparison of fluid levels in monitoring wells to well screen intervals it is also advisable to compare dissolved-phase concentrations to their solubility limits. The USEPA developed a "rule of thumb" of 1 percent of the solubility limit as a conservative

potential indication of the presence of SPH[3]. For an interim comparison, the dissolved-phase groundwater concentrations reported in Table 3 have been conservatively compared to 1% of the solubility values provided in NMED's Risk Assessment Guidance Table B-2. The enclosed table indicates that groundwater concentrations reported at TP-5 exceeded the 1% solubility values for ethylbenzene and xylenes in past sampling events, but were below 1% of solubility values in 2018 and 2019. This comparison does not consider the TPH concentrations as a solubility value was not available.

Comment 6

In Section 3.1.2 (Groundwater Field Parameters), page 13, paragraph 4, Western states, "[d]ue to detections of concentrations of metals above screening levels in some samples and the concern the detections may be related to the well purging procedures using bailers, the 2019 sampling event was conducted using low-methods [sic] consistent with NMED guidance (NMED, 2001)." According to Table 2 (Groundwater Field Measurements) field parameter readings collected during 2019 appear to be within the variability of and consistent with past readings. NMED acknowledges that the 2019 sampling event using low-flow methods was appropriately conducted. No response required.

Western Response:

The comment is acknowledged.

Comment 7

In Section 3.1.3 (Groundwater Sampling), page 14, paragraph 1, Western states, "[g]roundwater samples were submitted to Hall Environmental Analytical Laboratory and analyzed for the following constituents Volatile Organic Compounds - BTEX and MTBE by EPA Method 8260." Appendix B (Analytical Reports) presents the analytical results of benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tert-butyl ether (MTBE) but does not present analytical results of other volatile organic compounds. Because some chlorinated compounds (e.g., 1,2-Dichloroethane) were detected in groundwater samples collected from the wells located south of the slurry barrier wall (e.g., MW-59 and MW-65), presence or absence of all volatile organic compounds listed in EPA Method 8260 must be evaluated for the groundwater samples collected from the River Terrace wells. Report analytical results for all volatile organic compounds listed in EPA Method 8260 in future reports. Include the provision in the upcoming update of the Facility-Wide Groundwater Monitoring Plan. In the Monitoring Plan, propose to collect and analyze samples for 2 monitoring events. If after 2 monitoring events the constituents are not detected, then Western must propose to monitor for those constituents once every four years for the duration that the remediation system remains in operation.

Western Response:

The comment is acknowledged. The next update of the Facility-Wide Groundwater Monitoring Plan is scheduled for June 2021, as the 2020 update was previously submitted on June 20, 2020.

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[3] EPA, 1992, Estimating Potential for Occurrence of DNAPL at Superfund Sites, OSWER Publication 9355.4-07FS.

As comments have not yet been received on the 2020 updates, the requested changes could be addressed along with any other comments received on the 2020 updates.

Comment 8

In Section 3.2.1 (Pressure Readings), page 14, paragraph 3, Western states, "[p]ressure readings from BV-3, Air Sparging Line A, Air Sparging Line B, and the Main Air Blower exceeded the capabilities of the magnehelic gauge and were collected using a dial pressure gauge." According to Table 4 (Soil Gas Monitoring Data Summary} the pressure readings from BV-3, Air Sparging Line A, Air Sparging Line B, and the Main Air Blower are reported as one pound (1 lb). The reporting unit (pound) does not represent a pressure unit. Correct the pressure unit in future reports and provide a replacement Table 4 with the correct units.

Western Response:

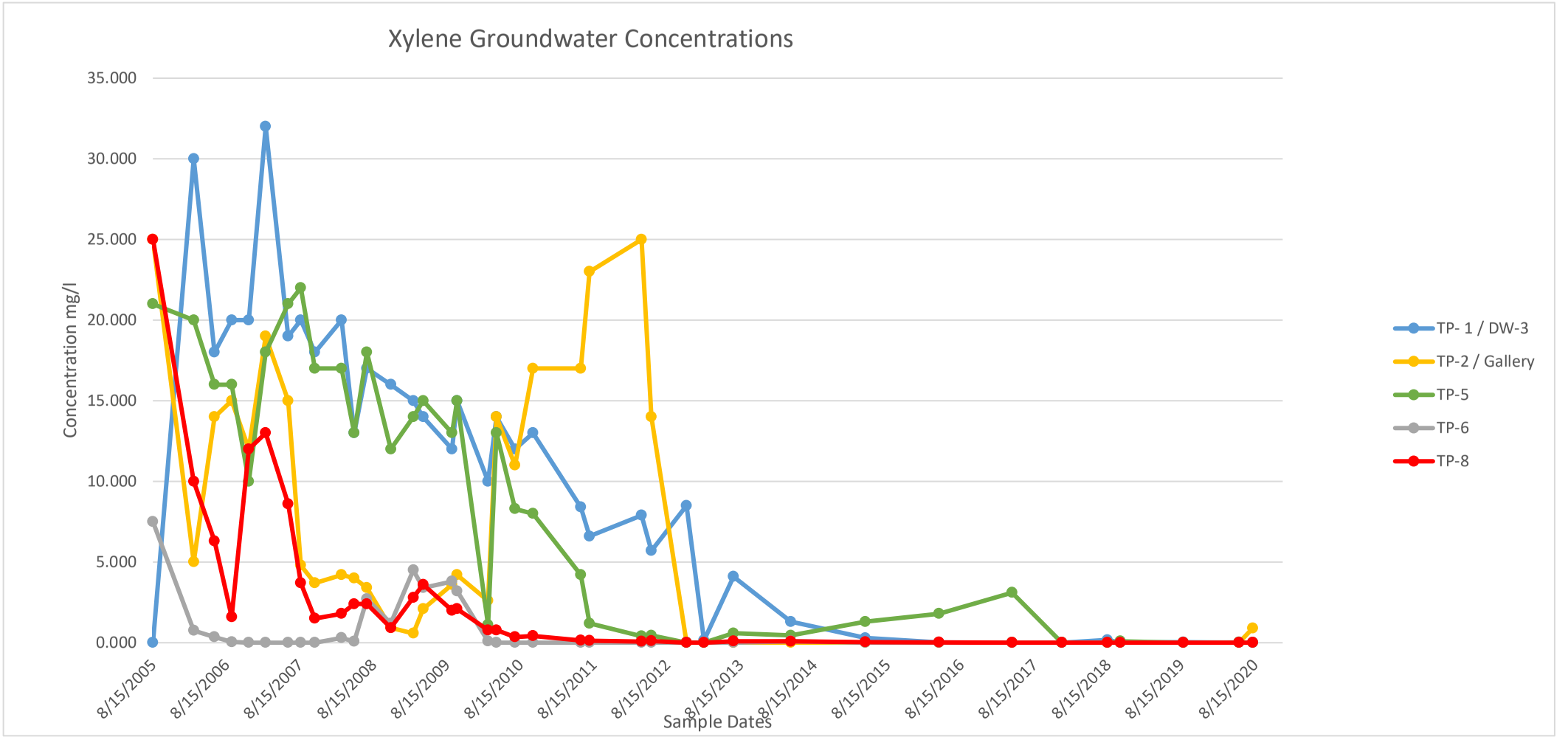
Table 4 has been corrected to refer to pound per square inch (psi) and a replacement copy is enclosed.

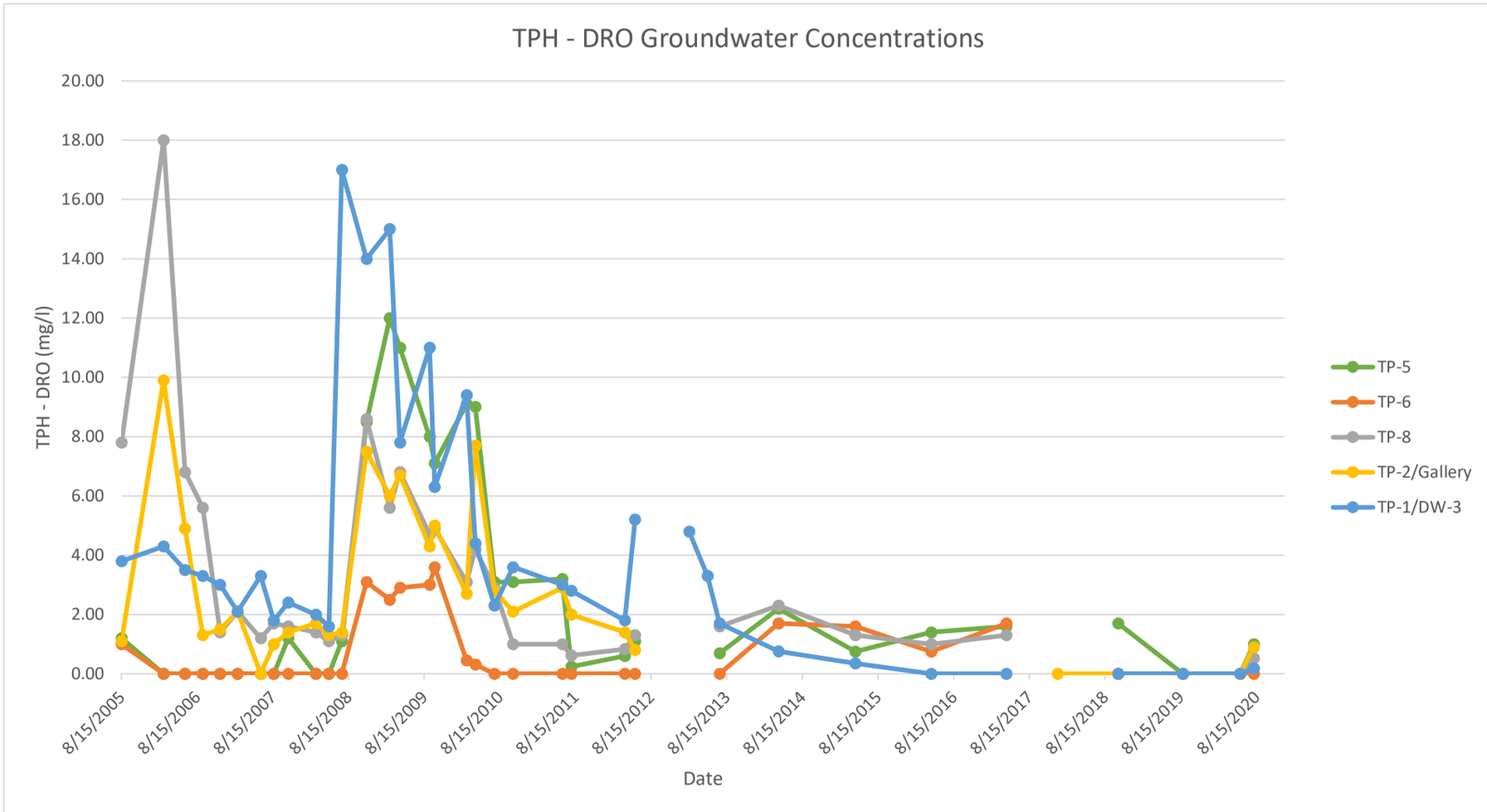
Comment 9

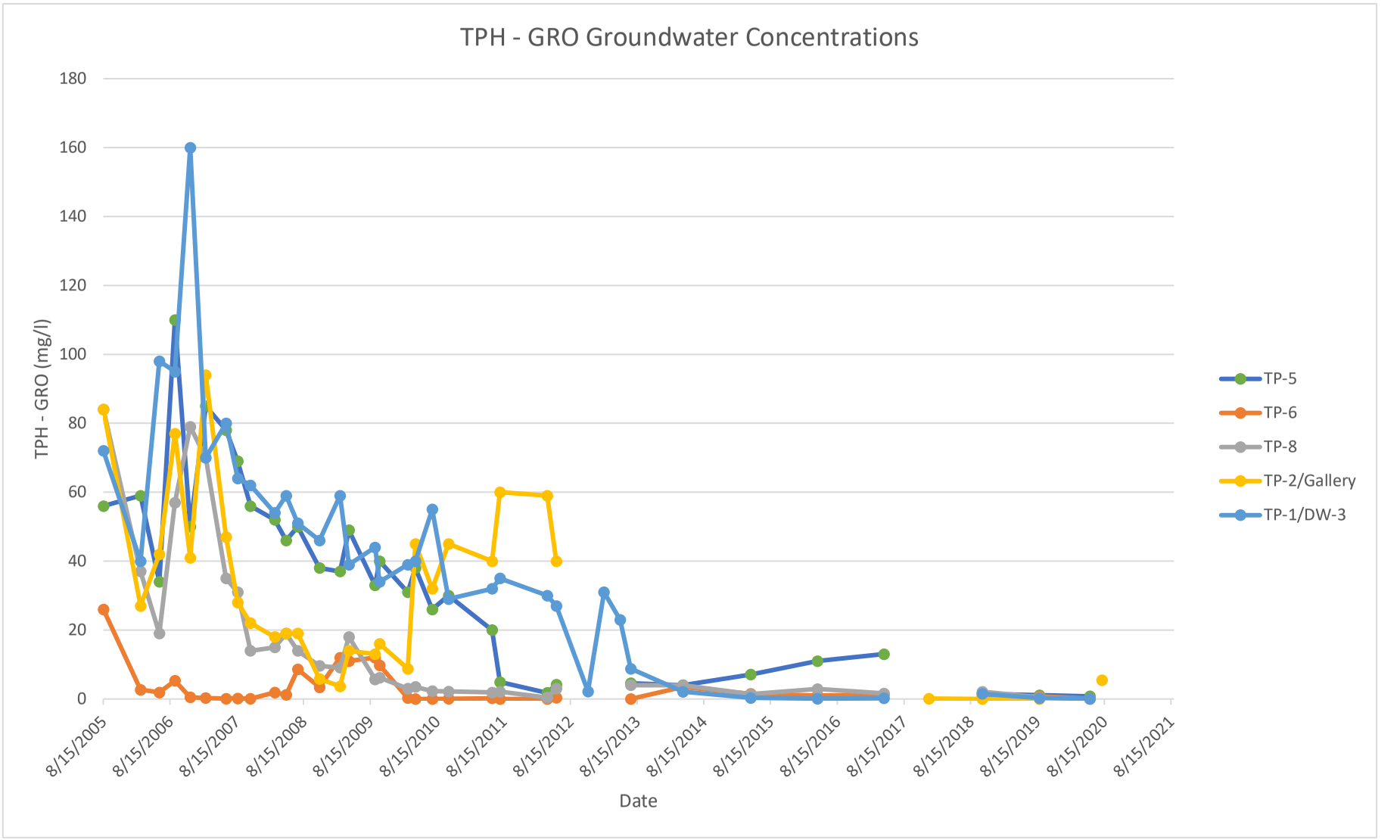
In Section 4.1.2 (Bioventing / Air Sparging Performance Monitoring), page 20, paragraph 4, Western states, "[t]he air pressure reading has decreased from 3 psi in 2018 to 1 psi in 2019." Section 3.3.2 (Aeration System Monitoring), page 17, paragraph 2, states that "an air leak was repaired in December 2019 and the pressure was restored to 3.0 psig." The fact that the pressure was restored to 3 psi must be mentioned in Section 4.1.2 for clarity. Revise future reports accordingly. Additionally, explain if the air leak may have caused false pressure readings between 2018 and 2019 in the response letter.

Western Response:

The text in Section 4.1.2 has been revised and a replacement page is enclosed along with a redline version. The air leak could have caused a false pressure reading, but none were recorded between 2018 and 2019 other than the values discussed in the report.


Xylene Groundwater Concentrations
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Concentration mg/l
8/15/2005
8/15/2006
8/15/2007
8/15/2008
8/15/2009
8/15/2010
8/15/2011
8/15/2012
8/15/2013
8/15/2014
8/15/2015
8/15/2016
8/15/2017
8/15/2018
8/15/2019
8/15/2020
Sample Dates
TP- 1 / DW-3
TP-2 / Gallery
TP-5
TP-6
TP-8


TPH - DRO Groundwater Concentrations
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
TPH - DRO (mg/l)
8/15/2005
8/15/2006
8/15/2007
8/15/2008
8/15/2009
8/15/2010
8/15/2011
8/15/2012
8/15/2013
8/15/2014
8/15/2015
8/15/2016
8/15/2017
8/15/2018
8/15/2019
8/15/2020
Date
TP-5
TP-6
TP-8
TP-2/Gallery
TP-1/DW-3


TPH - GRO Groundwater Concentrations
TPH - GRO (mg/l)
180
160
140
120
100
80
60
40
20
0
8/15/2005
8/15/2006
8/15/2007
8/15/2008
8/15/2009
8/15/2010
8/15/2011
8/15/2012
8/15/2013
8/15/2014
8/15/2015
8/15/2016
8/15/2017
8/15/2018
8/15/2019
8/15/2020
8/15/2021
Date
TP-5
TP-6
TP-8
TP-2/Gallery
TP-1/DW-3

Groundwater Monitoring Data Compared to 1% of Solubility Limit

			1 Percent of Solubility per NMED Risk Assessment Guidance Table B-2								WQCC 20NMAC 6.2.3103	
			17.900	5.26	1.690	1.06	510	NA	NA	NA	NA	0.060
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-3 (Biennial)	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.05	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.05	< 2.5	**0.0051**	NR[2]
TP-5	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	**0.0063**	<0.0015	<0.001	<0.40	**1.1**	<2.5	**0.0057**	NR[2]
	Low Flow 2018	Week of 10/17/18	<0.001	<0.001	**0.069**	**0.085**	<0.00021	**1.7**	**1.5**	<5.0	**0.0130**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.010	<0.010	**0.670**	**3.100**	<0.010	**1.6**	**13**	< 2.5	**0.068**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.010	<0.010	**0.300**	**1.800**	<0.010	**1.4**	**11**	< 2.5	**0.027**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.010	<0.010	**0.063**	**1.300**	<0.010	**0.75**	**7.1**	< 2.5	**0.019**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	**0.027**	**0.450**	<0.005	**2.2**	**4.0**	< 2.5	**0.012**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	**0.022**	**0.590**	<0.010	**0.69**	**4.6**	< 2.5	**0.013**	NR[2]
	High Flow 2012	Week of 05/29/12	<0.005	<0.005	**0.017**	**0.450**	<0.005	**1.10**	**4.20**	< 2.5	**0.0260**	NR[2]
	Low Flow 2012	Week of 04/09/12	<0.005	<0.005	**0.020**	**0.410**	<0.005	**0.60**	**1.80**	< 2.5	**0.3600**	NR[2]
	Low Flow 2011	Week of 07/26/11	<0.010	<0.01	**0.051**	**1.200**	<0.025	**0.24**	**4.9**		**0.0550**	NR[2]
	High Flow 2011	Week of 06/13/11	<0.010	<0.01	**0.350**	**4.200**	<0.025	**3.20**	**20**		**0.0580**	NR[2]
	4th Quarter 2010	Week of 10/18/10	<0.005	<0.01	**0.830**	**8.000**	<0.025	**3.10**	**30**		**0.0230**	NR
	3rd Quarter 2010	Week of 07/20/10	<0.005	<0.01	0.310	**8.300**	<0.025	**3.10**	**26**		**0.0830**	NR
	2nd Quarter 2010	Week of 04/19/10	<0.005	<0.010	**1.600**	**13.000**	<0.025	**9.00**	**38**		**0.1300**	NR

Groundwater Monitoring Data Compared to 1% of Solubility Limit

			1 Percent of Solubility per NMED Risk Assessment Guidance Table B-2								WQCC 20NMAC 6.2.3103	
			17.900	5.26	1.690	1.06	510	NA	NA	NA	NA	0.060
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
TP-5 (continued)	1st Quarter 2010	Week of 03/08/10	<0.005	**0.0078**	**0.150**	**1.100**	<0.013	**9.10**	**31**		**0.0430**	NR
	4th Quarter 2009	Week of 10-05-09	<0.005	<0.01	**1.900**	**15.000**	<0.025	**7.10**	**40**		**0.0250**	NR
	3rd Quarter 2009	Week of 09/10/09	<0.005	<0.01	**1.300**	**13.000**	<0.025	**8.00**	**33**		**0.0330**	NR
	2nd Quarter 2009	Week of 04/20/09	**0.025**	**0.011**	**2.400**	**15.000**	<0.025	**11.00**	**49**		**0.0260**	NR
	1st Quarter 2009	Week of 03/02/09	**0.019**	<0.01	**1.800**	**14.000**	<0.025	**12.00**	**37**		**0.0260**	NR
	4th Quarter 2008	Week of 11/10/08	**0.016**	**0.01**	**2.400**	**12.000**	<0.025	**8.50**	**38**		**0.0290**	NR
	3rd Quarter 2008	Week of 07/14/08	<0.02	<0.02	**1.900**	**18.000**	<0.05	**1.10**	**50**		**0.0430**	NR
	2nd Quarter 2008	Week of 05/12/08	**0.048**	<0.02	**1.100**	**13.000**	<0.05	*<1.00	**46**		**0.0390**	NR
	1st Quarter 2008	Week of 03/10/08	<0.020	<0.020	**1.600**	**17.000**	<0.050	*<1.00	**52**		**0.0510**	NR
	4th Quarter 2007	Week of 10/29/07	<0.001	<0.001	**2.600**	**17.000**	<0.0025	**1.20**	**56**		**0.0320**	NR
	3rd Quarter 2007	Week of 08/20/07	**0.300**	<0.10	**3.000**	**22.000**	<0.25	*<1.00	**69**		**0.0440**	NR
	2nd Quarter 2007	Week of 06/18/07	**0.340**	<0.10	**3.500**	**21.000**	<0.25	*<1.00	**78**		**0.0920**	NR
	1st Quarter 2007	Week of 02/26/07	<0.01	<0.01	**1.300**	**18.000**	<0.025	*<1.00	**85**		NR	NR
	4th Quarter 2006	Week of 12/04/06	**0.069**	<0.050	**1.200**	**10.000**	<0.120	*<1.00	**50**		NR	NR
	3rd Quarter 2006	Week of 09/11/06	<0.01	<0.01	**3.100**	**16.000**	<0.025	*<1.00	**110**		NR	NR
	2nd Quarter 2006	Week of 06/17/06	**0.054**	<0.001	**1.600**	**16.000**	<0.025	*<1.00	**34**		NR	NR
	1st Quarter 2006	Week of 03/06/06	**0.200**	<0.02	**0.280**	**20.000**	<0.05	*<1.00	**59**		NR	NR
	Baseline	Week of 08/15/05	**0.350**	<0.005	**3.500**	**21.000**	<0.05	**1.20**	**56**		NR	NR
TP-6	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	**0.77**	<2.5	**0.0034**	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.001	**0.0002J**	**0.00026J**	<0.0015	<0.001	<0.31	**0.82**	<2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	**0.026**	**0.0038**	<0.001	**1.7**	**1.3**	< 2.5	**0.027**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	**0.068**	<0.0015	<0.0010	**0.75**	**0.99**	< 2.5	**0.033**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	**0.0087**	**0.0048**	<0.001	**1.6**	**1.5**	< 2.5	**0.0150**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**

Groundwater Monitoring Data Compared to 1% of Solubility Limit

			1 Percent of Solubility per NMED Risk Assessment Guidance Table B-2								WQCC 20NMAC 6.2.3103	
			17.900	5.26	1.690	1.06	510	NA	NA	NA	NA	0.060
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
TP-6 (cont.)	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	**0.028**	**0.093**	<0.001	**1.7**	**3.5**	< 2.5	**0.0084**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0100**	NR[2]
TP-7 (Biennial)	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR[2]
	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.2	<0.05	<2.5	**0.020**	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	<0.20	<0.50	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.20	<0.50	< 2.5	**0.0014**	NR[2]
TP-8	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	**0.46**	< 2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.005	<0.005	**0.0028J**	< 0.0075	<0.005	<0.31	**2.1**	< 2.5	**0.0068**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.005	<0.005	**0.011**	< 0.0075	<0.005	**1.3**	**1.6**	< 2.5	**0.038**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.005	<0.005	**0.029**	**0.026**	<0.005	**1.0**	**2.9**	< 2.5	**0.034**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.005	<0.005	**0.0099**	**0.044**	<0.005	**1.3**	**1.4**	< 2.5	**0.0091**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	**0.019**	**0.083**	<0.005	**2.3**	**4.0**	< 2.5	**0.0080**	NR[2]
TP-9	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	**0.095**	<2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 10/17/18	<0.0001	<0.001	<0.001	<0.0025	<0.001	<0.63	**0.056**	<5.0	**0.00026J**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	**0.11**	< 2.5	**0.017**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	**0.092**	< 2.5	**0.052**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	**0.35**	<0.050	< 2.5	**0.0056**	NR[2]

Groundwater Monitoring Data Compared to 1% of Solubility Limit

			1 Percent of Solubility per NMED Risk Assessment Guidance Table B-2								WQCC 20NMAC 6.2.3103	
			17.900	5.26	1.690	1.06	510	NA	NA	NA	NA	0.060
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
TP-9 (cont.)	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0091**	NR[2]
TP-10	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.024**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0013**	NR[2]
TP-11	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[1]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0130**	NR[1]
TP-12	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0058**	NR[2]
TP-13	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	**0.22**	<0.050	< 2.5	**0.0064**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0068**	NR[2]

Groundwater Monitoring Data Compared to 1% of Solubility Limit

			1 Percent of Solubility per NMED Risk Assessment Guidance Table B-2								WQCC 20NMAC 6.2.3103	
			17.900	5.26	1.690	1.06	510	NA	NA	NA	NA	0.060
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
DW-1 (Biennial)	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR[2]
	2018	NA	Biennial									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	**0.0068**	NR[2]
	2016	NA	Biennial									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	****	<0.0002
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0014**	<0.0002
DW-2	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	**0.0011**	
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	**0.00091J**	<0.001	<0.31	**0.21**	<2.5	**0.016**	
	Special Event	12/29/17	<0.001	<0.001	**0.0036**	**0.0039**	<0.001	**0.4**	**1**	< 2.5	**0.0041**	NR
DW-3	Low Flow 2019	Week of 08/26/19	**0.0063**	<0.001	**0.0029**	**0.028**	<0.001	<0.40	**0.26**	<2.5	**0.0017**	NR
	Low Flow 2018	Week of 08/13/18	**0.0095**	**0.00019J**	**0.032**	**0.170**	**0.00063J**	<0.31	**1.5**	<2.5	**0.0091**	NR
	Special Event	12/29/17	<0.001	<0.001	**0.0040**	**0.0020**	<0.001	<0.2	**0.23**	< 2.5	**0.00083**	NR
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	**0.0032**	<0.0015	<0.001	<0.20	**0.099**	< 2.5	**0.0110**	NR[2]
	Low Flow 2016	Week of 04/28/16	**0.0049**	<0.001	**0.034**	**0.011**	<0.001	**0.35**	**0.33**	< 2.5	**0.014**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	**0.082**	<0.010	**0.400**	**0.290**	<0.010	**0.76**	**2.1**	<2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	**0.067**	<0.010	**0.720**	**1.300**	<0.010	**1.7**	**8.8**	<2.5	<0.0050	NR[2]
MW-48	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.29**	<2.5	**0.012**	NR[2]

Groundwater Monitoring Data Compared to 1% of Solubility Limit

			1 Percent of Solubility per NMED Risk Assessment Guidance Table B-2								WQCC 20NMAC 6.2.3103	
			17.900	5.26	1.690	1.06	510	NA	NA	NA	NA	0.060
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
MW-49	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	< 2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.019J**	< 2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.029**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.040**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0064**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
Gallery	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.22**	<2.5	<0.005	NR
	Special Event	12/29/17	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	**0.11**	< 2.5	**0.11**	NR

Notes: NR = Not Required (Voluntary Corrective Measures - Revised Monitoring Plan - October 2005) NA - Not Available

NR[1]= Not Required (Approval With Direction - June 2009)

NR[2]= Not Required (Approval With Direction - May 2011)

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

**** Analyte inadvertently not included in sample analysis.

Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, groundwater sampling discontinued.

1. Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, high flow sampling is no longer required at the River Terrace.

0.670	Constituent detected at concentration above method detection limit
3.100	Constituent detected at concentration above 1% of Solubility Limit

TABLE 4
Soil Gas Monitoring Data Summary

Sample Location	Sampling Event	Date	Purge Volume (L)	Depth to Water (ftbtoc)	Pressure (inches of water)	Vapor Phase Organics (% LEL)	Oxygen (%)	Carbon Dioxide (%)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	TPH-GRO (ug/L)
TP-5	Low Flow 2019	Week of 08/26/19	2.50	4.05	0	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
TP-6	Low Flow 2019	Week of 08/26/19	3.03	4.91	0.6	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
TP-7	Low Flow 2019	NA	NS	NS	0	NS	NS	NS	NS	NS	NS	NS	NS
TP-8	Low Flow 2019	Week of 08/26/19	3.12	5.07	0	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	**9.7**
BV-1	Low Flow 2019	Week of 08/26/19	0.88	5.72	13	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
BV-3*	Low Flow 2019	Week of 08/26/19	0.69	4.41	1 psi	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	**6.6**
BV-4	Low Flow 2019	Week of 08/26/19	0.95	6.18	1.5	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
BV-5	Low Flow 2019	Week of 08/26/19	0.95	6.12	12	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
BV-6	Low Flow 2019	Week of 08/26/19	0.92	5.96	5	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
DW-2	Low Flow 2019	Week of 08/26/19	14	5.67	NM	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
DW-3	Low Flow 2019	Week of 08/26/19	UNABLE TO REMOVE PUMP FROM WELL - WELL NOT SAMPLED										
MW-48	Low Flow 2019	Week of 08/26/19	17	6.79	NM	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
Air Sparging Line A*	Low Flow 2019	NA	NA	NA	1 psi	NA	NA	NA	NA	NA	NA	NA	NA
Air Sparging Line B*	Low Flow 2019	NA	NA	NA	1 psi	NA	NA	NA	NA	NA	NA	NA	NA
Main Blower*	Low Flow 2019	NA	NA	NA	1 psi	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

0.670 Constituent detected at concentration above method detection limit

Pressure readings were measured on August 15, 2019 prior to shutting the system down for gauging and sampling.

Pressure readings from BV-3, Air Sparging Line A, Air Sparging Line B and the Main Blower exceeded the capability of the magnehelic gauge and were collected using a dial pressure gauge read in pounds/square inch (psi).

DW-3

Benzene was detected at a concentration of 0.0063 mg/L in the groundwater sample collected at DW-3, which exceeds the screening level of 0.005 mg/L. The concentration slightly decreased from 0.0095 mg/L to 0.0063 mg/L over the last two sampling events.

TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at DW-3 (0.26 mg/L). The TPH-GRO concentration decreased from 1.5 mg/L to 0.26 mg/L over the last two sampling events.

4.1.2 Bioventing / Air Sparging Performance Monitoring

Groundwater Treatment System

A total of 40,561 gallons of impacted groundwater was removed and treated through the GAC filters in 2019. The presence of constituents above the screening levels in the GAC inlet samples indicates the groundwater recovery system remains effective in capturing and removing contaminant mass. The decreasing concentrations in samples collected at the GAC inlet, as well as in individual wells, also shows the effectiveness of the system since installation.

Aeration System

The air injection system ran consistently throughout 2019 and required no changes to the air distribution. However, a leak was discovered and repaired in December 2019. The air pressure reading was noted to have decreased from 3 psi in 2018 to 1 psi in August 2019. The air pressure reading returned to 3 psi upon the repairs.

4.2 Recommendations

Concentrations in the extracted groundwater and at the most of the monitoring wells remain relatively low, with xylenes, TPH-DRO, and TPH-GRO being the most persistent organic constituents. Western will continue to look for means of optimizing the air sparging system to increase remediation efficiency.

DW-3

Benzene was detected at a concentration of 0.0063 mg/L in the groundwater sample collected at DW-3, which exceeds the screening level of 0.005 mg/L. The concentration slightly decreased from 0.0095 mg/L to 0.0063 mg/L over the last two sampling events.

TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at DW-3 (0.26 mg/L). The TPH-GRO concentration decreased from 1.5 mg/L to 0.26 mg/L over the last two sampling events.

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RIVER TERRACE ANNUAL REPORT
Voluntary Bioventing / Air Sparging System

January – December 2019

Bloomfield Terminal
(Former Bloomfield Refinery)

Western Refining Southwest, Inc.
#50 Rd 4990
Bloomfield, New Mexico 87413

Submitted: February 2020

Table of Contents

List of Sections

Table of Contents (continued)

List of Tables

List of Figures

List of Appendices

List of Acronyms

benzene, toluene, ethylbenzene, and total xylenes (BTEX)

below grade surface (bgs)

biovent well (BV)

carbon dioxide (CO_2)

Code of Federal Regulations (CFR)

cubic feet per second (cfs)

dewatering well (DW)

diesel range organics (DRO)

dissolved oxygen (DO)

feet (ft)

degrees Fahrenheit (°F)

gasoline range organics (GRO)

granulated activated carbon (GAC)

investigation derived waste (IDW)

liters (L)

liquid petroleum gas (LPG)

maximum contaminant level (MCL)

methyl tert-butyl ether (MTBE)

micrograms per liter (ug/L)

micro mhos per centimeter (umhos/cm)

milligrams per liter (mg/L)

millivolts (mV)

monitoring well (MW)

motor oil range organics (MRO)

New Mexico Administrative Code (NMAC)

No Product Present (NPP)

New Mexico Environment Department Hazardous Waste Bureau (NMED-HWB)

Oxidation reduction potential (ORP)

parts per million (ppm)

photoionization detector (PID)

polyvinyl chloride (PVC)

pounds per square inch (psi)

Resource Conservation and Recovery Act (RCRA)

separate phase hydrocarbon (SPH)

Solid Waste Management Units (SWMUs)

Temperature (TEMP)

Temporary piezometer (TP)

top of casing (TOC)

total petroleum hydrocarbon (TPH)

United States Environmental Protection Agency (USEPA)

Water Quality Control Commission (WQCC)

Executive Summary

This Report is a summary of monitoring activities conducted in 2019 at the River Terrace Bioventing / Air Sparging System located at the Bloomfield Terminal (Former Bloomfield Refinery). The following is a synopsis of activities performed at the River Terrace in 2019.

Groundwater Monitoring

Groundwater samples were collected at specific wells and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tert-butyl ether (MTBE), Total Petroleum Hydrocarbons (TPH) Diesel Range Organics (DRO), TPH Gasoline Range Organics (GRO), TPH Motor Oil Range Organics (MRO), and total lead. The analytical results for samples collected in 2019 during San Juan River low-flow conditions were below their respective screening levels with the following exceptions:

- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-5 (1.1 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-6 (0.77 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-8 (0.46 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-9 (0.095 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at DW-3 (0.26 mg/L); and
- Benzene was detected at a concentration of 0.0063 mg/L in the groundwater sample collected at DW-3, which exceeds the screening level of 0.005 mg/L.

Soil Vapor Monitoring

Soil gas samples were collected at specific sampling locations and analyzed for BTEX and TPH-GRO. The analytical results for samples collected in 2019 during San Juan River low-flow conditions were below the method detection limit with the following exceptions:

- TPH-GRO was detected at TP-8 (9.7 ug/L); and
- TPH-GRO was detected at BV-3 (6.6 ug/L).

Bioventing / Air Sparging System Monitoring

The River Terrace System currently consists of the following:

- Five biovent wells (BV-1, BV-3, BV-4, BV-5, and BV-6);
- Ten temporary piezometers (TP-3, and TP-5 thru TP-13);
- Three dewatering wells (DW-1, DW-2, and DW-3);
- Two monitoring wells (MW-48, and MW-49);
- Two air sparging lines (Air Sparging Line A, and Air Sparging Line B); and
- One groundwater collection gallery.

The active dewatering system consists of two dewatering wells (DW-2 and DW-3) and a collection gallery, each equipped with variable-speed submersible pumps. Groundwater pumped by the dewatering system is pumped through two filters containing granular activated carbon (GAC), which are operated in series before discharging into the facility raw water ponds. The purpose of the dewatering system is to enhance the effectiveness of the bioventing system by dewatering the influenced area and remove impacted groundwater for treatment. A total of 40,561 gallons of impacted groundwater was removed and treated through the GAC filters in 2019. Results from the analytical sampling of the GAC system show that the GAC filters continue to be effective in treating the extracted groundwater prior to discharging into the facility raw water ponds.

The air injection system ran consistently throughout 2019 and required no changes to the air distribution. The air pressure reading has decreased from 3 psi in 2018 to 1 psi in 2019. The consistent pressure affirms that there exists an even distribution of air throughout the biovent / air sparging area of influence.

Section 1
Introduction

1.1 Site Location and Description

Owner: San Juan Refining Company, a New Mexico Corporation
1250 Washington Street
Tempe, Arizona 85281

Operator: Western Refining Southwest, Inc.
(Formerly Giant Industries Arizona, Inc.), an Arizona Corporation
1250 Washington Street
Tempe, Arizona 85281

Facility: Bloomfield Terminal (Former Bloomfield Refinery) (physical address)
50 Road 4990
Bloomfield, New Mexico 87413

Western Refining Southwest, Inc. (postal address)
P.O. Box 159
Bloomfield, New Mexico 87413

US EPA ID: NMD089416416

SIC Code: 5171 (Previously Operated under 2911)

The former Bloomfield Refinery facility is currently owned by San Juan Refining Company, a New Mexico corporation, and operated by Western Refining Southwest, Inc. formerly known as Giant Industries Arizona, Inc., an Arizona corporation. The former Bloomfield Refinery had an approximate refining capacity of 18,000 barrels per day. Various process units operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization, and diesel hydrotreating. Products produced at the refinery included gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils, and liquid petroleum gas (LPG).

The Bloomfield Terminal ("Terminal") is a crude oil and petroleum product transfer and storage facility that includes truck loading and unloading. The Terminal stores and transfers crude oil, petroleum products (e.g., naphtha, unleaded gasoline, diesel, and kerosene) and ethanol. The purpose of the facility is to transfer crude oil and petroleum products between pipelines, trucks and storage tanks. Crude oil and petroleum products arrive by pipeline or tank trucks. The tank farm is a system of storage tanks used throughout the Terminal to hold and store crude oil, petroleum products, fuel additives, and water. These tanks are located above ground and range

in size from 110,000 barrels to less than 1,000 barrels. Pumps, valves, and piping systems are used throughout the Terminal to transfer various liquids among tankage and loading racks. Several tank truck loading racks are used to load out petroleum products and receive crude oil and gasoline additives.

The Terminal is located on approximately 263 acres south of Bloomfield, New Mexico in San Juan County (Figure 1). The Terminal complex is bisected by County Road 4990 (Sullivan Road), which runs east-west (Figure 2). The part of the Terminal tankage located north of County Road 4990 includes the following general areas:

- Office Area (buildings, warehouse, maintenance, storage yard)
- Parking Lots
- Diesel Unloading
- Wastewater Treatment Unit (WWTU)
- Tank Farm Area
- Used Equipment Laydown Area
- Firefighting Training Area
- Former Refinery Units
- Class I Injection Well
- Raw Water Ponds

The remainder of the Terminal facility, regional business office, transportation maintenance facility, and the evaporation ponds are located on a 25-acre site south of County Road 4990 and includes the following general areas:

- Terminal Office and Parking Lot
- Crude Oil Unloading Station
- Product Loading and Unloading Station
- Storage Tank Area
- Regional Office and Parking Lot
- Transportation Maintenance Truck Shop and Truck Parking Lot
- Wastewater Evaporation Ponds
- 90-day Hazardous Waste Bay

The facility is located on a bluff 120 feet above the south side of the San Juan River. The top of the bluff is relatively flat and is at an elevation of 5,540 feet above sea level. Based on the available site-specific and regional subsurface information, the site is underlain by the Quaternary Jackson Lake terrace deposits, which unconformably overlie the tertiary Nacimiento Formation. The Jackson Lake deposits consist of fine grained sand, silt, and clay that grades to course sand, gravel and cobble size material closer to the contact with the Nacimiento Formation. The Jackson Lake Formation is over 40 feet thick near the southeast portion of the site and generally thins to the northwest toward the San Juan River. The Nacimiento Formation

is primarily composed of fine grained materials (e.g., carbonaceous mudstone/claystone with interbedded sandstones) with a reported local thickness of approximately 570 feet (Groundwater Technology, 1994).

The River Terrace area is located north of the Hammond Ditch, approximately 120 feet lower in elevation than the former Refinery process and tank farm areas. Since 2006, Western has operated a bioventing system for the purpose of providing oxygen to the subsurface and supporting aerobic biodegradation of petroleum hydrocarbons that were identified in soil along the western portion of the River Terrace to a depth of approximately 8 feet below existing grade surface (bgs). Impacted groundwater was also recovered and treated using granular activated carbon (GAC).

In 2013, optimization activities to the biovent system were completed, which included removal of impacted soil, installation of an air sparging system, and installation of an additional dewatering well (DW-3). These enhancements allowed for the system to continue to target the subsurface soils, as well as enhance the groundwater remediation efforts through additional pumping and air sparging.

The River Terrace System currently consists of the following:

- Five biovent wells (BV-1, BV-3, BV-4, BV-5, and BV-6);
- Ten temporary piezometers (TP-3, and TP-5 thru TP-13);
- Three dewatering wells (DW-1, DW-2, and DW-3);
- Two monitoring wells (MW-48, and MW-49);
- Two air sparging lines (Air Sparging Line A, and Air Sparging Line B); and
- One groundwater collection gallery.

The active dewatering system consists of two dewatering wells (DW-2 and DW-3) and a collection gallery, each equipped with variable-speed submersible pumps. The collection gallery, consisting of a horizontal 4-inch perforated pipe with an 8-inch diameter vertical riser pipe and submersible pump, was installed and placed into operation by early October 2009. Dewatering well DW-3 was installed as part of the most recent optimization activities, and is constructed with a 4-inch machine slotted PVC well casing that is placed inside a 5.5-inch diameter steel pipe. The steel pipe is packed with pebbles, allowing for better groundwater pumping efficiency.

The dewatering wells operate off of independent level control systems. As each individual pump senses a low water column level, the pump will shut down for a period of time to allow the well to recover before resuming pumping. The cycle of operation frequency for the dewatering pumps is directly reflective of the operational level of the San Juan River. Groundwater pumped by the dewatering system is pumped through two GAC filters operating in series before discharging into the facility raw water ponds. The purpose of the dewatering system is to enhance the effectiveness of the bioventing system by dewatering the influenced area and remove impacted groundwater for treatment.

Installation of the air sparging component of the biovent system was completed in late 2012, and consists of two air sparging lines (Air Sparging Line A and Air Sparging Line B). Each air sparging line consists of air sparging tubes that extend down into the groundwater (Western Refining, 2013). Air from the biovent main air blower is pushed into each sparging tube, causing a bubbling effect in the groundwater while also oxygenating the surrounding subsurface.

The biovent portion of the system continues to remain active, although the majority of the impacted soils within the subsurface were removed as part of the 2013 optimization activities. The main air blower injects air into the subsurface (vadose and phreatic zones) through the BV wells. The air supply promotes aerobic biodegradation within the subsurface.

Section 2
Background

This section presents a summary of the events and activities conducted at the River Terrace Area since 1999.

1999

- Installation of a bentonite slurry wall and sheet pile barrier on the River Terrace and adjacent to the San Juan River was completed. The barrier, which was installed into the top of the Nacimiento Formation, extends approximately 200 feet around the perimeter of the riverbank from the bluff opposite the west end of the process area to the river inlet station. The bentonite slurry and sheet pile barrier wall was installed to prevent hydrocarbons from migrating into the San Juan River.

2004

- Two groundwater monitoring wells (MW-48 and MW-49) were installed in October 2004 to replace two piezometers (P-4 and P-5). Additionally in October 2004, eight temporary piezometers were installed (TP-1 through TP-8). The purpose of installing the monitoring wells and piezometers was to determine the extent of hydrocarbon impacts in soil on the refinery side of the bentonite slurry wall and sheet pile barrier.

2005

- Bloomfield Refinery initiated construction of the River Terrace Bioventing Project to provide oxygen to the subsurface and support aerobic biodegradation of petroleum hydrocarbons existing in the soil and groundwater at the River Terrace. Construction activities included the following:
    - Installation of five additional piezometers (TP-9 through TP-13) within the eastern portion of the River Terrace area in April 2005.
    - Construction of an aeration system designed to increase bioremediation in the subsurface. The aeration system included installation of 13 bioventing wells (BV-1 through BV-13), all located within the western portion of the River Terrace. The bioventing wells were installed in August 2005.
    - Construction of a dewatering system designed to expand the bio-remedial vadose zone. The dewatering system included installation of two dewatering wells (DW-1 and DW-2). The dewatering wells were installed in August 2005.

2006

- Operation of the bioventing system commenced in January 2006. System monitoring activities were conducted in compliance with the approved River Terrace Voluntary

Corrective Measures Monitoring Plan (Revised) dated October 28, 2005 (Malcolm Pirnie, 2005).

- An in-situ respiration test was conducted in May 2006. The results of the in-situ test were used to evaluate progress of the bio-remedial activity.
- Quarterly performance monitoring was conducted in March, June, September, and December 2006.

2007

- Quarterly performance monitoring of the bioventing system was conducted in February, June, August, and October 2007.
- An in-situ respiration test was conducted in September 2007. The results of the in-situ test were used to evaluate progress of the bio-remedial activity.
- The dewatering pumps were replaced in February 2007.
- Breakthrough in the lead GAC (V-612) was detected in April 2007. Upon confirmation of breakthrough, GAC filter V-611 became the lead GAC filter. V-612 was replaced and placed back in service in June as the lag filter.

2008

- Quarterly performance monitoring activities for the bioventing system were conducted in March, May, July, and November 2008.
- The aeration system blower bearings were replaced in February 2008.
- The monitoring well MW-48 dewatering pump was replaced in August 2008.
- Blower piping was upgraded in October 2008.

2009

- Quarterly performance monitoring for the bioventing system was conducted in March, April, September, and October 2009.
- An in-situ respiration test was conducted during the week of October 26, 2009.
- In order to improve and optimize the dewatering system, a collection gallery, pump, and piping system were installed in the southwest portion of the River Terrace and put in service October 13, 2009.

2010

- Quarterly performance monitoring for the bioventing system was conducted in March, April, July, and October 2010.

- Following suspension of refining operations on November 23, 2009, operation of the River Pump station decreased, thus impacting the frequency of the River Terrace dewatering system. Although the aeration system continued to operate consistently, operation of the dewatering system has become infrequent due to the decreased demand for fresh water to support current facility operations.

2011

- In March 2011, Western received approval from NMED-HWB to modify the piping of the River Terrace dewatering system. Piping modifications included installation of a 3,000-gallon surge tank and booster pump, which allows the treated water from the River Terrace dewatering system to discharge directly into the Refinery's fresh water ponds. Piping modifications were completed in April 2011.

- Approved modifications to on-going monitoring at the River Terrace (NMED, 2011) were implemented as part of the 2011 sampling program for the River Terrace. The approved sampling modifications included the following:

    - Soil gas sampling to be conducted annually at all piezometers, DW-1, and MW-49. The sampling is to be performed during San Juan River low-flow conditions;

    - Soil gas monitoring (O_2, CO_2, and PID readings) for TP-1, TP-2, DW-1, MW-49, and TP-5 through TP-9 is to be performed semi-annually. The monitoring is to be performed during San Juan River high and low-flow conditions;

    - Groundwater monitoring of TP-3, TP-7, TP-9, TP-10, TP-11, TP-12, TP-13, and DW-1 is to be conducted biennially (beginning 2011). Samples are to be collected during low-flow conditions of the San Juan River;

    - Groundwater monitoring of TP-1, TP-2, TP-5, TP-6, TP-8, and MW-49 is to be conducted semi-annually. The monitoring is to be performed during San Juan River high and low-flow conditions;

    - Discontinue analysis of barium and chromium analysis for all piezometers, MW-49, and DW-1; and

    - Samples at the GAC in-let, GAC outlet of lead vessel, and GAC outlet of lag vessel are to be collected quarterly.

- High and low-flow monitoring events were conducted in June and July 2011, respectively.

- Quarterly performance monitoring of the bioventing system GAC filters inlet and GAC outlet occurred in March, May, July, and October 2011.

- Additional samples outside of what was required were collected at the discharge of the lead GAC filter on a monthly basis, with the exception that a sample was not collected in April 2011 due to the dewatering system being off-line.

2012

- In June 2012, the lead GAC filter was exchanged for a new filter. The biovent dewatering system consists of two GAC filters that operate in series. The new filter was placed in the lag position, and the previous lag filter was placed in the lead position.

- In October 2012, Western submitted a Work Plan that summarized proposed activities to optimize the remediation progress at the River Terrace. Approval of the Work Plan was issued by NMED-HWB on October 12, 2012. Field activities commenced on October 20, 2012 and included the following activities:

    - Removal of impacted clay soil at the River Terrace;

    - Installation of sparging piping to target areas of the River Terrace where groundwater is impacted;

    - Decommissioning of TP-1, TP-2, BV-2, and BV-7 through BV-13 in association with the excavation activities; and

    - Air Sparging Line A and Air Sparging Line B were added to system.

2013

- Western completed and put into service dewatering well DW-3 located within the southwest corner of the River Terrace. This new dewatering well adds additional value to the current dewatering system at the river terrace as historical analysis have shown this area to contain higher concentrations of impacted groundwater.

- The High-Flow Monitoring Event did not take place in 2013. The one week spring peak release (5,000 cfs) did not take place because of the threat of a water shortage in the San Juan River Basin. San Juan County is experiencing a severe drought.

2014

- Quarterly performance monitoring of the GAC filters for the bioventing system was conducted in March, April, July, and October 2014.

- The High-Flow Monitoring Event did not take place in 2014. The one week spring peak release (5,000 cfs) did not take place because of the threat of a water shortage in the San Juan River Basin. San Juan County was experiencing a severe drought.

2015

- Monthly and Quarterly performance monitoring of the GAC filters for the bioventing system was conducted. Samples in addition to the required frequency were collected at the GAC filters to monitor their operations.

- The High-Flow Monitoring Event did not take place in 2015. The one week spring peak release (5,000 cfs) did not take place because of the threat of a water shortage in the San Juan River Basin.

- General pump maintenance was performed on the recovered water transfer pump in March 2015.

- A section of the blower discharge piping was replaced due to a crack at a joint connection.

- Western received approval to discontinue sampling of groundwater at piezometers TP-3, TP-10, TP-11, TP-12, and TP-13; however groundwater elevation information will continue to be collected from these locations (NMED, 2015).

- Western received approval to discontinue soil gas monitoring at the River Terrace (NMED, 2015).

- Western received approval not to replace TP-2 with an additional well until further notice (NMED, 2015).

2016

- Monthly and Quarterly performance monitoring of the GAC filters for the bioventing system was conducted. Samples in addition to the required frequency were collected at the GAC filters to monitor their operations.

2017

- Quarterly performance monitoring of the GAC filters for the bioventing system was conducted. In addition and beyond the required frequency, monthly samples were collected at the GAC inlet and GAC lead filter.

- The low-flow groundwater sampling event was conducted in April 2017. A special groundwater sampling event was conducted in December 2017 pursuant to NMED comments on past monitoring reports.

2018

- Performance monitoring of the GAC filters for the bioventing system was conducted. In addition and beyond the required frequency, monthly samples were collected at the GAC inlet and GAC lead filer.

- The low-flow groundwater sampling event was conducted in August 2018. Two piezometers, TP-5 and TP-9 were not located during the August sampling event. The piezometers were subsequently located and groundwater samples were collected in

October 2018, also under low-flow conditions. There was no high-flow discharge event in 2018.

2019

- Performance monitoring of the GAC filters for the bioventing system was conducted. Quarterly samples were collected in February, May, July and October at the GAC inlet, GAC lead filter and GAC lag filter.

- The low-flow sampling event was conducted in August 2019.

    - Fluid levels were gauged at MW-48, MW-49, DW-1, DW-2, DW-3, Collection Gallery, TP-3, TP-5, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, TP-12, and TP-13;

    - Soil gas monitoring and sampling was conducted at TP-5, TP-6, TP-8, BV-1, BV-3, BV-4, BV-5, BV-6, DW-2, and MW-48. Soil gas monitoring and sampling was not conducted at DW-3. The pump in DW-3 is wedged in the well and could not be removed; and

    - Groundwater monitoring was conducted at TP-5, TP-6, TP-7 (biennial event), DW-1 (biennial event), DW-2, DW-3, MW-48, MW-49 and Collection Gallery.

Section 3
Performance Monitoring

Performance monitoring at the River Terrace area includes collecting groundwater samples for laboratory analysis, collecting field measurements and system readings, and evaluating system treatment performance by the GAC filter system. The location of the River Terrace wells and aeration system is shown in Figure 3 and Figure 4. A summary of the field methods used to conduct performance monitoring at the River Terrace is provided in Appendix A. The following is a summary of monitoring activities conducted at the River Terrace in 2019.

3.1 Groundwater Monitoring

Groundwater samples were collected in August 2019 during low-flow operation of the San Juan River [i.e., with a river flow rate of approximately 900 cubic feet per second (cfs)] for all required wells. The following is a summary of activities performed during the groundwater monitoring event conducted in 2019.

3.1.1 Fluid Level Measurements

Depth-to-groundwater, depth-to-product measurements, and well depth were collected from MW-48, MW-49, DW-1, DW-2, DW-3, Collection Gallery, TP-3, TP-5, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, TP-12, and TP-13. No separate phase hydrocarbon was detected in any of the wells. The measurements were collected prior to the collection of groundwater samples during the San Juan River low-flow sampling events. The fluid level measurements collected in 2019 and previous events are provided in Table 1.

3.1.2 Groundwater Field Parameters

Groundwater field parameters (temperature, pH, conductivity, DO, and ORP) were recorded during the low-flow well purging procedure prior to collecting groundwater samples. Groundwater field parameters were collected from TP-5, TP-6, TP-7, TP-8, TP-9, DW-2, DW-3, MW-48, MW-49, and the collection gallery. A summary of the groundwater field parameters collected during the 2019 sampling events and previous events are included in Table 2. In the past, bailers were used to purge the wells prior to sample collection. Due to detections of concentrations of metals above screening levels in some samples and the concern the detections may be related to the well purging procedures using bailers, the 2019 sampling event was conducted using low-methods consistent with NMED guidance (NMED, 2001).

3.1.3 Groundwater Sampling

Groundwater samples were collected from TP-5, TP-6, TP-7, TP-8, TP-9, DW-2, DW-3, MW-48, MW-49, and Collection Gallery. Groundwater samples were submitted to Hall Environmental Analytical Laboratory and analyzed for the following constituents:

- Volatile Organic Compounds – BTEX and MTBE by EPA Method 8260;
- TPH – GRO by EPA Modified Method 8015D;
- TPH – DRO by EPA Modified Method 8015D;
- TPH – MRO by EPA Modified Method 8015D; and
- Total lead by EPA Method 200.8.

A summary of the groundwater analyses is provided in Table 3. The analytical reports are provided as Appendix B.

3.2 Soil Vapor Monitoring

3.2.1 Pressure Readings

During the sampling event, field pressure readings were collected from wells TP-5, TP-6, TP-7, and TP-8, using a hand-held magnahelic gauge connected to the sample port at the top of each sampling location. Included in Table 4 is a summary of the pressure readings collected in August 2019.

Injection pressure readings were collected from the bioventing wells (BV-1, BV-3, BV-4, BV-5, and BV-6), the air sparging lines (A and B), and at the discharge of the main air blower. Pressure readings from BV-3, Air Sparging Line A, Air Sparging Line B, and the Main Air Blower exceeded the capabilities of the magnehelic gauge and were collected using a dial pressure gauge. Table 4 includes a summary of the pressure readings collected in August 2019.

3.2.2 Soil Gas Field Parameters

Field measurements of soil gas hydrocarbons, oxygen, and carbon dioxide were collected using a multi-gas meter from sample locations TP-5, TP-6, TP-8, BV-1, BV-3, BV-4, BV-5, BV-6, DW-2, and MW-48. DW-3 was not sampled. The pump is wedged in the well and could not be removed. A summary of the soil gas field parameters is provided in Table 4.

3.2.3 Soil Gas Sampling

Soil gas samples were collected from sample locations TP-5, TP-6, TP-8, BV-1, BV-3, BV-4, BV-5, BV-6, DW-2, and MW-48. All soil gas samples were collected in tedlar bags and submitted to Hall Environmental Analytical Laboratory to be analyzed for the following parameters:

- Volatile Organic Compounds – BTEX by EPA Method 8260B; and
- Total Petroleum Hydrocarbons – GRO by EPA Method 8015B.

The analytical results for samples collected in 2019 during San Juan River low-flow conditions were below the method detection limit with the following exceptions:

- TPH-GRO was detected at TP-8 (9.7 ug/L); and
- TPH-GRO was detected at BV-3 (6.6 ug/L).

A summary of the soil gas analytical results is provided in Table 4. The analytical reports are provided as Appendix B.

3.3 Bioventing / Air Sparging System Performance Monitoring

3.3.1 GAC Sampling

Extracted groundwater from the active dewatering wells and collection gallery is treated prior to discharging to the raw water ponds, located within the east portion of the terminal. Extracted groundwater is pumped through two GAC filters positioned in series for removal of dissolved-phase hydrocarbons.

GAC influent (GAC-Inlet) samples, lead GAC filter effluent samples (GAC-Lead) and lag GAC filter effluent samples (GAC-Lag) were collected quarterly. Samples were submitted to Hall Environmental Analytical Laboratory and analyzed for the following parameters:

- Volatile Organic Compounds – BTEX and MTBE by EPA Method 8260 (First Quarter);
- Volatile Organic Compounds – EPA Method 8260B (Second, Third and Fourth Quarters); and
- Total Petroleum Hydrocarbons – TPH-GRO, TPH-DRO, and TPH-MRO by EPA Method 8015D.

The analytical results for the GAC-Lag samples were non-detectable for BTEX, MTBE, TPH-DRO, TPH-GRO and TPH-MRO during all four quarterly sampling events is 2019. Detected

concentrations of benzene, ethylbenzene, and MTBE at the inlet of the GAC filters in the fourth quarter (October 2019) were below the respective screening levels. These constituents were non-detectable in the first, second, and third quarters of 2019. At the GAC-Lead the TPH-DRO concentration during fourth quarter exceeded the screening level. TPH-DRO was non-detectable in the first, second, or third quarters of 2019. Samples collected from the GAC-Inlet and analyzed for TPH-GRO were detected in concentrations above the screening level in all four quarters of 2019.

Detected concentrations of MTBE collected from the GAC-Lead in the first and fourth quarters of 2019 were below the respective screening levels. MTBE was non-detectable in the second and third quarters of 2019. At the GAC-Lead the TPH-DRO concentration during fourth quarter exceeded the screening level. TPH-DRO was non-detectable in the first, second, and third quarters of 2019.

During the second, third and fourth quarters the analytical results were reported for the complete list of volatile organic compounds. Reported detectable concentrations (in addition to the constituents previously discussed) are as follows:

- GAC Inlet – 2nd Quarter – sec-Butylbenzene (0.0033 mg/L). The screening level is 2 mg/L (EPA RSL Tap Water);
- GAC Inlet – 4th Quarter – 1-Methylnaphthalene (0.00037 mg/L). The screening level is 0.0114 mg/L (NMED Tap Water);
- GAC Inlet – 4th Quarter – Isopropylbenzene (0.00052 mg/L). The screening level is 0.447 mg/L (NMED Tap Water);
- GAC Inlet – 4th Quarter – n-Propylbenzene (0.00066 mg/L). The screening level is 0.66 mg/L (NMED Tap Water);
- GAC Inlet – 4th Quarter – sec-Butylbenzene (0.00095 mg/L). The screening level is 2 mg/L (NMED Tap Water);
- GAC Lead – 4th Quarter - 4-Methyl-2-pentanone (0.015 mg/L). The screening level is 1.24 mg/L (NMED Tap Water); and
- GAC Lag – 4th Quarter – 4-Methyl-2-pentanone (0.0017 mg/L). The screening level is 1.24 mg/L (NMED Tap Water).

The total amount of groundwater extracted and pumped through the GAC filter system is monitored via a downstream in-line totalizer meter prior to discharging into the facility raw water ponds. A total of 40,561 gallons of impacted groundwater was removed and treated through the GAC filters in 2019. The volume of treated groundwater has decreased since 2018 when 193,892 gallons were treated through the GAC filters. Several pumps were replaced due to scaling in January 2020 and flow has increased back to the typical range.

3.3.2 Aeration System Monitoring

The air pressure reading had decreased from 3 psi in 2018 to 1 psi when checked in August 2019. However, an air leak was repaired in December 2019 and the pressure was restored to 3.0 psig.

Section 4
Conclusions and Recommendations

This section summarizes and provides an evaluation of the results shown in field monitoring data and analytical data. The analytical reports for groundwater are provided in Appendix B.

4.1 Conclusions

4.1.1 Groundwater Monitoring

Groundwater samples were collected at specific wells and analyzed for BTEX, MTBE, TPH-DRO, TPH-GRO, TPH-MRO, and total lead. The analytical results for samples collected in 2018 during San Juan River low-flow conditions were below their respective screening levels with the exceptions discussed below.

- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-5 (1.1 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-6 (0.77 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-8 (0.46 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-9 (0.095 mg/L);
- TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at DW-3 (0.26 mg/L); and
- Benzene was detected at a concentration of 0.0063 mg/L in the groundwater sample collected at DW-3, which exceeds the screening level of 0.005 mg/L.

Table 3 provides a summary of the analytical groundwater results. A concentration map showing the BTEX and TPH-GRO concentrations for the River Terrace wells during low-flow conditions is provided in Figure 5.

<u>Lead</u>

The analyses for lead in the groundwater samples were below the screening level. In 2017 there were seven samples with concentrations exceeding the screening level with reported concentrations ranging from 0.0068 mg/L to 0.068 mg/L. In 2018 there was one sample that exceeded the screening level. The decrease in reported concentrations in 2018 and the

comparable 2019 results is attributed to the change in collecting samples using low-flow procedures instead of using a bailer.

TP-5

In the reported results for TP-5 there was a significant decrease in concentrations of ethylbenzene and xylenes from the 2017 sampling event to the 2018 sampling event. This trend has continued based on reported results from 2019 sampling event. Ethylbenzene concentrations have decreased from 0.670 mg/L to 0.069 mg/L to 0.0063 mg/L over the last three sampling events. The reported concentration of 0.0063 mg/L is the lowest reported concentration from this sampling location since the initial sampling event in 2005. The xylenes concentrations in TP-5 have decreased from 3.1 mg/L to 0.085 mg/L to <0.0015 mg/L over the last three sampling events. The concentration of xylenes is the lowest reported since sampling began in 2005.

In the reported concentration of TPH-DRO decreased to non-detect from the reported concentration of 1.7 mg/L detected in 2018. The TPH-GRO concentrations have decreased from 13 mg/L to 1.5 mg/L to 1.1 mg/L over the last three sampling events.

TP-6

TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-6 (0.77 mg/L). The TPH-GRO concentrations have decreased from 1.3 mg/L to 0.82 mg/L to 0.77 mg/L over the last three sampling events.

TP-8

TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-8 (0.46 mg/L). The TPH-GRO concentration decreased from 2.1 mg/L to 0.46 mg/L over the last two sampling events.

TP-9

TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at TP-9 (0.095 mg/L). The TPH-GRO concentration increased from 0.056 mg/L to 0.095 mg/L over the last two sampling events.

DW-3

Benzene was detected at a concentration of 0.0063 mg/L in the groundwater sample collected at DW-3, which exceeds the screening level of 0.005 mg/L. The concentration slightly decreased from 0.0095 mg/L to 0.0063 mg/L over the last two sampling events.

TPH-GRO was detected above the NMED screening level (0.0101 mg/L) at DW-3 (0.26 mg/L). The TPH-GRO concentration decreased from 1.5 mg/L to 0.26 mg/L over the last two sampling events.

4.1.2 Bioventing / Air Sparging Performance Monitoring

Groundwater Treatment System

A total of 40,561 gallons of impacted groundwater was removed and treated through the GAC filters in 2019. The presence of constituents above the screening levels in the GAC inlet samples indicates the groundwater recovery system remains effective in capturing and removing contaminant mass. The decreasing concentrations in samples collected at the GAC inlet, as well as in individual wells, also shows the effectiveness of the system since installation.

Aeration System

The air injection system ran consistently throughout 2019 and required no changes to the air distribution. The air pressure reading has decreased from 3 psi in 2018 to 1 psi in 2019.

4.2 Recommendations

Concentrations in the extracted groundwater and at the most of the monitoring wells remain relatively low, with xylenes, TPH-DRO, and TPH-GRO being the most persistent organic constituents. Western will continue to look for means of optimizing the air sparging system to increase remediation efficiency.

Section 5
References

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Tables

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
TP-1	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA
TP-2	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA
TP-3 (Biennial)	2019	08/20/19	5423.88	NA	6.85	NPP	5417.03	12.43	4 - 9	NA
	2018	08/02/18	5423.88	NA	7.18	NPP	5416.70	12.37	4 - 9	NA
	2017	04/28/17	5423.88	NA	7.16	NPP	5416.72	12.35	4 - 9	NA
	2016	04/27/16	5423.88	NA	7.15	NPP	5416.73	12.35	4 - 9	NA
	High Flow 2015	No High Flow	5423.88	NA	**	**	**	**	4 - 9	NA
	Low Flow 2015	Week of 04/28/15	5423.88	NA	7.53	NPP	5416.35	12.35	4 - 9	NA
TP-5	Low Flow 2019	08/20/19	5422.83	NA	4.27	NPP	5418.56	8.90	3 - 8	NA
	Low Flow 2018	Week of 10/15/18	5422.83	NA	4.75	NPP	5418.08	8.85	3 - 8	NA
	Low Flow 2017	Week of 04/26/17	5422.83	NA	4.91	NPP	5417.92	8.84	3 - 8	NA
	Low Flow 2016	Week of 04/28/16	5422.83	NA	4.87	NPP	5417.96	8.84	3 - 8	NA
	High Flow 2015	No High Flow	5422.83	NA	**	**	**	**	3 - 8	NA
	Low Flow 2015	Week of 04/28/15	5422.83	NA	5.13	NPP	5417.7	8.84	3 - 8	NA
TP-6	Low Flow 2019	08/20/19	5422.55	NA	5.36	NPP	5417.19	9.97	5 - 10	NA
	Low Flow 2018	Week of 08/13/18	5422.55	NA	5.56	NPP	5416.99	9.94	5 - 10	NA
	Low Flow 2017	Week of 04/26/17	5422.55	NA	5.71	NPP	5416.84	9.94	5 - 10	NA
	Low Flow 2016	Week of 04/28/16	5422.55	NA	5.75	NPP	5416.8	9.94	5 - 10	NA
	High Flow 2015	No High Flow	5422.55	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5422.55	NA	6.00	NPP	5416.55	9.94	5 - 10	NA
TP-7 (Biennial)	Low Flow 2019	08/20/19	5421.99	NA	5.06	NPP	5416.93	9.77	5 - 10	NA
	2018	08/02/18	5421.99	NA	5.49	NPP	5416.5	9.73	5 - 10	NA
	Low Flow 2017	Week of 04/26/17****	5421.99	NA	5.86	NPP	5416.13	9.71	5 - 10	NA
	2016	04/27/16	5421.99	NA	5.83	NPP	5416.16	9.72	5 - 10	NA
	High Flow 2015	No High Flow	5421.99	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5421.99	NA	6.05	NPP	5415.94	9.72	5 - 10	NA
TP-8	Low Flow 2019	08/20/19	5422.52	NA	5.24	NPP	5417.28	9.99	5 - 10	NA
	Low Flow 2018	Week of 08/13/18	5422.52	NA	5.65	NPP	5416.87	9.94	5 - 10	NA
	Low Flow 2017	Week of 04/26/17	5422.52	NA	5.66	NPP	5416.86	9.72	5 - 10	NA
	Low Flow 2016	Week of 04/28/16	5422.52	NA	5.65	NPP	5416.87	9.72	5 - 10	NA
	High Flow 2015	No High Flow	5422.52	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5422.52	NA	8.06	NPP	5414.46	9.72	5 - 10	NA
TP-9	Low Flow 2019	08/20/19	5422.14	NA	4.38	NPP	5417.76	10.95	5 - 10	NA
	Low Flow 2018	Week of 10/17/18	5422.14	NA	5.28	NPP	5416.86	10.95	5 - 10	NA
	Low Flow 2017	Week of 04/26/17	5422.14	NA	5.81	NPP	5416.33	10.97	5 - 10	NA
	Low Flow 2016	Week of 04/28/16	5422.14	NA	5.69	NPP	5416.45	10.97	5 - 10	NA
	High Flow 2015	No High Flow	5422.14	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5422.14	NA	5.93	NPP	5416.21	10.97	5 - 10	NA

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
TP-10	2019	08/20/19	5422.56	NA	4.68	NPP	5417.88	9.97	3.5 - 8.5	NA
	2018	08/02/18	5422.56	NA	5.15	NPP	5417.41	9.88	3.5 - 8.5	NA
	2017	04/28/17	5422.56	NA	5.11	NPP	5417.45	9.95	3.5 - 8.5	NA
	2016	04/27/16	5422.56	NA	5.12	NPP	5417.44	9.95	3.5 - 8.5	NA
	High Flow 2015	No High Flow	5422.56	NA	**	**	**	**	3.5 - 8.5	NA
	Low Flow 2015	Week of 04/28/15	5422.56	NA	5.50	NPP	5417.06	9.95	3.5 - 8.5	NA
TP-11	2019	08/20/19	NA	NA	5.02	NPP	NA	9.98	4.5 - 9.5	NA
	2018	08/02/18	NA	NA	5.61	NPP	NA	9.95	4.5 - 9.5	NA
	2017	04/28/17	NA	NA	5.56	NPP	NA	9.98	4.5 - 9.5	NA
	2016	04/27/16	NA	NA	5.58	NPP	NA	9.98	4.5 - 9.5	NA
	High Flow 2015	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA
	Low Flow 2015	Week of 04/28/15	NA	NA	5.84	NPP	NA	9.98	4.5 - 9.5	NA
TP-12	2019	08/20/19	5424.97	NA	6.78	NPP	5418.19	11.61	7 - 12	NA
	2018	08/02/18	5424.97	NA	7.33	NPP	5417.64	11.58	7 - 12	NA
	2017	04/28/17	5424.97	NA	7.32	NPP	5417.65	11.79	7 - 12	NA
	2016	04/27/16	5424.97	NA	7.36	NPP	5417.61	11.79	7 - 12	NA
	High Flow 2015	No High Flow	5424.97	NA	**	**	**	**	7 - 12	NA
	Low Flow 2015	Week of 07/11/15	5424.97	NA	7.57	NPP	5417.4	11.79	7 - 12	NA
TP-13 (Biennial)	2019	08/20/19	5423.88	NA	5.65	NPP	5418.23	12.89	4.5 - 14.5	NA
	2018	08/02/18	5423.88	NA	6.16	NPP	5417.72	12.78	4.5 - 14.5	NA
	2017	04/28/17	5423.88	NA	6.18	NPP	5417.7	12.73	4.5 - 14.5	NA
	2016	04/27/16	5423.88	NA	6.25	NPP	5417.63	16.09	4.5 - 14.5	NA
	High Flow 2015	No High Flow	5423.88	NA	**	**	**	**	4.5 - 14.5	NA
	Low Flow 2015	Week of 04/28/15	5423.88	NA	6.45	NPP	5417.43	16.09	4.5 - 14.5	NA
DW-1 (Biennial)	2019	08/20/19	5422.97	5420.73	5.52	NPP	5417.45	15.64	5 - 14	5415.73 - 5406.73
	2018	08/02/18	5422.97	5420.73	5.91	NPP	5417.06	15.60	5 - 14	5415.73 - 5406.73
	Low Flow 2017	Week of 04/26/17****	5422.97	5420.73	6.16	NPP	5416.81	15.62	5 - 14	5415.73 - 5406.73
	2016	04/27/16	5422.97	5420.73	6.15	NPP	5416.82	15.62	5 - 14	5415.73 - 5406.73
	High Flow 2015	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73
	Low Flow 2015	Week of 04/28/15	5422.97	5420.73	6.30	NPP	5416.67	15.62	5 - 14	5415.73 - 5406.73
DW-2	Low Flow 2019	08/20/19	5423.81	5422.67	6.29	NPP	5417.52	15.33	4 - 14	5418.67 - 5408.67
	Low Flow 2018	Week of 08/13/18	5423.81	5422.67	6.27	NPP	5417.54	15.50	4 - 14	5418.67 - 5408.67
	Special Event	12/29/17	5423.81	5422.67	NM	NM	NM	NM	4 - 14	5418.67 - 5408.67

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
DW-3	Low Flow 2019	08/20/19	5424.79	5422.43	7.12	NPP	5417.67	12.84	6 - 14	5416.43 - 5408.43
	Low Flow 2018	Week of 08/13/18	5424.79	5422.43	7.60	NPP	5417.19	NM	6 - 14	5416.43 - 5408.43
	Special Event	12/29/17	5424.79	5422.43	NM	NM	NM	NM	6 - 14	5416.43 - 5408.43
	Low Flow 2017	Week of 04/26/17	5424.79	5422.43	7.61	NPP	5417.18	14.64	6 - 14	5416.43 - 5408.43
	Low Flow 2016	Week of 04/28/16	5424.79	5422.43	7.59	NPP	5417.2	14.64	6 - 14	5416.43 - 5408.43
	High Flow 2015	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43
	Low Flow 2015	Week of 04/28/15	5424.79	5422.43	11.23	NPP	5413.56	14.64	6 - 14	5416.43 - 5408.43
MW-48	Low Flow 2019	08/20/19	--	--	7.05	NPP	--	16.81	--	--
	Low Flow 2018	Week of 08/13/18	--	--	7.43	NPP	--	16.81	--	--
MW-49	Low Flow 2019	08/20/19	5425.20	5422.52	8.51	NPP	5416.69	9.85	4 - 14	5418.52 - 5408.52
	Low Flow 2018	Week of 08/13/18	5425.20	5422.52	8.99	NPP	5416.21	16.98	4 - 14	5418.52 - 5408.52
	Low Flow 2017	Week of 04/26/17	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52
	Low Flow 2016	Week of 04/28/16	5425.20	5422.52	9.31	NPP	5415.89	16.48	4 - 14	5418.52 - 5408.52
	High Flow 2015	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52
	Low Flow 2015	Week of 04/28/15	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52
Gallery	Low Flow 2019	08/20/19	NA	NA	5.87	NM	NA	15.16	NA	NA
	Low Flow 2018	Week of 08/21/18	NA	NA	6.26	NM	NA	15.11	NA	NA
	Special Event	12/29/17	NA	NA	NM	NM	NA	NM	NA	NA

Notes:

NPP = No Product Present
NM = Not measured
NA = Not Available
TOC - top of casing
ft-msl - feet above mean sea level
ft-bgs = feet below ground surface
** Due to drought, river conditions never met high flow requirements.
*** Well Decommissioned November 2012 as part of biovent system enhancements.
**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017
(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 2
Groundwater Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-3 (Biennial)	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	891	2.56	29.3	7.69	54.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	421	2.06	62	7.47	66.4
TP-5	Low Flow 2019	Week of 08/26/19	824	0.20	-329.4	6.91	74.4
	Low Flow 2018	Week of 10/15/18	1,381	0.21	-358	7.89	63.5
	Low Flow 2017	Week of 04/26/17	1,165	2.37	-204	7.19	56.3
	Low Flow 2016	Week of 04/28/16	815	1.24	-279	7.03	56.2
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	828	2.28	-257	7.56	55.1
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	526	0.34	-251	7.30	53.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	431	2.55	-210	7.56	68.1
	High Flow 2012	Week of 05/29/12	470	1.48	-33	6.30	61.1
	Low Flow 2012	Week of 04/09/12	363	0.93	-266	6.80	50.9
	Low Flow 2011	Week of 07/26/11	932	1.78	192	6.70	68.5
	High Flow 2011	Week of 06/13/11	561	0.72	273	6.95	62.2
	4th Quarter 2010	Week of 10/18/10	632	2.06	71	7.01	68.2
	3rd Quarter 2010	Week of 07/20/10	707	1.11	84	6.79	65.8

TABLE 2
Groundwater Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-5 (continued)	2nd Quarter 2010	Week of 04/19/10	590	0.58	121	7.02	54.1
	1st Quarter 2010	Week of 03/08/10	807	0.67	253	7.05	48.5
	4th Quarter 2009	Week of 10-05-09	759	4.57	212	6.76	67.4
	3rd Quarter 2009	Week of 09/10/09	794	1.12	152	7.04	72.6
	2nd Quarter 2009	Week of 04/20/09	1,128	0.69	106	6.69	55.2
	1st Quarter 2009	Week of 03/02/09	1,092	3.33	176	7.07	49.2
	4th Quarter 2008	Week of 11/10/08	981	1.23	129	6.83	61.8
	3rd Quarter 2008	Week of 07/14/08	852	1.49	159	6.95	69.8
	2nd Quarter 2008	Week of 05/12/08	702	1.32	54	6.87	56.8
	1st Quarter 2008	Week of 03/10/08	656	2.34	216	6.82	47.4
	4th Quarter 2007	Week of 10/29/07	857	0.23	229	7.04	66.5
	3rd Quarter 2007	Week of 08/20/07	911	0.17	129	6.88	69.8
	2nd Quarter 2007	Week of 06/18/07	884	0.80	148	6.87	63.9
	1st Quarter 2007	Week of 02/26/07	1,027	0.79	219	6.87	49.6
	4th Quarter 2006	Week of 12/04/06	1,377	1.36	229	6.99	56.0
	3rd Quarter 2006	Week of 09/11/06	879	0.29	149	7.09	71.0
	2nd Quarter 2006	Week of 06/17/06	989	0.05	39	6.94	65.3
	1st Quarter 2006	Week of 03/06/06	747	0.52	-51	7.03	54.1
	Baseline	Week of 08/15/05	923	NR	NR	6.90	68.7
TP-6	Low Flow 2019	Week of 08/26/19	834	1.51	-319.7	7.15	75.6
	Low Flow 2018	Week of 08/13/18	1,878	1.09	-268	7.41	70.9
	Low Flow 2017	Week of 04/26/17	999	2.45	-132	7.00	55.0
	Low Flow 2016	Week of 04/28/16	780	1.48	-231	8.04	55.9
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	800	1.77	-185	7.73	55.8

TABLE 2
Groundwater Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-7 (Biennial)	Low Flow 2019	Week of 08/26/19	1,349	0.59	-157.6	7.18	73.2
	2018	Week of 08/13/18	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	978	5.25	163	7.78	49.5
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	773	3.09	-62.4	7.76	54.8
TP-8	Low Flow 2019	Week of 08/26/19	1,492	0.91	-276.3	7.36	74.1
	Low Flow 2018	Week of 08/13/18	1,627	0.99	-119	7.73	69.3
	Low Flow 2017	Week of 04/26/17	1,571	2.80	-80	7.27	52.5
	Low Flow 2016	Week of 04/28/16	1,084	2.57	-163	8.03	54.0
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	907	2.64	-93.6	7.76	54.0
TP-9	Low Flow 2019	Week of 08/26/19	1,761	0.43	-149.3	6.69	69.5
	Low Flow 2018	Week of 10/15/18	2,050	0.69	-164	7.39	15.8
	Low Flow 2017	Week of 04/26/17	1,674	2.23	-83	7.33	50.9
	Low Flow 2016	Week of 04/28/16	1,715	2.00	-123	7.19	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,833	3.38	-104	7.35	51.9
TP-10	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	695	1.78	46.3	7.60	50.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	340	2.01	60	7.50	63.1

TABLE 2
Groundwater Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-11	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	797	2.06	34.4	7.67	51.9
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	500	1.92	-28	7.40	62.4
TP-12	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	1,064	2.51	-33.9	7.55	51.0
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	561	2.61	-32	7.60	56.6
TP-13 (Biennial)	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	600	5.66	-15.7	7.83	50.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	365	3.23	-54	7.50	60.7
DW-1 (Biennial)	Low Flow 2019	Week of 08/26/19	2,277	0.33	134.2	6.79	68.2
	2018	NA	Biennial				
	Low Flow 2017	Week of 04/26/17****	981	2.79	144	7.91	55.4
	2016	NA	Biennial				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	2,053	2.13	-114	7.26	53.5
DW-2	Low Flow 2019	Week of 08/26/19	1,572	0.28	-265.3	7.30	75.5
	Low Flow 2018	Week of 8/13/18	2,100	1.38	-180	7.73	70.1
	Special Event	12/29/17	1,426	2.22	-29	7.79	60.2

TABLE 2
Groundwater Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
DW-3	Low Flow 2019	Week of 08/26/19	2,368	2.93	-367.2	7.37	74.0
	Low Flow 2018	Week of 8/13/18	1,970	1.34	-326	7.59	69.3
	Special Event	12/29/17	1,654	0.68	41	7.78	70.1
	Low Flow 2017	Week of 04/26/17	1,975	1.45	-162	7.26	70.9
	Low Flow 2016	Week of 04/28/16	1,448	2.59	-269	7.60	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,507	6.74	-243	7.58	57.4
MW-48	Low Flow 2019	Week of 08/26/19	2,816	0.26	-241.1	7.39	74.6
	Low Flow 2018	Week of 8/13/18	3,077	1.4	-246.3	7.80	68.4
MW-49	Low Flow 2019	Week of 08/26/19	1,883	1.15	-258.5	7.12	70.7
	Low Flow 2018	Week of 8/13/18	1,527	0.81	-120.3	7.65	61.3
	Low Flow 2017	Week of 04/26/17	1,202	3.73	-85	7.18	52.3
	Low Flow 2016	Week of 04/28/16	942	3.63	-125.13	7.95	51.7
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	936	1.94	-140.80	7.65	52.90
Gallery	Low Flow 2019	Week of 08/26/19	3,229	0.04	-319.4	7.36	72.0
	Low Flow 2018	Week of 8/13/18	3,286	1.76	-145	7.62	66.9
	Special Event	12/29/17	1,552	1.85	-75	6.91	51.2

Notes:

DO = Dissolved Oxygen NA - Not Applicable

ORP = Oxidation Reduction Potential

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 3
Groundwater Monitoring Data Summary

			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4			WQCC 20NMAC 6.2.3103	
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858	0.015	0.002
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-3 (Biennial)	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.05	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.05	< 2.5	**0.0051**	NR[2]
TP-5	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	**0.0063**	<0.0015	<0.001	<0.40	**1.1**	<2.5	**0.0057**	NR[2]
	Low Flow 2018	Week of 10/17/18	<0.001	<0.001	**0.069**	**0.085**	<0.00021	**1.7**	**1.5**	<5.0	**0.0130**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.010	<0.010	**0.670**	**3.100**	<0.010	**1.6**	**13**	< 2.5	**0.068**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.010	<0.010	**0.300**	**1.800**	<0.010	**1.4**	**11**	< 2.5	**0.027**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.010	<0.010	**0.063**	**1.300**	<0.010	**0.75**	**7.1**	< 2.5	**0.019**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	**0.027**	**0.450**	<0.005	**2.2**	**4.0**	< 2.5	**0.012**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	**0.022**	**0.590**	<0.010	**0.69**	**4.6**	< 2.5	**0.013**	NR[2]
	High Flow 2012	Week of 05/29/12	<0.005	<0.005	**0.017**	**0.450**	<0.005	**1.10**	**4.20**	< 2.5	**0.0260**	NR[2]
	Low Flow 2012	Week of 04/09/12	<0.005	<0.005	**0.020**	**0.410**	<0.005	**0.60**	**1.80**	< 2.5	**0.3600**	NR[2]
	Low Flow 2011	Week of 07/26/11	<0.010	<0.01	**0.051**	**1.200**	<0.025	**0.24**	**4.9**		**0.0550**	NR[2]
	High Flow 2011	Week of 06/13/11	<0.010	<0.01	**0.350**	**4.200**	<0.025	**3.20**	**20**		**0.0580**	NR[2]
	4th Quarter 2010	Week of 10/18/10	<0.005	<0.01	**0.830**	**8.000**	<0.025	**3.10**	**30**		**0.0230**	NR
	3rd Quarter 2010	Week of 07/20/10	<0.005	<0.01	0.310	**8.300**	<0.025	**3.10**	**26**		**0.0830**	NR
	2nd Quarter 2010	Week of 04/19/10	<0.005	<0.010	**1.600**	**13.000**	<0.025	**9.00**	**38**		**0.1300**	NR

TABLE 3
Groundwater Monitoring Data Summary

			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4			WQCC 20NMAC 6.2.3103	
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858	0.015	0.002
Sample Location	Sampling Event	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-5 (continued)	1st Quarter 2010	Week of 03/08/10	<0.005	0.0078	0.150	1.100	<0.013	9.10	31		0.0430	NR
	4th Quarter 2009	Week of 10-05-09	<0.005	<0.01	1.900	15.000	<0.025	7.10	40		0.0250	NR
	3rd Quarter 2009	Week of 09/10/09	<0.005	<0.01	1.300	13.000	<0.025	8.00	33		0.0330	NR
	2nd Quarter 2009	Week of 04/20/09	0.025	0.011	2.400	15.000	<0.025	11.00	49		0.0260	NR
	1st Quarter 2009	Week of 03/02/09	0.019	<0.01	1.800	14.000	<0.025	12.00	37		0.0260	NR
	4th Quarter 2008	Week of 11/10/08	0.016	0.01	2.400	12.000	<0.025	8.50	38		0.0290	NR
	3rd Quarter 2008	Week of 07/14/08	<0.02	<0.02	1.900	18.000	<0.05	1.10	50		0.0430	NR
	2nd Quarter 2008	Week of 05/12/08	0.048	<0.02	1.100	13.000	<0.05	*<1.00	46		0.0390	NR
	1st Quarter 2008	Week of 03/10/08	<0.020	<0.020	1.600	17.000	<0.050	*<1.00	52		0.0510	NR
	4th Quarter 2007	Week of 10/29/07	<0.001	<0.001	2.600	17.000	<0.0025	1.20	56		0.0320	NR
	3rd Quarter 2007	Week of 08/20/07	0.300	<0.10	3.000	22.000	<0.25	*<1.00	69		0.0440	NR
	2nd Quarter 2007	Week of 06/18/07	0.340	<0.10	3.500	21.000	<0.25	*<1.00	78		0.0920	NR
	1st Quarter 2007	Week of 02/26/07	<0.01	<0.01	1.300	18.000	<0.025	*<1.00	85		NR	NR
	4th Quarter 2006	Week of 12/04/06	0.069	<0.050	1.200	10.000	<0.120	*<1.00	50		NR	NR
	3rd Quarter 2006	Week of 09/11/06	<0.01	<0.01	3.100	16.000	<0.025	*<1.00	110		NR	NR
	2nd Quarter 2006	Week of 06/17/06	0.054	<0.001	1.600	16.000	<0.025	*<1.00	34		NR	NR
	1st Quarter 2006	Week of 03/06/06	0.200	<0.02	0.280	20.000	<0.05	*<1.00	59		NR	NR
	Baseline	Week of 08/15/05	0.350	<0.005	3.500	21.000	<0.05	1.20	56		NR	NR
TP-6	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	0.77	<2.5	0.0034	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.001	0.0002J	0.00026J	<0.0015	<0.001	<0.31	0.82	<2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	0.026	0.0038	<0.001	1.7	1.3	< 2.5	0.027	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	0.068	<0.0015	<0.0010	0.75	0.99	< 2.5	0.033	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	0.0087	0.0048	<0.001	1.6	1.5	< 2.5	0.0150	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**

TABLE 3
Groundwater Monitoring Data Summary

			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4			WQCC 20NMAC 6.2.3103	
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858	0.015	0.002
Sample Location	Sampling Event	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-6 (cont.)	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	**0.028**	**0.093**	<0.001	**1.7**	**3.5**	< 2.5	**0.0084**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0100**	NR[2]
TP-7 (Biennial)	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR[2]
	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.2	<0.05	<2.5	**0.020**	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	<0.20	<0.50	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.20	<0.50	< 2.5	**0.0014**	NR[2]
TP-8	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	**0.46**	< 2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.005	<0.005	**0.0028J**	< 0.0075	<0.005	<0.31	**2.1**	< 2.5	**0.0068**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.005	<0.005	**0.011**	< 0.0075	<0.005	**1.3**	**1.6**	< 2.5	**0.038**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.005	<0.005	**0.029**	**0.026**	<0.005	**1.0**	**2.9**	< 2.5	**0.034**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.005	<0.005	**0.0099**	**0.044**	<0.005	**1.3**	**1.4**	< 2.5	**0.0091**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	**0.019**	**0.083**	<0.005	**2.3**	**4.0**	< 2.5	**0.0080**	NR[2]
TP-9	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	**0.095**	<2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 10/17/18	<0.0001	<0.001	<0.001	<0.0025	<0.001	<0.63	**0.056**	<5.0	**0.00026J**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	**0.11**	< 2.5	**0.017**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	**0.092**	< 2.5	**0.052**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	**0.35**	<0.050	< 2.5	**0.0056**	NR[2]

TABLE 3
Groundwater Monitoring Data Summary

			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4			WQCC 20NMAC 6.2.3103	
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858	0.015	0.002
Sample Location	Sampling Event	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-9 (cont.)	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0091**	NR[2]
TP-10	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.024**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0013**	NR[2]
TP-11	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[1]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0130**	NR[1]
TP-12	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0058**	NR[2]
TP-13	2016 - 2019	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	**0.22**	<0.050	< 2.5	**0.0064**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0068**	NR[2]

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			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4			WQCC 20NMAC 6.2.3103	
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858	0.015	0.002
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (mg/L)**	**MTBE (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**Lead (mg/L)**	**Mercury (mg/L)**
DW-1 (Biennial)	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR[2]
	2018	NA	Biennial									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	**0.0068**	NR[2]
	2016	NA	Biennial									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	****	<0.0002
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0014**	<0.0002
DW-2	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	**0.0011**	
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	**0.00091J**	<0.001	<0.31	**0.21**	<2.5	**0.016**	
	Special Event	12/29/17	<0.001	<0.001	**0.0036**	**0.0039**	<0.001	**0.4**	**1**	< 2.5	**0.0041**	NR
DW-3	Low Flow 2019	Week of 08/26/19	**0.0063**	<0.001	**0.0029**	**0.028**	<0.001	<0.40	**0.26**	<2.5	**0.0017**	NR
	Low Flow 2018	Week of 08/13/18	**0.0095**	**0.00019J**	**0.032**	**0.170**	**0.00063J**	<0.31	**1.5**	<2.5	**0.0091**	NR
	Special Event	12/29/17	<0.001	<0.001	**0.0040**	**0.0020**	<0.001	<0.2	**0.23**	< 2.5	**0.00083**	NR
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	**0.0032**	<0.0015	<0.001	<0.20	**0.099**	< 2.5	**0.0110**	NR[2]
	Low Flow 2016	Week of 04/28/16	**0.0049**	<0.001	**0.034**	**0.011**	<0.001	**0.35**	**0.33**	< 2.5	**0.014**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	**0.082**	<0.010	**0.400**	**0.290**	<0.010	**0.76**	**2.1**	<2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	**0.067**	<0.010	**0.720**	**1.300**	<0.010	**1.7**	**8.8**	<2.5	<0.0050	NR[2]
MW-48	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.29**	<2.5	**0.012**	NR[2]

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Groundwater Monitoring Data Summary

			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4			WQCC 20NMAC 6.2.3103	
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858	0.015	0.002
Sample Location	Sampling Event	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
MW-49	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	< 2.5	<0.00050	NR[2]
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.019J	< 2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.029	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.040	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0064	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
Gallery	Low Flow 2019	Week of 08/26/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5	<0.00050	NR
	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.22	<2.5	<0.005	NR
	Special Event	12/29/17	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	0.11	< 2.5	0.11	NR

Notes: NR = Not Required (Voluntary Corrective Measures - Revised Monitoring Plan - October 2005)

NR[1]= Not Required (Approval With Direction - June 2009)

NR[2]= Not Required (Approval With Direction - May 2011)

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

**** Analyte inadvertently not included in sample analysis.

Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, groundwater sampling discontinued.

1. Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, high flow sampling is no longer required at the River Terrace.

0.670	Constituent detected at concentration above method detection limit
3.100	Constituent detected at concentration above screening level

TABLE 4
Soil Gas Monitoring Data Summary

Sample Location	Sampling Event	Date	Purge Volume (L)	Depth to Water (ftbtoc)	Pressure (inches of water)	Vapor Phase Organics (% LEL)	Oxygen (%)	Carbon Dioxide (%)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	TPH-GRO (ug/L)
TP-5	Low Flow 2019	Week of 08/26/19	2.50	4.05	0	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
TP-6	Low Flow 2019	Week of 08/26/19	3.03	4.91	0.6	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
TP-7	Low Flow 2019	NA	NS	NS	0	NS	NS	NS	NS	NS	NS	NS	NS
TP-8	Low Flow 2019	Week of 08/26/19	3.12	5.07	0	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	**9.7**
BV-1	Low Flow 2019	Week of 08/26/19	0.88	5.72	13	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
BV-3*	Low Flow 2019	Week of 08/26/19	0.69	4.41	1 lb	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	**6.6**
BV-4	Low Flow 2019	Week of 08/26/19	0.95	6.18	1.5	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
BV-5	Low Flow 2019	Week of 08/26/19	0.95	6.12	12	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
BV-6	Low Flow 2019	Week of 08/26/19	0.92	5.96	5	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
DW-2	Low Flow 2019	Week of 08/26/19	14	5.67	NM	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
DW-3	Low Flow 2019	Week of 08/26/19	UNABLE TO REMOVE PUMP FROM WELL - WELL NOT SAMPLED										
MW-48	Low Flow 2019	Week of 08/26/19	17	6.79	NM	0	20.9	0.0	<0.10	<0.10	<0.10	<0.15	<5.0
Air Sparging Line A*	Low Flow 2019	NA	NA	NA	1 lb	NA	NA	NA	NA	NA	NA	NA	NA
Air Sparging Line B*	Low Flow 2019	NA	NA	NA	1 lb	NA	NA	NA	NA	NA	NA	NA	NA
Main Blower*	Low Flow 2019	NA	NA	NA	1 lb	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

0.670 Constituent detected at concentration above method detection limit

Pressure readings were measured on August 15, 2019 prior to shutting the system down for gauging and sampling.

Pressure readings from BV-3, Air Sparging Line A, Air Sparging Line B and the Main Blower exceeded the capability of the magnehelic gauge and were collected using a dial pressure gauge.

TABLE 5
GAC Filter Monitoring Data Summary

			WQCC 20NMAC 6.2.3103					NMED Soil Screening Guidance Table 6-4		
			0.005	1.00	0.7	0.62	0.1	0.0858	0.0101	0.0858
Sample Location	Sampling Event	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)
GAC-INLET	4th Quarter	10/23/19	0.00026 J	<0.001	0.00095 J	<0.0015	0.00072 J	0.73	0.047 J	<2.5
	3rd Quarter	07/31/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	0.073	<2.5
	2nd Quarter	05/08/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	0.21	<2.5
	1st Quarter	02/13/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	0.31	<2.5
GAC-LEAD	4th Quarter	10/23/19	<0.001	<0.001	<0.001	<0.0015	0.00085 J	1.5	<0.050	<2.5
	3rd Quarter	07/31/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5
	2nd Quarter	05/08/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5
	1st Quarter	02/13/19	<0.001	<0.001	<0.001	<0.0015	0.0011	<0.40	<0.050	<2.5
GAC-LAG	4th Quarter	10/23/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5
	3rd Quarter	07/31/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5
	2nd Quarter	05/08/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5
	1st Quarter	02/13/19	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.40	<0.050	<2.5

Notes:

= Analytical result exceeds the respective screening level.

J = estimated concentration reported below quantitation limit

MTBE = Methyl tert-butyl ether

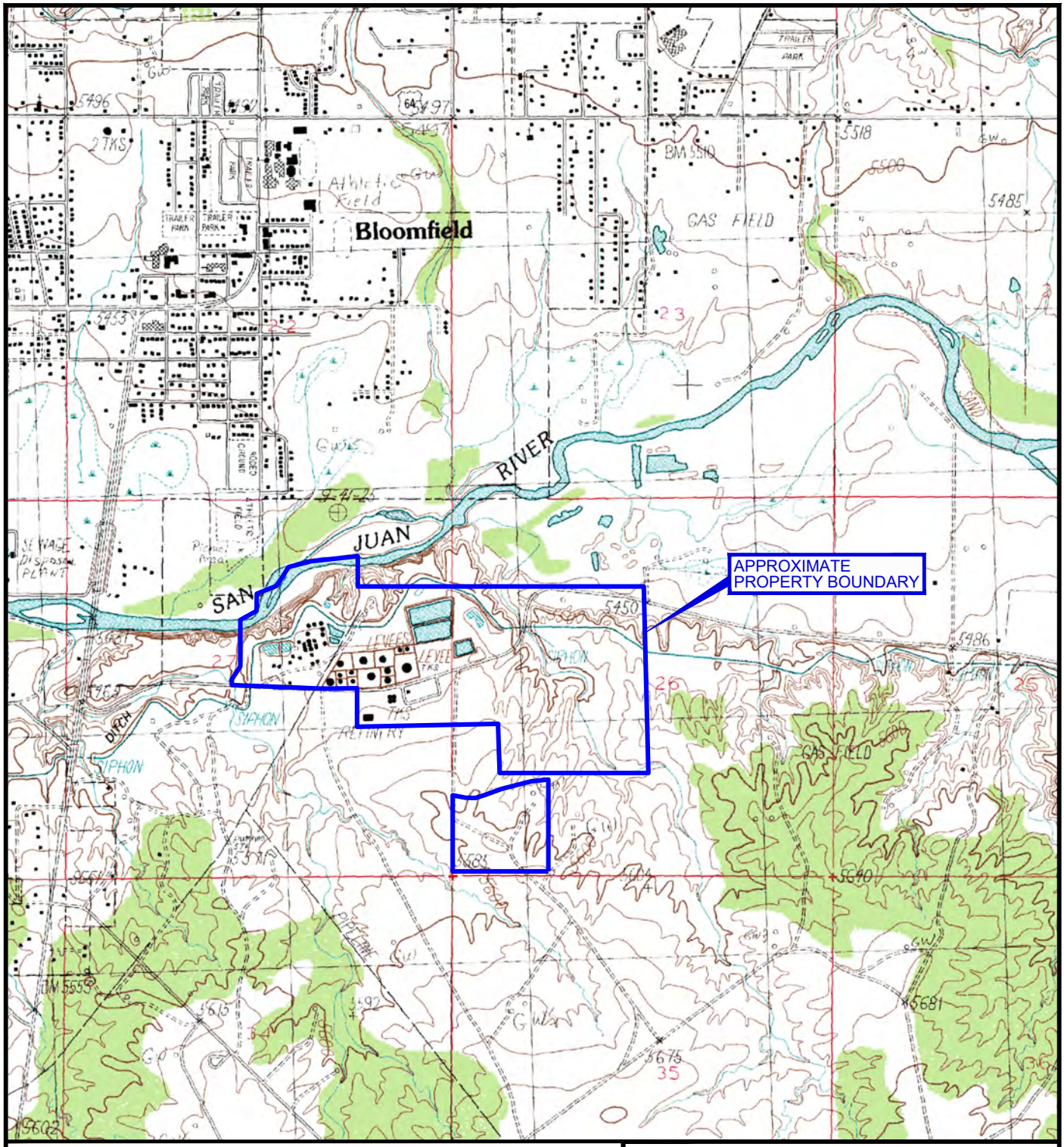
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-MRO = Total Petroleum Hydrocarbons - Motor Oil Range Organics

WQCC = Water Quality Control Commission

Figures



Map Source: USGS 7.5 Min. Quad Sheet BLOOMFIELD, NM., 1985.

N

0 2000

SCALE IN FEET

NEW MEXICO

QUADRANGLE LOCATION

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:08/27/14	FILE: WestRef-dA01

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:02/23/20 | FILE:WestRef-dB208

FIGURE 2
FACILITY SITE PLAN
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

DiSorbo Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

RIVER TERRACE

LEGEND

- MW-1 ● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- RW-1 ⊛ RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- OW 1+50 ◐ OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
- CW 1+50 ◑ COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
- SW1-0206 ▲ SUMP WELL LOCATION AND IDENTIFICATION NUMBER
- P-2 PIEZOMETER IDENTIFICATION
- SURFACE WATER DRAINAGE PATTERN

- UNDER GROUND PIPE-WAY
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL
- FORMER TANK LOCATION
- ABANDONED UNDERGROUND PIPING
- UNDER GROUND WASTEWATER PIPING
- UNDER GROUND DRAIN PIPING

0 300
SCALE IN FEET

Map Source: Google Aerial, 03-15-2015.

N

0 50
SCALE IN FEET

LEGEND

- BV-1 — BIOVENTING WELL LOCATION AND IDENTIFICATION NUMBER
- DW-2 — ACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
- DW-1 — INACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
- MW-48 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- TP-5 — TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- SHEET PILINGS
- SLURRY WALL

NOTE:
LOCATION OF SHEET PILINGS AND SLURRY WALL TAKEN FROM SEPT. 2001 DISCHARGE FLOW APPLICATION, SITE INVESTIGATION AND ABATEMENT PLAN CMS.

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:02/03/18 | FILE:WestRef-dB158

FIGURE 3
RIVER TERRACE WELL LOCATION MAP
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

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Suite 300
Austin, Texas 78759

Map Source: Google Aerial, 03-15-2015.

N

0 30

SCALE IN FEET

LEGEND

BV-1	BIOVENTING WELL LOCATION AND IDENTIFICATION NUMBER
DW-2	ACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
DW-1	INACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
MW-48	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
TP-5	TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:02/03/18	FILE:WestRef-dA131

FIGURE 4

BIOVENT / AIR SPARGE SYSTEM LAYOUT
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

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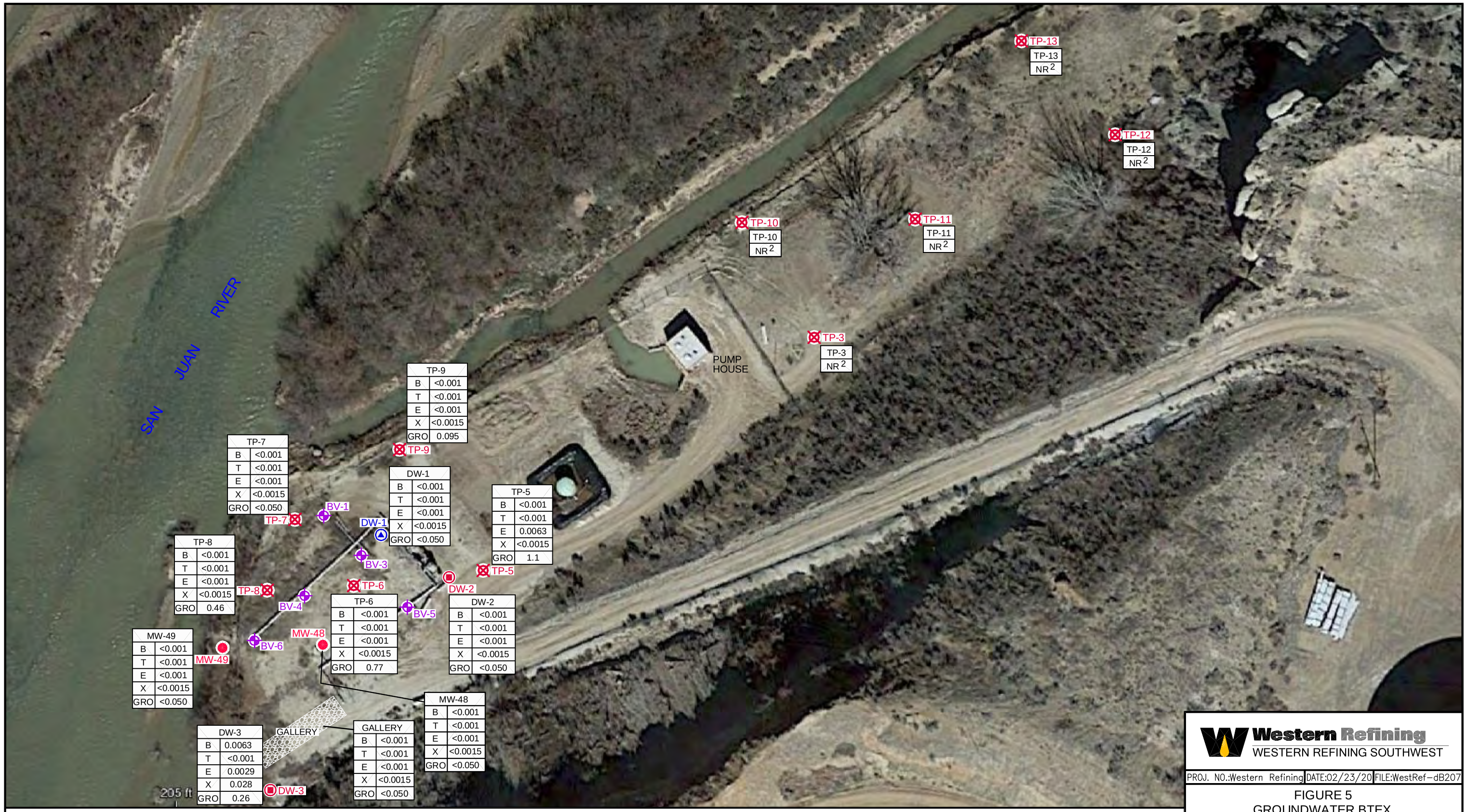
Austin, Texas 78759



Map Source: Google Aerial, 03-15-2015.

0 50
SCALE IN FEET

LEGEND

BV-1 BIOVENTING WELL LOCATION AND IDENTIFICATION NUMBER

DW-2 ACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER

DW-1 INACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER

MW-48 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

TP-5 TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES
GRO	GAS RANGE ORGANICS

NOTE:
SAMPLES COLLECTED APRIL 2017, EXCEPT DW-1, DW-2, TP-7 AND GALLERY COLLECTED DECEMBER 2017. APRIL AND DECEMBER SAMPLES COLLECTED AT DW-3.

NR 1 NOT REQUIRED (BI-ANNUAL SAMPLING)

NR 2 NOT REQUIRED (APPROVAL WITH DIRECTION - MAY 2011) (ALL CONCENTRATIONS IN mg/L)

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:02/23/20 | FILE:WestRef-dB207

FIGURE 5
GROUNDWATER BTEX CONCENTRATION MAP
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

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Appendices

Appendix A Field Methods

Appendix B Analytical Reports

Appendix A

Field Methods

Appendix A - Field Methods

Groundwater Sampling – Low-Flow Purging and Sampling

Equipment and Supplies

- Job Safety Analysis Form
- Safe Work Permit
- Well Sampling Worksheet
- Portable tank and discharge line for waste water
- Disposable Nitrile Gloves
- Work table and chair
- Plastic sheeting
- Alconox soap (or similar)
- Clean 5-gallon bucket and lid for soap/potable water mixture
- 5-gallon bucket for rinse water
- Distilled water
- Interface Probe
- YSI Professional Plus water quality meter (or similar)
- Calibration standards for water quality meter
- Flow-thru cell for water quality meter
- Peristaltic pump – Geopump II with EZ Load II pumphead and case
- 12 Volt battery and charger
- Flex Silicone Tubing – 15 feet
- Rigid Polyethylene Tubing – 1/4 – inch – 170 feet
- Decontaminated PVC piping
- Zipties
- Electrical tape
- Measuring container
- 5-gallon bucket for purged water
- Bottle kits with preservatives (provided by contract laboratory)
- Labels for sample bottles
- Permanent marker
- Chain-of-custody forms
- Cooler(s) ice
- Sealable plastic bags – 1 gallon
- Garbage bags
- Paper towels
- Shipping tape / duct tape

Water Quality Parameters

Water quality parameters are measured using an YSI Professional Plus water quality meter attached to a flow-thru cell. Calibration of the YSI Professional Plus occurs at the beginning of each day of sampling. The probe is powered on and allowed to stabilize. The calibration menu is selected. The LCD screen runs through a list of selections to specify units, calibration solutions, etc. The calibrations procedures outlined in the YSI Professional Plus instruction manual are followed.

Electrical conductance, oxidation-reduction potential (ORP), pH, temperature, and dissolved oxygen are monitored during purging. The water quality meter and flow-thru cell are rinsed with potable water before and after calibration and after each sampling location.

Fluid Level Measurements

All water/product levels are determined to an accuracy of 0.01 foot using a Geotech Interface Meter. The technician records separate phase hydrocarbon, depth to water, and total well depth using this probe. The total well depth should be measured and recorded after the collection of the samples and the removal of the tubing. The probe and line are decontaminated with a soap and potable water mixture. The probe and line are triple rinsed with distilled water and wiped dry with paper towels. The probe is decontaminated after each sampling location.

Installation of Equipment

The peristaltic pump tubing is placed in the approximate mid-portion of the screened interval of the well. Prior to initiation of pumping, a properly decontaminated water level meter should be lowered into the well to monitor the static water level prior to and during the purging process. Ideally, there should be only a slight and stable drawdown of the water column after pumping begins.

The following step-by-step procedures describe the process of purging with a peristaltic pump:

1. Unfold work table and cover surface with clean plastic sheeting that is either taped or clamped down. Place pump, flow-thru cell, and water quality meter on table.

2. Cut a length of rigid tubing equal to approximate one foot from the bottom of the well plus an additional ten feet. Attach a 3-feet section of decontaminated PVC pipe to the end of the tubing with zipties. The PVC pipe adds weight to the tubing for a more accurate positioning of the tubing intake. Lower the end of the tubing into the well until the end of the tubing is positioned approximately in the mid-portion of the screened interval of the well. Secure the tubing to the well casing or other secure object using electrician's tape or a ziptie. This will prevent the tubing from being lost in the well should the tubing detach from the pump head.

3. Place one end of the rigid tubing existing the well into one end of silicone flexible tubing (approximately one foot in length). Proper sizing of the tubing should allow for a snug

fit of the rigid tubing inside the flexible tubing mounted in the pump head. This connection will be positioned on the vacuum side of the peristaltic pump.

4. Place the flexible tubing in the pump head and lock in place.

5. Cut two pieces of flexible tubing (four inches in length) and attach them to the flow thru cell.

6. Cut a 3-feet section of rigid tubing and insert it into the discharge side of the flex tubing which has been locked into the pump. Insert the other end of the rigid tubing into the flex tubing on the intake port (bottom port) of the flow thru cell.

7. Cut a 3-feet section of rigid tubing and insert it into flex tubing that is connected to the discharge port (top port) on the flow thru cell. Clamp the free end of the tubing onto the inside of a plastic bucket to be used to contain the purged water.

8. Lower the interface probe into the well and position the probe approximately 6-inches below the top of the fluid column and turn the probe on.

9. Turn on the water quality meter.

10. Turn on the pump to produce a vacuum on the well side of the pump head and begin the purge. Adjust the pump speed to pump as slow as possible. Observe pump direction to ensure that a vacuum is being applied to the purge line. If the purge line is being pressurized, either switch the tubing at the pump head or reverse the polarity of the cables on the pump or on the battery.

11. Introducing the tubing into the screened interval may dislodge sediment or fines which may be purged/vacuumed through the line. Observe the fluid in the rigid tubing and stop the purging if sediment or fines have entered the tubing. Disconnect the rigid tubing from intake of the flow-thru cell and turn the pump back on to direct the water to the purge bucket and not the flow-thru cell. Once the sediment has been removed from the line turn off the pump and reconnect the rigid line to the intake port of the flow-thru cell.

12. Allow the flow-thru cell to fill up and begin to discharge to the purged water bucket. Measure the amount of groundwater being purged in one minute. The target flow rate is 0.1 liter per minute.

13. Begin recording the water quality parameters and collect readings every three minutes. If the pumping rate exceeds the recovery rate of the well, lower the tubing into the well, as needed, until the drawdown stabilizes. The end of the tubing should not be lowered to a depth less than one foot from the bottom of the well.

Purge Volume Criteria

The purge water criteria will be project specific and will not be based on volume but rather only on groundwater chemistry. An adequate purge is achieved when the pH and specific conductance of the ground water have stabilized.

Because groundwater temperature is subject to rapid changes when collected for parameter measurement, its usefulness is subject to question for the purpose of determining parameter stability. Even though temperature may or may not be used to determine stability during well purging, it is still advisable to record the sample temperature, along with the other groundwater chemistry parameters during well purging, as it may be needed to interpret other chemical parameter results in some situations.

Stabilization occurs when, for at least three consecutive measurements, the pH remains constant within 0.1 Standard Unit (SU) and specific conductance varies no more than approximately 10 percent. Other parameters, such as dissolved oxygen (DO), may also be used as a purge adequacy parameter. Normal goals for DO are 0.2 mg/L or 10% saturation, whichever is greater. DO measurements must be conducted using either a flow-through cell or an over-topping cell to minimize or reduce any oxygenation of the sample during measurement. Oxidation Reduction Potential (ORP) should not be used as a purge stabilization parameter but may be measured during purging to obtain the measurement of record for ORP for the sampling event.

A minimum of three total sets of measurements are considered to be adequate to document stability of parameters. The measurements should be taken frequently enough (three-minute intervals) to provide a sufficient number of measurements to evaluate stability.

If five sets of measurements (15 minutes) have been collected and the chemical parameters have not stabilized according to the above criteria, purging should be discontinued and the well should be sampled.

Sampling Procedures

After purging of the well is completed, the groundwater collected directly into the laboratory-provided sample containers. The rigid tubing that connects the pump to the intake of the flow-thru cell should be cut in half. The samples are not collected after the water has flowed thru the flow-thru cell.

The sample containers will be filled in the following order based on volatilization sensitivity.

- Volatile organic compounds – Three 40-ml glass vials with Teflon septa will be used. Each vial will be filled so that it has a positive meniscus and the cap screwed on carefully to avoid leaving any airspace in the vial. If an air bubble forms in the bottle, an additional separate sample will be collected.

- Semi-volatile organic compounds – One or two, 1-liter amber glass containers with Teflon-lined lids will be used to collect the sample.

- Total Metals – One, 500-ml or 1-liter plastic container. The sample will be preserved to pH less than 2 using nitric acid.

- Dissolved Metals – One 500-ml or 1-liter plastic container. The sample will be field filtered and placed in a container with preservative.

- Inorganic Parameters – The containers for the inorganic parameters such as nitrite, nitrate, total dissolved solids, etc. will be filled at the end and will vary in size and preservation methods.

Once filled and sealed, the sample containers will be labelled with the well number. The sample designation will be cross-referenced to field documents that describe the locations of the samples. The documents include site maps, well sampling forms, chain-of-custody forms, field notebook and well logs.

The date and time the sample is collected and the sampler's name/initials will be indicated on the label. All labels will be made in waterproof ink and then covered with clear packaging tape to minimize the potential loss of sample identity.

The sample containers will be secured in bubble wrap and then placed in new sealable bags. The bags will be placed into a cooler filled with ice packed in sealable bags. All samples will be kept cold (at 4^{o}C or below) and delivered by hand, transported to the laboratory or transported by overnight courier under standard custody protocols. Shipment of samples to the laboratory will be done as soon as possible.

For those coolers shipped to a laboratory, bubble wrap will be placed on the bottom and sides of the cooler to minimize breakage. A clean, plastic garbage bag will then be placed in the cooler. The sample containers secured in bubble wrap and sealable bags will then be placed inside the garbage bags. Ice packed in sealable bags will be placed around the sample containers until the cooler is filled. The garbage bag will be sealed with a zip tie and the excess portion will be cut off. The chain of custody form (minus the sampler's copy) will be placed in a sealable bag and then taped to the inside of the top of the cooler. The cooler will be closed and secured with reinforced shipping tape or duct tape. A custody seal will be signed and dated and placed across the gap formed between the cooler lid and the shell of the cooler. If the cooler is equipped with a drain spout the spout must be closed and covered with tape to prevent accidental opening.

All groundwater samples will be collected, as close to the well head as is practical. Water removed during the sampling will be added to the purge water bucket.

Quality Assurance Samples

Quality assurance samples will be collected during the collection of groundwater samples. The collection of these will be project specific:

- Duplicate Sample – One duplicate sample of will be collected per each sampling event. The analyses conducted on the duplicate sample will be the same as those conducted on the groundwater samples. The sample and its duplicate name will be recorded on the groundwater sampling worksheet.

- Trip Blank – One trip blank be submitted for each shipment of samples. The trip blank will be provided by the laboratory and is maintained in the cooler at all times. Trip blanks are not opened. The trip blanks for each cooler will consist of two distilled water-filled 40-ml glass vials with Teflon-lined septum caps and hydrochloric acid preservative

(VOA vials). A trip blank will not be used if volatile organic constituents are not part of the analytical suite.

- Field Blank – One field blank will be obtained per each sampling event. The field blank will be analyzed for the same constituents being analyzed for those samples collected on that specific day. At a representative area the sample containers will be filled with distilled water.

- Equipment Blank – One equipment blank will be obtained per each sampling event. The equipment blank will be analyzed for the same constituents being analyzed for those samples collected on that specific day.

Post Sampling Procedures

After the samples have been collected and packed in coolers the following steps will be taken.

1. Cut zipties and remove the tubing from the well and from the peristaltic pump and place in trash bags.
2. Measure the total well depth and record the data on the well sampling worksheet. Decontaminate the Interface probe by washing with soap and potable water and triple rinsing with distilled water.
3. Discard the water in the flow-thru cell into the purged water bucket. Remove the water quality sonde from the flow-thru cell and rinse with potable water. Install the protective cover, dry off sonde and water quality meter and store in case.
4. Decontaminate the flow-thru cell with soap and potable water and triple rinse with distilled water. Dry off flow-thru cell and store in case.
5. Remove plastic sheeting from table and discard.
6. Empty purge water bucket into portable tank. The tank will be emptied into the facility waste water treatment system at the end of the sampling day or if it becomes full. All disposable sampling equipment, supplies, and non-reusable personal protective equipment will be placed in the appropriate container as directed by the facility's environmental staff.

Appendix B

Analytical Reports

(On Attached CD)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

September 18, 2019

Gregory J. McCartney

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: River Terrace OrderNo.: 1908H76

Dear Gregory J. McCartney:

Hall Environmental Analysis Laboratory received 15 sample(s) on 8/29/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: EB01
Project: River Terrace
Collection Date: 8/27/2019 11:25:00 AM
Lab ID: 1908H76-001
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 6:46:42 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 6:46:42 PM	47204
Surr: DNOP	125	52.7-168		%Rec	1	9/3/2019 6:46:42 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 4:39:38 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 1:09:35 PM	G62589
Surr: BFB	96.1	70-130		%Rec	1	9/3/2019 1:09:35 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 1:09:35 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 1:09:35 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 1:09:35 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 1:09:35 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 1:09:35 PM	SL62589
Surr: 1,2-Dichloroethane-d4	98.7	70-130		%Rec	1	9/3/2019 1:09:35 PM	SL62589
Surr: 4-Bromofluorobenzene	95.5	70-130		%Rec	1	9/3/2019 1:09:35 PM	SL62589
Surr: Dibromofluoromethane	103	70-130		%Rec	1	9/3/2019 1:09:35 PM	SL62589
Surr: Toluene-d8	94.0	70-130		%Rec	1	9/3/2019 1:09:35 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-5
Project: River Terrace
Collection Date: 8/27/2019 11:55:00 AM
Lab ID: 1908H76-002
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 7:11:03 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 7:11:03 PM	47204
Surr: DNOP	129	52.7-168		%Rec	1	9/3/2019 7:11:03 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	0.0057	0.00050		mg/L	1	9/5/2019 4:44:00 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	1.1	0.050		mg/L	1	9/4/2019 12:43:33 PM	G62661
Surr: BFB	99.9	70-130		%Rec	1	9/4/2019 12:43:33 PM	G62661
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/4/2019 12:43:33 PM	SL62661
Toluene	ND	1.0		µg/L	1	9/4/2019 12:43:33 PM	SL62661
Ethylbenzene	6.3	1.0		µg/L	1	9/4/2019 12:43:33 PM	SL62661
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2019 12:43:33 PM	SL62661
Xylenes, Total	ND	1.5		µg/L	1	9/4/2019 12:43:33 PM	SL62661
Surr: 1,2-Dichloroethane-d4	98.5	70-130		%Rec	1	9/4/2019 12:43:33 PM	SL62661
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	9/4/2019 12:43:33 PM	SL62661
Surr: Dibromofluoromethane	103	70-130		%Rec	1	9/4/2019 12:43:33 PM	SL62661
Surr: Toluene-d8	96.6	70-130		%Rec	1	9/4/2019 12:43:33 PM	SL62661

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: DW-2
Project: River Terrace
Collection Date: 8/27/2019 12:30:00 PM
Lab ID: 1908H76-003
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 7:35:32 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 7:35:32 PM	47204
Surr: DNOP	126	52.7-168		%Rec	1	9/3/2019 7:35:32 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	0.0011	0.00050		mg/L	1	9/5/2019 4:46:11 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 4:02:08 PM	G62589
Surr: BFB	95.5	70-130		%Rec	1	9/3/2019 4:02:08 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 4:02:08 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 4:02:08 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 4:02:08 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 4:02:08 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 4:02:08 PM	SL62589
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/3/2019 4:02:08 PM	SL62589
Surr: 4-Bromofluorobenzene	93.3	70-130		%Rec	1	9/3/2019 4:02:08 PM	SL62589
Surr: Dibromofluoromethane	111	70-130		%Rec	1	9/3/2019 4:02:08 PM	SL62589
Surr: Toluene-d8	95.7	70-130		%Rec	1	9/3/2019 4:02:08 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: River Terrace
Lab ID: 1908H76-004 **Matrix:** AQUEOUS

Client Sample ID: Collection Gallery
Collection Date: 8/27/2019 1:00:00 PM
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 7:59:51 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 7:59:51 PM	47204
Surr: DNOP	127	52.7-168		%Rec	1	9/3/2019 7:59:51 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 4:48:21 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 4:30:57 PM	G62589
Surr: BFB	96.1	70-130		%Rec	1	9/3/2019 4:30:57 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 4:30:57 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 4:30:57 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 4:30:57 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 4:30:57 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 4:30:57 PM	SL62589
Surr: 1,2-Dichloroethane-d4	99.8	70-130		%Rec	1	9/3/2019 4:30:57 PM	SL62589
Surr: 4-Bromofluorobenzene	92.1	70-130		%Rec	1	9/3/2019 4:30:57 PM	SL62589
Surr: Dibromofluoromethane	108	70-130		%Rec	1	9/3/2019 4:30:57 PM	SL62589
Surr: Toluene-d8	95.2	70-130		%Rec	1	9/3/2019 4:30:57 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: DW-3
Project: River Terrace
Collection Date: 8/27/2019 1:35:00 PM
Lab ID: 1908H76-005
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 8:24:44 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 8:24:44 PM	47204
Surr: DNOP	131	52.7-168		%Rec	1	9/3/2019 8:24:44 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	0.0017	0.00050		mg/L	1	9/5/2019 4:54:56 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	0.26	0.050		mg/L	1	9/3/2019 4:59:49 PM	G62589
Surr: BFB	99.5	70-130		%Rec	1	9/3/2019 4:59:49 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	6.3	1.0		µg/L	1	9/3/2019 4:59:49 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 4:59:49 PM	SL62589
Ethylbenzene	2.9	1.0		µg/L	1	9/3/2019 4:59:49 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 4:59:49 PM	SL62589
Xylenes, Total	28	1.5		µg/L	1	9/3/2019 4:59:49 PM	SL62589
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/3/2019 4:59:49 PM	SL62589
Surr: 4-Bromofluorobenzene	98.5	70-130		%Rec	1	9/3/2019 4:59:49 PM	SL62589
Surr: Dibromofluoromethane	112	70-130		%Rec	1	9/3/2019 4:59:49 PM	SL62589
Surr: Toluene-d8	97.2	70-130		%Rec	1	9/3/2019 4:59:49 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: MW-48
Project: River Terrace
Collection Date: 8/27/2019 2:15:00 PM
Lab ID: 1908H76-006
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 8:49:28 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 8:49:28 PM	47204
Surr: DNOP	135	52.7-168		%Rec	1	9/3/2019 8:49:28 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 4:57:06 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/4/2019 2:09:41 PM	G62661
Surr: BFB	97.1	70-130		%Rec	1	9/4/2019 2:09:41 PM	G62661
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/4/2019 2:09:41 PM	SL62661
Toluene	ND	1.0		µg/L	1	9/4/2019 2:09:41 PM	SL62661
Ethylbenzene	ND	1.0		µg/L	1	9/4/2019 2:09:41 PM	SL62661
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2019 2:09:41 PM	SL62661
Xylenes, Total	ND	1.5		µg/L	1	9/4/2019 2:09:41 PM	SL62661
Surr: 1,2-Dichloroethane-d4	94.2	70-130		%Rec	1	9/4/2019 2:09:41 PM	SL62661
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	9/4/2019 2:09:41 PM	SL62661
Surr: Dibromofluoromethane	101	70-130		%Rec	1	9/4/2019 2:09:41 PM	SL62661
Surr: Toluene-d8	95.4	70-130		%Rec	1	9/4/2019 2:09:41 PM	SL62661

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Trip Blank
Project: River Terrace
Collection Date:
Lab ID: 1908H76-007
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	9/3/2019 5:57:27 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 5:57:27 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 5:57:27 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 5:57:27 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 5:57:27 PM	SL62589
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/3/2019 5:57:27 PM	SL62589
Surr: 4-Bromofluorobenzene	97.1	70-130		%Rec	1	9/3/2019 5:57:27 PM	SL62589
Surr: Dibromofluoromethane	111	70-130		%Rec	1	9/3/2019 5:57:27 PM	SL62589
Surr: Toluene-d8	96.2	70-130		%Rec	1	9/3/2019 5:57:27 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-6
Project: River Terrace
Collection Date: 8/27/2019 2:50:00 PM
Lab ID: 1908H76-008
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 9:14:19 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 9:14:19 PM	47204
Surr: DNOP	149	52.7-168		%Rec	1	9/3/2019 9:14:19 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	0.0034	0.00050		mg/L	1	9/5/2019 4:59:17 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	0.77	0.050		mg/L	1	9/3/2019 6:26:10 PM	G62589
Surr: BFB	101	70-130		%Rec	1	9/3/2019 6:26:10 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 6:26:10 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 6:26:10 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 6:26:10 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 6:26:10 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 6:26:10 PM	SL62589
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/3/2019 6:26:10 PM	SL62589
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	9/3/2019 6:26:10 PM	SL62589
Surr: Dibromofluoromethane	107	70-130		%Rec	1	9/3/2019 6:26:10 PM	SL62589
Surr: Toluene-d8	95.3	70-130		%Rec	1	9/3/2019 6:26:10 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: MW-49
Project: River Terrace
Collection Date: 8/27/2019 3:25:00 PM
Lab ID: 1908H76-009
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 9:38:57 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 9:38:57 PM	47204
Surr: DNOP	98.3	52.7-168		%Rec	1	9/3/2019 9:38:57 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 5:01:28 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 6:54:54 PM	G62589
Surr: BFB	101	70-130		%Rec	1	9/3/2019 6:54:54 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 6:54:54 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 6:54:54 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 6:54:54 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 6:54:54 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 6:54:54 PM	SL62589
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/3/2019 6:54:54 PM	SL62589
Surr: 4-Bromofluorobenzene	96.5	70-130		%Rec	1	9/3/2019 6:54:54 PM	SL62589
Surr: Dibromofluoromethane	109	70-130		%Rec	1	9/3/2019 6:54:54 PM	SL62589
Surr: Toluene-d8	95.4	70-130		%Rec	1	9/3/2019 6:54:54 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: DUP 01
Project: River Terrace
Collection Date: 8/27/2019
Lab ID: 1908H76-010
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 10:03:47 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 10:03:47 PM	47204
Surr: DNOP	101	52.7-168		%Rec	1	9/3/2019 10:03:47 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 5:03:38 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 7:23:38 PM	G62589
Surr: BFB	100	70-130		%Rec	1	9/3/2019 7:23:38 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 7:23:38 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 7:23:38 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 7:23:38 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 7:23:38 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 7:23:38 PM	SL62589
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/3/2019 7:23:38 PM	SL62589
Surr: 4-Bromofluorobenzene	99.9	70-130		%Rec	1	9/3/2019 7:23:38 PM	SL62589
Surr: Dibromofluoromethane	106	70-130		%Rec	1	9/3/2019 7:23:38 PM	SL62589
Surr: Toluene-d8	95.5	70-130		%Rec	1	9/3/2019 7:23:38 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-8
Project: River Terrace
Collection Date: 8/27/2019 4:00:00 PM
Lab ID: 1908H76-011
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 10:28:39 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 10:28:39 PM	47204
Surr: DNOP	99.1	52.7-168		%Rec	1	9/3/2019 10:28:39 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 5:05:49 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	0.46	0.050		mg/L	1	9/4/2019 2:38:26 PM	G62661
Surr: BFB	99.0	70-130		%Rec	1	9/4/2019 2:38:26 PM	G62661
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/4/2019 2:38:26 PM	SL62661
Toluene	ND	1.0		µg/L	1	9/4/2019 2:38:26 PM	SL62661
Ethylbenzene	ND	1.0		µg/L	1	9/4/2019 2:38:26 PM	SL62661
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2019 2:38:26 PM	SL62661
Xylenes, Total	ND	1.5		µg/L	1	9/4/2019 2:38:26 PM	SL62661
Surr: 1,2-Dichloroethane-d4	95.3	70-130		%Rec	1	9/4/2019 2:38:26 PM	SL62661
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	1	9/4/2019 2:38:26 PM	SL62661
Surr: Dibromofluoromethane	101	70-130		%Rec	1	9/4/2019 2:38:26 PM	SL62661
Surr: Toluene-d8	93.8	70-130		%Rec	1	9/4/2019 2:38:26 PM	SL62661

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-7
Project: River Terrace
Collection Date: 8/27/2019 4:30:00 PM
Lab ID: 1908H76-012
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 10:53:31 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 10:53:31 PM	47204
Surr: DNOP	101	52.7-168		%Rec	1	9/3/2019 10:53:31 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 5:08:00 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 8:20:58 PM	G62589
Surr: BFB	97.8	70-130		%Rec	1	9/3/2019 8:20:58 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 8:20:58 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 8:20:58 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 8:20:58 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 8:20:58 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 8:20:58 PM	SL62589
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/3/2019 8:20:58 PM	SL62589
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	9/3/2019 8:20:58 PM	SL62589
Surr: Dibromofluoromethane	105	70-130		%Rec	1	9/3/2019 8:20:58 PM	SL62589
Surr: Toluene-d8	94.5	70-130		%Rec	1	9/3/2019 8:20:58 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-9
Project: River Terrace
Collection Date: 8/27/2019 5:00:00 PM
Lab ID: 1908H76-013
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/3/2019 11:18:19 PM	47204
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/3/2019 11:18:19 PM	47204
Surr: DNOP	99.2	52.7-168		%Rec	1	9/3/2019 11:18:19 PM	47204
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 5:10:10 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	0.095	0.050		mg/L	1	9/3/2019 8:49:38 PM	G62589
Surr: BFB	102	70-130		%Rec	1	9/3/2019 8:49:38 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 8:49:38 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 8:49:38 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 8:49:38 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 8:49:38 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 8:49:38 PM	SL62589
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	9/3/2019 8:49:38 PM	SL62589
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	9/3/2019 8:49:38 PM	SL62589
Surr: Dibromofluoromethane	105	70-130		%Rec	1	9/3/2019 8:49:38 PM	SL62589
Surr: Toluene-d8	94.2	70-130		%Rec	1	9/3/2019 8:49:38 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: DW-1
Project: River Terrace
Collection Date: 8/27/2019 5:25:00 PM
Lab ID: 1908H76-014
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	9/4/2019 4:42:43 PM	47235
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/4/2019 4:42:43 PM	47235
Surr: DNOP	122	52.7-168		%Rec	1	9/4/2019 4:42:43 PM	47235
200.8 ICPMS METALS:TOTAL						Analyst:	**pmf**
Lead	ND	0.00050		mg/L	1	9/5/2019 5:12:21 PM	47251
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**JMR**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/3/2019 9:18:16 PM	G62589
Surr: BFB	97.4	70-130		%Rec	1	9/3/2019 9:18:16 PM	G62589
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**JMR**
Benzene	ND	1.0		µg/L	1	9/3/2019 9:18:16 PM	SL62589
Toluene	ND	1.0		µg/L	1	9/3/2019 9:18:16 PM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/3/2019 9:18:16 PM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2019 9:18:16 PM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/3/2019 9:18:16 PM	SL62589
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%Rec	1	9/3/2019 9:18:16 PM	SL62589
Surr: 4-Bromofluorobenzene	99.6	70-130		%Rec	1	9/3/2019 9:18:16 PM	SL62589
Surr: Dibromofluoromethane	108	70-130		%Rec	1	9/3/2019 9:18:16 PM	SL62589
Surr: Toluene-d8	92.9	70-130		%Rec	1	9/3/2019 9:18:16 PM	SL62589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Trip Blank
Project: River Terrace
Collection Date:
Lab ID: 1908H76-015
Matrix: AQUEOUS
Received Date: 8/29/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	9/4/2019 12:10:56 AM	SL62589
Toluene	ND	1.0		µg/L	1	9/4/2019 12:10:56 AM	SL62589
Ethylbenzene	ND	1.0		µg/L	1	9/4/2019 12:10:56 AM	SL62589
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2019 12:10:56 AM	SL62589
Xylenes, Total	ND	1.5		µg/L	1	9/4/2019 12:10:56 AM	SL62589
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/4/2019 12:10:56 AM	SL62589
Surr: 4-Bromofluorobenzene	95.9	70-130		%Rec	1	9/4/2019 12:10:56 AM	SL62589
Surr: Dibromofluoromethane	109	70-130		%Rec	1	9/4/2019 12:10:56 AM	SL62589
Surr: Toluene-d8	97.8	70-130		%Rec	1	9/4/2019 12:10:56 AM	SL62589

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **MB-47251**	SampType: **MBLK**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **PBW**	Batch ID: **47251**	RunNo: **62715**
Prep Date: **9/3/2019**	Analysis Date: **9/5/2019**	SeqNo: **2135609** Units: **mg/L**

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

Sample ID: **MSLLLCS-47251**	SampType: **LCSLL**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **BatchQC**	Batch ID: **47251**	RunNo: **62715**
Prep Date: **9/3/2019**	Analysis Date: **9/5/2019**	SeqNo: **2135613** 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	102	50	150			

Sample ID: **MSLCS-47251**	SampType: **LCS**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **LCSW**	Batch ID: **47251**	RunNo: **62715**
Prep Date: **9/3/2019**	Analysis Date: **9/5/2019**	SeqNo: **2135615** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	99.2	85	115			

Sample ID: **1908H76-001CMSLL**	SampType: **MSLL**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **EB01**	Batch ID: **47251**	RunNo: **62715**
Prep Date: **9/3/2019**	Analysis Date: **9/5/2019**	SeqNo: **2135646** 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	97.0	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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **LCS-47204**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **47204**	RunNo: **62625**
Prep Date: **8/30/2019**	Analysis Date: **9/3/2019**	SeqNo: **2132011** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.40	2.500	0	105	66.7	148			
Surr: DNOP	0.25		0.2500		98.5	52.7	168			

Sample ID: **MB-47204**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **47204**	RunNo: **62625**
Prep Date: **8/30/2019**	Analysis Date: **9/3/2019**	SeqNo: **2132013** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.54		0.5000		109	52.7	168			

Sample ID: **1908H76-014BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **DW-1**	Batch ID: **47235**	RunNo: **62627**
Prep Date: **9/3/2019**	Analysis Date: **9/4/2019**	SeqNo: **2132738** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.40	2.500	0	114	68.3	147			
Surr: DNOP	0.28		0.2500		112	52.7	168			

Sample ID: **1908H76-014BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **DW-1**	Batch ID: **47235**	RunNo: **62627**
Prep Date: **9/3/2019**	Analysis Date: **9/4/2019**	SeqNo: **2132739** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.8	0.40	2.500	0	113	68.3	147	1.29	20	
Surr: DNOP	0.27		0.2500		107	52.7	168	0	0	

Sample ID: **LCS-47235**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **47235**	RunNo: **62627**
Prep Date: **9/3/2019**	Analysis Date: **9/4/2019**	SeqNo: **2132740** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.8	0.40	2.500	0	113	66.7	148			
Surr: DNOP	0.27		0.2500		110	52.7	168			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **MB-47235**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **47235**	RunNo: **62627**
Prep Date: **9/3/2019**	Analysis Date: **9/4/2019**	SeqNo: **2132741** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.59		0.5000		119	52.7	168			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **1908h76-001ams**	SampType: **MS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **EB01**	Batch ID: **SL62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131531** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.2	70	130			
Toluene	18	1.0	20.00	0	89.0	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.8	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.6		10.00		95.7	70	130			

Sample ID: **1908h76-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **EB01**	Batch ID: **SL62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131532** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130	8.41	20	
Toluene	19	1.0	20.00	0	93.9	70	130	5.40	20	
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.8	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.5		10.00		94.7	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		105	70	130	0	0	
Surr: Toluene-d8	9.3		10.00		93.0	70	130	0	0	

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131547** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.8	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.8	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.5	70	130			
Surr: Toluene-d8	9.7		10.00		97.4	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131548** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131548** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.7	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.9	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.7		10.00		96.7	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133505** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	19	1.0	20.00	0	96.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.4	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.2	70	130			
Surr: Toluene-d8	9.2		10.00		91.9	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133506** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.3	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.4	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.2	70	130			
Surr: Toluene-d8	9.3		10.00		93.3	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
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131205** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	95.6	70	130			
Surr: BFB	10		10.00		102	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G62589**	RunNo: **62589**
Prep Date:	Analysis Date: **9/3/2019**	SeqNo: **2131206** 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	10		10.00		102	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133568** 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	92.6	70	130			
Surr: BFB	9.7		10.00		96.5	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133569** 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	9.8		10.00		98.0	70	130			

Sample ID: **1908h76-002ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **TP-5**	Batch ID: **G62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133571** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.6	0.050	0.5000	1.146	84.4	70	130			
Surr: BFB	10		10.00		100	70	130			

Sample ID: **1908h76-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **TP-5**	Batch ID: **G62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133572** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H76**

18-Sep-19

Client: Western Refining Southwest, Inc.

Project: River Terrace

Sample ID: **1908h76-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **TP-5**	Batch ID: **G62661**	RunNo: **62661**
Prep Date:	Analysis Date: **9/4/2019**	SeqNo: **2133572** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.5	0.050	0.5000	1.146	67.3	70	130	5.61	20	S
Surr: BFB	10		10.00		101	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1908H76** RcptNo: 1

Received By: **Desiree Dominguez** **8/29/2019 8:15:00 AM**

Completed By: **Erin Melendrez** **8/29/2019 3:59:27 PM**

Reviewed By: DM 8/30/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: 13 (<2 or >12 unless noted)

Adjusted? No

Checked by: 8/30/19

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: **X** Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/27/19	1125	H_2O	EB01	40ml VOA-5	HCl	-001			X							X		
				250 ml amber-1	Neat				X									
				250 ml plastic-1	HNO_3								X					

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320		Christ Walt	8/28/19	1320
Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1902	Christian Waller	courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.3-0.0= 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/27/19	1155	H_2O	TP-5	40ml VOA-5	HCl	-002			X							X		
↓	↓	↓	↓	250 ml amber-1	Neat				X									
↓	↓	↓	↓	250 ml plastic-1	HNO_3	—							X					

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320			8/28/19	1320
8/28/19	1902		Courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/27/19	1230	H_2O	DW-2	40ml VOA-5	HCl	-003			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	|			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	|							X									

Date	Time	Relinquished by:	Received by:	Date	Time
8/29/19	1320			8/28/19	1320
8/28/19	1902		courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/27/19	1300	H_2O	Collection Gallery	40ml VOA-5	HCl	-004			X							X		
↓	↓	↓	↓	250 ml amber-1	Neat	|			X									
↓	↓	↓	↓	250 ml plastic-1	HNO_3	—							X					

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320		Mat Wade	8/28/19	1320
Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1962	Mat Wade	Courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.3 -0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/27/19	1335	H_2O	DW-3	40ml VOA-5	HCl	-005			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	1			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	1							X									

Date	Time	Relinquished by:	Received by:	Date	Time
8/28/19	1320		Matt Wade	8/28/19	1320
8/28/19	1902	Matt Wade			
			courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/27/19	1415	H_2O	MW-48	40ml VOA-5	HCl	-006			X							X		
↓	↓	↓	↓	250 ml amber-1	Neat	1			X									
↓	↓	↓	↓	250 ml plastic-1	HNO_3	1							X					
8/27/19	—	H_2O	TRIP BLANK	40mL VOA-3	HCl	-007										X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320		Chris Walker	8/28/19	1320
8/28/19	1902	Chris Walker	courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H760	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/27/19	1450	H_2O	TP-6	40ml VOA-5	HCl	-008			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	1			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	1							X									

Analysis Request

Relinquished by:	Date	Time	Received by:	Date	Time
	8/28/19	1320		8/28/19	1320
Christ Waller	8/28/19	1902	Courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

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

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.3-0.0 = 2.3°c

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/27/19	1525	H_2O	MW-49	40ml VOA-5	HCl	-009			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	|			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	|							X									

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320	[signature]	[signature]	8/28/19	1320
8/28/19	1962	[signature]	[signature] courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

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

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: (X) Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/27/19	----	H_2O	DUP01	40ml VOA-5	HCl	-010			X							X						
				250 ml amber-1	Neat	1			X													
				250 ml plastic-1	HNO_3								X									

Analysis Request

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Date	Time	Relinquished by:	Received by:	Date	Time
8/28/19	1326		Christy Waelen	8/28/19	1320
8/28/19	1902	Christy Waelen	courier	8/29/19	8:15

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76
8/27/19	1600	H_2O	TP-8	40ml VOA-5	HCl	-011
↓	↓	↓	↓	250 ml amber-1	Neat	|
↓	↓	↓	↓	250 ml plastic-1	HNO_3	|

Analysis Request

BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	**TPH 8015B (GRO/DRO/MRO)**	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	**TOTAL METALS - LEAD ONLY**	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	**8021B BTEX,MTBE only**	8270 (Semi-VOA)						Air Bubbles (Y or N)
		X							X							
		X														
						X										

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320			8/28/19	1320
8/28/19	1902	Christa Waeler	Courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/27/19	1630	H_2O	TP-7	40ml VOA-5	HCl	-012			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	↓			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	↓							X									

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1320			8/28/19	1320
Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1902		Courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.3 - 0.0 = 2.3°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/27/19	1700	H_2O	TP-9	40ml VOA-5	HCl	-013			X							X		
↓	↓	↓	↓	250 ml amber-1	Neat	1			X									
↓	↓	↓	↓	250 ml plastic-1	HNO_3	1							X					

Date	Time	Relinquished by:	Received by:	Date	Time
8/28/19	1320			8/28/19	1320
8/28/19	1902		Courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **River Terrace**

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☐ Yes ☐ No

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H76	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	Total Metals - Lead & Mercury Only	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/27/19	1725	H_2O	DW-1	40ml VOA-5	HCl	-014			X							X		
↓	↓	↓	↓	250 ml amber-1	Neat	1			X									
↓	↓	↓	↓	250 ml plastic-1	HNO_3	1							X					
8/27/19	—	H_2O	TRIP BLANK	40mL VOA-3	HCl	-015										X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/28/19	1326		Chantel Watt	8/28/19	1320
8/28/19	1902	Chantel Watt	courier	8/29/19	8:15

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

September 10, 2019

Gregory J. McCartney
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: River Terrace Soil Gas Sampling OrderNo.: 1908H25

Dear Gregory J. McCartney:

Hall Environmental Analysis Laboratory received 12 sample(s) on 8/28/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-5
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 1:57:00 PM
Lab ID: 1908H25-001 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 11:40:27 AM	E62687
Surr: BFB	88.3	70-130		%Rec	1	9/5/2019 11:40:27 AM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 11:40:27 AM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 11:40:27 AM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 11:40:27 AM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 11:40:27 AM	A62687
Surr: 1,2-Dichloroethane-d4	97.2	70-130		%Rec	1	9/5/2019 11:40:27 AM	A62687
Surr: 4-Bromofluorobenzene	88.1	70-130		%Rec	1	9/5/2019 11:40:27 AM	A62687
Surr: Dibromofluoromethane	104	53.9-127		%Rec	1	9/5/2019 11:40:27 AM	A62687
Surr: Toluene-d8	103	70-130		%Rec	1	9/5/2019 11:40:27 AM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: DW-2
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 2:20:00 PM
Lab ID: 1908H25-002 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 12:39:07 PM	E62687
Surr: BFB	89.5	70-130		%Rec	1	9/5/2019 12:39:07 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 12:39:07 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 12:39:07 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 12:39:07 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 12:39:07 PM	A62687
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/5/2019 12:39:07 PM	A62687
Surr: 4-Bromofluorobenzene	85.6	70-130		%Rec	1	9/5/2019 12:39:07 PM	A62687
Surr: Dibromofluoromethane	105	53.9-127		%Rec	1	9/5/2019 12:39:07 PM	A62687
Surr: Toluene-d8	104	70-130		%Rec	1	9/5/2019 12:39:07 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: BV-5
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 2:40:00 PM
Lab ID: 1908H25-003 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 1:38:01 PM	E62687
Surr: BFB	82.9	70-130		%Rec	1	9/5/2019 1:38:01 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 1:38:01 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 1:38:01 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 1:38:01 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 1:38:01 PM	A62687
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	9/5/2019 1:38:01 PM	A62687
Surr: 4-Bromofluorobenzene	85.4	70-130		%Rec	1	9/5/2019 1:38:01 PM	A62687
Surr: Dibromofluoromethane	108	53.9-127		%Rec	1	9/5/2019 1:38:01 PM	A62687
Surr: Toluene-d8	99.0	70-130		%Rec	1	9/5/2019 1:38:01 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: MW-48
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 3:10:00 PM
Lab ID: 1908H25-004 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 2:07:32 PM	E62687
Surr: BFB	83.5	70-130		%Rec	1	9/5/2019 2:07:32 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 2:07:32 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 2:07:32 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 2:07:32 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 2:07:32 PM	A62687
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	9/5/2019 2:07:32 PM	A62687
Surr: 4-Bromofluorobenzene	85.3	70-130		%Rec	1	9/5/2019 2:07:32 PM	A62687
Surr: Dibromofluoromethane	110	53.9-127		%Rec	1	9/5/2019 2:07:32 PM	A62687
Surr: Toluene-d8	99.1	70-130		%Rec	1	9/5/2019 2:07:32 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: BV-3
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 3:30:00 PM
Lab ID: 1908H25-005 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	6.6	5.0		µg/L	1	9/5/2019 2:37:11 PM	E62687
Surr: BFB	86.2	70-130		%Rec	1	9/5/2019 2:37:11 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 2:37:11 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 2:37:11 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 2:37:11 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 2:37:11 PM	A62687
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	1	9/5/2019 2:37:11 PM	A62687
Surr: 4-Bromofluorobenzene	87.2	70-130		%Rec	1	9/5/2019 2:37:11 PM	A62687
Surr: Dibromofluoromethane	107	53.9-127		%Rec	1	9/5/2019 2:37:11 PM	A62687
Surr: Toluene-d8	98.7	70-130		%Rec	1	9/5/2019 2:37:11 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-6
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 3:45:00 PM
Lab ID: 1908H25-006 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 3:06:50 PM	E62687
Surr: BFB	85.8	70-130		%Rec	1	9/5/2019 3:06:50 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 3:06:50 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 3:06:50 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 3:06:50 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 3:06:50 PM	A62687
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/5/2019 3:06:50 PM	A62687
Surr: 4-Bromofluorobenzene	84.7	70-130		%Rec	1	9/5/2019 3:06:50 PM	A62687
Surr: Dibromofluoromethane	107	53.9-127		%Rec	1	9/5/2019 3:06:50 PM	A62687
Surr: Toluene-d8	99.2	70-130		%Rec	1	9/5/2019 3:06:50 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: BV-4
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 3:55:00 PM
Lab ID: 1908H25-007 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 3:36:28 PM	E62687
Surr: BFB	81.0	70-130		%Rec	1	9/5/2019 3:36:28 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 3:36:28 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 3:36:28 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 3:36:28 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 3:36:28 PM	A62687
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/5/2019 3:36:28 PM	A62687
Surr: 4-Bromofluorobenzene	85.9	70-130		%Rec	1	9/5/2019 3:36:28 PM	A62687
Surr: Dibromofluoromethane	106	53.9-127		%Rec	1	9/5/2019 3:36:28 PM	A62687
Surr: Toluene-d8	97.8	70-130		%Rec	1	9/5/2019 3:36:28 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: BV-6
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 4:10:00 PM
Lab ID: 1908H25-008 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/5/2019 4:06:10 PM	E62687
Surr: BFB	84.1	70-130		%Rec	1	9/5/2019 4:06:10 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 4:06:10 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 4:06:10 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 4:06:10 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 4:06:10 PM	A62687
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	9/5/2019 4:06:10 PM	A62687
Surr: 4-Bromofluorobenzene	86.4	70-130		%Rec	1	9/5/2019 4:06:10 PM	A62687
Surr: Dibromofluoromethane	102	53.9-127		%Rec	1	9/5/2019 4:06:10 PM	A62687
Surr: Toluene-d8	97.1	70-130		%Rec	1	9/5/2019 4:06:10 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: TP-8
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 4:26:00 PM
Lab ID: 1908H25-009 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	9.7	5.0		µg/L	1	9/5/2019 4:35:46 PM	E62687
Surr: BFB	84.5	70-130		%Rec	1	9/5/2019 4:35:46 PM	E62687
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/5/2019 4:35:46 PM	A62687
Toluene	ND	0.10		µg/L	1	9/5/2019 4:35:46 PM	A62687
Ethylbenzene	ND	0.10		µg/L	1	9/5/2019 4:35:46 PM	A62687
Xylenes, Total	ND	0.15		µg/L	1	9/5/2019 4:35:46 PM	A62687
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	9/5/2019 4:35:46 PM	A62687
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	9/5/2019 4:35:46 PM	A62687
Surr: Dibromofluoromethane	108	53.9-127		%Rec	1	9/5/2019 4:35:46 PM	A62687
Surr: Toluene-d8	100	70-130		%Rec	1	9/5/2019 4:35:46 PM	A62687

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: BV-1
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 4:38:00 PM
Lab ID: 1908H25-010 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/6/2019 11:21:56 AM	D62738
Surr: BFB	79.6	70-130		%Rec	1	9/6/2019 11:21:56 AM	D62738
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/6/2019 11:21:56 AM	B62738
Toluene	ND	0.10		µg/L	1	9/6/2019 11:21:56 AM	B62738
Ethylbenzene	ND	0.10		µg/L	1	9/6/2019 11:21:56 AM	B62738
Xylenes, Total	ND	0.15		µg/L	1	9/6/2019 11:21:56 AM	B62738
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	9/6/2019 11:21:56 AM	B62738
Surr: 4-Bromofluorobenzene	78.8	70-130		%Rec	1	9/6/2019 11:21:56 AM	B62738
Surr: Dibromofluoromethane	108	53.9-127		%Rec	1	9/6/2019 11:21:56 AM	B62738
Surr: Toluene-d8	99.9	70-130		%Rec	1	9/6/2019 11:21:56 AM	B62738

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: FB-01
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019 4:03:00 PM
Lab ID: 1908H25-011 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/6/2019 12:20:42 PM	D62738
Surr: BFB	81.2	70-130		%Rec	1	9/6/2019 12:20:42 PM	D62738
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/6/2019 12:20:42 PM	B62738
Toluene	ND	0.10		µg/L	1	9/6/2019 12:20:42 PM	B62738
Ethylbenzene	ND	0.10		µg/L	1	9/6/2019 12:20:42 PM	B62738
Xylenes, Total	ND	0.15		µg/L	1	9/6/2019 12:20:42 PM	B62738
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	9/6/2019 12:20:42 PM	B62738
Surr: 4-Bromofluorobenzene	84.5	70-130		%Rec	1	9/6/2019 12:20:42 PM	B62738
Surr: Dibromofluoromethane	110	53.9-127		%Rec	1	9/6/2019 12:20:42 PM	B62738
Surr: Toluene-d8	99.3	70-130		%Rec	1	9/6/2019 12:20:42 PM	B62738

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: DUP-01
Project: River Terrace Soil Gas Sampling
Collection Date: 8/26/2019
Lab ID: 1908H25-012 **Matrix:** AIR
Received Date: 8/28/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	5.0		µg/L	1	9/6/2019 1:19:40 PM	D62738
Surr: BFB	80.6	70-130		%Rec	1	9/6/2019 1:19:40 PM	D62738
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.10		µg/L	1	9/6/2019 1:19:40 PM	B62738
Toluene	ND	0.10		µg/L	1	9/6/2019 1:19:40 PM	B62738
Ethylbenzene	ND	0.10		µg/L	1	9/6/2019 1:19:40 PM	B62738
Xylenes, Total	ND	0.15		µg/L	1	9/6/2019 1:19:40 PM	B62738
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/6/2019 1:19:40 PM	B62738
Surr: 4-Bromofluorobenzene	83.0	70-130		%Rec	1	9/6/2019 1:19:40 PM	B62738
Surr: Dibromofluoromethane	105	53.9-127		%Rec	1	9/6/2019 1:19:40 PM	B62738
Surr: Toluene-d8	98.2	70-130		%Rec	1	9/6/2019 1:19:40 PM	B62738

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H25**
10-Sep-19

Client: Western Refining Southwest, Inc.
Project: River Terrace Soil Gas Sampling

Sample ID: **1908h25-001a dup** SampType: **DUP** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **TP-5** Batch ID: **A62687** RunNo: **62687**
Prep Date: Analysis Date: **9/5/2019** SeqNo: **2134726** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.10						0	20	
Toluene	ND	0.10						0	20	
Ethylbenzene	ND	0.10						0	20	
Xylenes, Total	ND	0.15						0	20	
Surr: 1,2-Dichloroethane-d4	1.0		1.000		100	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.86		1.000		86.1	70	130	0	0	
Surr: Dibromofluoromethane	1.0		1.000		100	53.9	127	0	0	
Surr: Toluene-d8	1.0		1.000		101	70	130	0	0	

Sample ID: **1908h25-010a dup** SampType: **DUP** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BV-1** Batch ID: **B62738** RunNo: **62738**
Prep Date: Analysis Date: **9/6/2019** SeqNo: **2136837** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.10						0	20	
Toluene	ND	0.10						0	20	
Ethylbenzene	ND	0.10						0	20	
Xylenes, Total	ND	0.15						0	20	
Surr: 1,2-Dichloroethane-d4	1.1		1.000		108	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.81		1.000		81.3	70	130	0	0	
Surr: Dibromofluoromethane	1.1		1.000		111	53.9	127	0	0	
Surr: Toluene-d8	0.98		1.000		98.5	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908H25**
10-Sep-19

Client: Western Refining Southwest, Inc.
Project: River Terrace Soil Gas Sampling

Sample ID: **1908h25-001a dup**	SampType: **DUP**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **TP-5**	Batch ID: **E62687**	RunNo: **62687**							
Prep Date:	Analysis Date: **9/5/2019**	SeqNo: **2135138**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0						0	20	
Surr: BFB	860		1000		85.8	70	130	0	0	

Sample ID: **1908h25-010a dup**	SampType: **DUP**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BV-1**	Batch ID: **D62738**	RunNo: **62738**							
Prep Date:	Analysis Date: **9/6/2019**	SeqNo: **2136863**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0						0	20	
Surr: BFB	810		1000		81.1	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1908H25** RcptNo: **1**

Received By: **Desiree Dominguez** **8/28/2019 8:15:00 AM** DD

Completed By: **Anne Thorne** **8/29/2019 7:51:45 AM** Anne Thorne

Reviewed By: DAD 8/29/19 of 8/29/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: AT 08/29/19

Special Handling (if applicable)

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

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

16. Additional remarks:
17. **Cooler Information**

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

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

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**
Soil Gas Sampling

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: ~~3.3-0.4=2.9°~~ NA DAD 8/28/19

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908425	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B BTEX Only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/26/19	1357	AIR	TP-5	1 L Tedlar Bag-2	None	001			X							X						
	1420		DW-2			002			X							X						
	1440		BV-5			003			X							X						
	1510		MW-48			004			X							X						
	1530		BV-3			005			X							X						
	1545		TP-6			006			X							X						
	1555		BV-4			007			X							X						
	1610		BV-6			008			X							X						

Date	Time	Relinquished by:	Received by:	Date	Time
8/27/19	1509		Christine Walker	8/27/19	1509
8/27/19	1844	Christine Walker	Courier	8/28/19	8:15

Remarks:

Chain-of-Custody Record

Client: **Western - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **419-421-2338**

Email: gjmccartney@marathonpetroleum.com

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

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**
Soil Gas Sampling

Project #: **2019 Annual Event**

Project Manager: **Gregory McCartney**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: ~~3.3 - 0.4 = 2.9°~~ NA DAD 8/28/19

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908H25	Analysis Request: BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B BTEX Only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/26/19	1626	AIR	TP-8	1 L Tedlar Bag-2	None	209			X							X						
	1638		BV-1			210			X							X						
	1603		FB-01			211			X							X						
↓	—	↓	DUP-01	↓	↓	212			X							X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/27/19	1509	[signature]	[signature]	8/27/19	1509
8/27/19	1844	[signature]	[signature] courier	8/28/19	8:15

Remarks:

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

February 22, 2019

Eric Carroll

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: GAC Lead OrderNo.: 1902702

Dear Eric Carroll:

Hall Environmental Analysis Laboratory received 3 sample(s) on 2/14/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC- Lead
Project: GAC Lead
Collection Date: 2/13/2019 9:55:00 AM
Lab ID: 1902702-001
Matrix: AQUEOUS
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	2/19/2019 9:32:20 PM	43230
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	2/19/2019 9:32:20 PM	43230
Surr: DNOP	104	76.6-135		%Rec	1	2/19/2019 9:32:20 PM	43230
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	2/19/2019 9:39:02 AM	G57798
Surr: BFB	114	72.8-125		%Rec	1	2/19/2019 9:39:02 AM	G57798
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	2/20/2019 1:11:32 PM	SL57829
Toluene	ND	1.0		µg/L	1	2/20/2019 1:11:32 PM	SL57829
Ethylbenzene	ND	1.0		µg/L	1	2/20/2019 1:11:32 PM	SL57829
Methyl tert-butyl ether (MTBE)	1.1	1.0		µg/L	1	2/20/2019 1:11:32 PM	SL57829
Xylenes, Total	ND	1.5		µg/L	1	2/20/2019 1:11:32 PM	SL57829
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	1	2/20/2019 1:11:32 PM	SL57829
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	1	2/20/2019 1:11:32 PM	SL57829
Surr: Dibromofluoromethane	109	70-130		%Rec	1	2/20/2019 1:11:32 PM	SL57829
Surr: Toluene-d8	99.3	70-130		%Rec	1	2/20/2019 1:11:32 PM	SL57829

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting 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: Western Refining Southwest, Inc.
Client Sample ID: GAC-Inlet
Project: GAC Lead
Collection Date: 2/13/2019 9:45:00 AM
Lab ID: 1902702-002
Matrix: AQUEOUS
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	2/20/2019 8:28:04 AM	43230
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	2/20/2019 8:28:04 AM	43230
Surr: DNOP	100	76.6-135		%Rec	1	2/20/2019 8:28:04 AM	43230
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.31	0.050		mg/L	1	2/19/2019 10:01:45 AM	G57798
Surr: BFB	136	72.8-125	S	%Rec	1	2/19/2019 10:01:45 AM	G57798
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	2/20/2019 1:41:06 PM	SL57829
Toluene	ND	1.0		µg/L	1	2/20/2019 1:41:06 PM	SL57829
Ethylbenzene	ND	1.0		µg/L	1	2/20/2019 1:41:06 PM	SL57829
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	2/20/2019 1:41:06 PM	SL57829
Xylenes, Total	ND	1.5		µg/L	1	2/20/2019 1:41:06 PM	SL57829
Surr: 1,2-Dichloroethane-d4	115	70-130		%Rec	1	2/20/2019 1:41:06 PM	SL57829
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	1	2/20/2019 1:41:06 PM	SL57829
Surr: Dibromofluoromethane	110	70-130		%Rec	1	2/20/2019 1:41:06 PM	SL57829
Surr: Toluene-d8	98.3	70-130		%Rec	1	2/20/2019 1:41:06 PM	SL57829

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting 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: Western Refining Southwest, Inc.
Client Sample ID: GAC-Lag
Project: GAC Lead
Collection Date: 2/13/2019 10:00:00 AM
Lab ID: 1902702-003
Matrix: AQUEOUS
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	2/19/2019 11:08:33 PM	43230
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	2/19/2019 11:08:33 PM	43230
Surr: DNOP	110	76.6-135		%Rec	1	2/19/2019 11:08:33 PM	43230
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	2/19/2019 10:24:24 AM	G57798
Surr: BFB	114	72.8-125		%Rec	1	2/19/2019 10:24:24 AM	G57798
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	2/20/2019 2:10:40 PM	SL57829
Toluene	ND	1.0		µg/L	1	2/20/2019 2:10:40 PM	SL57829
Ethylbenzene	ND	1.0		µg/L	1	2/20/2019 2:10:40 PM	SL57829
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	2/20/2019 2:10:40 PM	SL57829
Xylenes, Total	ND	1.5		µg/L	1	2/20/2019 2:10:40 PM	SL57829
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	2/20/2019 2:10:40 PM	SL57829
Surr: 4-Bromofluorobenzene	98.9	70-130		%Rec	1	2/20/2019 2:10:40 PM	SL57829
Surr: Dibromofluoromethane	109	70-130		%Rec	1	2/20/2019 2:10:40 PM	SL57829
Surr: Toluene-d8	102	70-130		%Rec	1	2/20/2019 2:10:40 PM	SL57829

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting 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#: **1902702**

22-Feb-19

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID: **1902702-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC- Lead**	Batch ID: **43230**	RunNo: **57792**
Prep Date: **2/19/2019**	Analysis Date: **2/19/2019**	SeqNo: **1935271** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.4	0.40	2.500	0	94.6	68.3	147			
Surr: DNOP	0.28		0.2500		110	76.6	135			

Sample ID: **1902702-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC- Lead**	Batch ID: **43230**	RunNo: **57792**
Prep Date: **2/19/2019**	Analysis Date: **2/19/2019**	SeqNo: **1935272** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.5	0.40	2.500	0	99.8	68.3	147	5.36	20	
Surr: DNOP	0.28		0.2500		112	76.6	135	0	0	

Sample ID: **LCS-43230**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **43230**	RunNo: **57792**
Prep Date: **2/19/2019**	Analysis Date: **2/19/2019**	SeqNo: **1935276** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.5	0.40	2.500	0	98.5	76.5	158			
Surr: DNOP	0.27		0.2500		107	76.6	135			

Sample ID: **MB-43230**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **43230**	RunNo: **57792**
Prep Date: **2/19/2019**	Analysis Date: **2/19/2019**	SeqNo: **1935277** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.52		0.5000		103	76.6	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
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902702**

22-Feb-19

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G57798**	RunNo: **57798**
Prep Date:	Analysis Date: **2/19/2019**	SeqNo: **1935072** 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	23		20.00		113	72.8	125			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G57798**	RunNo: **57798**
Prep Date:	Analysis Date: **2/19/2019**	SeqNo: **1935073** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	99.6	77.7	130			
Surr: BFB	26		20.00		132	72.8	125			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
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902702**

22-Feb-19

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL57829**	RunNo: **57829**
Prep Date:	Analysis Date: **2/20/2019**	SeqNo: **1936087** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.7	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.6		10.00		95.6	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL57829**	RunNo: **57829**
Prep Date:	Analysis Date: **2/20/2019**	SeqNo: **1936089** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	18	1.0	20.00	0	89.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.6	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.7		10.00		96.5	70	130			

Sample ID: **1902702-001a ms**	SampType: **MS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **GAC- Lead**	Batch ID: **SL57829**	RunNo: **57829**
Prep Date:	Analysis Date: **2/20/2019**	SeqNo: **1936092** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	115	70	130			
Toluene	19	1.0	20.00	0	92.9	70	130			
Surr: 1,2-Dichloroethane-d4	12		10.00		116	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.3	70	130			
Surr: Dibromofluoromethane	11		10.00		110	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **1902702-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **GAC- Lead**	Batch ID: **SL57829**	RunNo: **57829**
Prep Date:	Analysis Date: **2/20/2019**	SeqNo: **1936094** 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	0.906	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
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902702**

22-Feb-19

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID: **1902702-001a msd** SampType: **MSD** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **GAC- Lead** Batch ID: **SL57829** RunNo: **57829**

Prep Date: Analysis Date: **2/20/2019** SeqNo: **1936094** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	18	1.0	20.00	0	90.9	70	130	2.17	20	
Surr: 1,2-Dichloroethane-d4	12		10.00		117	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.7		10.00		97.0	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		113	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		99.0	70	130	0	0	

Qualifiers:

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

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: **Western Refining Southw** Work Order Number: **1902702** RcptNo: **1**

Received By: **Erin Melendrez** 2/14/2019 8:10:00 AM

Completed By: **Victoria Zellar** 2/15/2019 9:56:10 AM Victoria Zellar

Reviewed By: EJM 2/15/19

labeled by YG 2/15/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: YG 2/15/19 (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Yes			
2	2.4	Good	Yes			
3	1.5	Good	Yes			
4	3.1	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **#50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other

X EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: **GAC - Lead**

Date: 2-13-2019

Project #:

~~PO#12015519~~ 02959001-0005

Project Manager:

Eric Carroll

Sampler: C. Jones

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.7°C, 2.4°C, 1.5°C, 3.1°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1902702	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO / MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEx, MTBE only	8270 (Semi-VOA)	8015B DRO Extended				Air Bubbles (Y or N)
2/13/19	0955	H_2O	GAC - Lead	5 VOA	HCl	-001			X							X						
2/13/19	0955	" "	GAC - Lead	1-500-ml	Amber													X				
2/13/19	0945	H_2O	GAC -Inlet	5 VOA	HCl	-002			X							X						
2/13/19	0945	" "	GAC -Inlet	1-500-ml	Amber													X				
2/13/19	1000	H_2O	GAC -Lag	5 VOA	HCl	-003			X							X						
2/13/19	1000	" "	GAC -Lag	1-500-ml	Amber													X				

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
2/13/19	1250		Courtney Walls	2/13/19	1236	
2/13/19	2010	Courtney Walls	Courier EUN 2/14/19	2/14/19	0810	

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

May 24, 2019

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX: (505) 632-3911

RE: GAC 5/7/2018 OrderNo.: 1905465

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/9/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 5/7/2018
Collection Date: 5/8/2019 11:05:00 AM
Lab ID: 1905465-001 **Matrix:** AQUEOUS **Received Date:** 5/9/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	5/17/2019 4:40:22 PM	44932
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/17/2019 4:40:22 PM	44932
Surr: DNOP	119	52.7-168		%Rec	1	5/17/2019 4:40:22 PM	44932
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	5/15/2019 6:08:57 PM	R59906
Surr: BFB	95.5	70-130		%Rec	1	5/15/2019 6:08:57 PM	R59906
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Toluene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Ethylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Naphthalene	ND	2.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1-Methylnaphthalene	ND	4.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
2-Methylnaphthalene	ND	4.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Acetone	ND	10		µg/L	1	5/15/2019 6:08:57 PM	W59906
Bromobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Bromodichloromethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Bromoform	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Bromomethane	ND	3.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
2-Butanone	ND	10		µg/L	1	5/15/2019 6:08:57 PM	W59906
Carbon disulfide	ND	10		µg/L	1	5/15/2019 6:08:57 PM	W59906
Carbon Tetrachloride	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Chlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Chloroethane	ND	2.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Chloroform	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Chloromethane	ND	3.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
2-Chlorotoluene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
4-Chlorotoluene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
cis-1,2-DCE	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Dibromochloromethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Dibromomethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 5/7/2018
Collection Date: 5/8/2019 11:05:00 AM
Lab ID: 1905465-001 **Matrix:** AQUEOUS **Received Date:** 5/9/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,4-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Dichlorodifluoromethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1-Dichloroethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1-Dichloroethene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2-Dichloropropane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,3-Dichloropropane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
2,2-Dichloropropane	ND	2.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Hexachlorobutadiene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
2-Hexanone	ND	10		µg/L	1	5/15/2019 6:08:57 PM	W59906
Isopropylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
4-Isopropyltoluene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
4-Methyl-2-pentanone	ND	10		µg/L	1	5/15/2019 6:08:57 PM	W59906
Methylene Chloride	ND	3.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
n-Butylbenzene	ND	3.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
n-Propylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
sec-Butylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Styrene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
tert-Butylbenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
trans-1,2-DCE	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1,1-Trichloroethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,1,2-Trichloroethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Trichloroethene (TCE)	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Trichlorofluoromethane	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
1,2,3-Trichloropropane	ND	2.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Vinyl chloride	ND	1.0		µg/L	1	5/15/2019 6:08:57 PM	W59906
Xylenes, Total	ND	1.5		µg/L	1	5/15/2019 6:08:57 PM	W59906
Surr: 1,2-Dichloroethane-d4	83.6	70-130		%Rec	1	5/15/2019 6:08:57 PM	W59906
Surr: 4-Bromofluorobenzene	94.1	70-130		%Rec	1	5/15/2019 6:08:57 PM	W59906
Surr: Dibromofluoromethane	99.0	70-130		%Rec	1	5/15/2019 6:08:57 PM	W59906
Surr: Toluene-d8	87.3	70-130		%Rec	1	5/15/2019 6:08:57 PM	W59906

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC 5/7/2018
Collection Date: 5/8/2019 10:56:00 AM
Lab ID: 1905465-002 **Matrix:** AQUEOUS **Received Date:** 5/9/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	5/17/2019 5:46:59 PM	44932
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/17/2019 5:46:59 PM	44932
Surr: DNOP	123	52.7-168		%Rec	1	5/17/2019 5:46:59 PM	44932
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	5/15/2019 6:37:35 PM	R59906
Surr: BFB	97.1	70-130		%Rec	1	5/15/2019 6:37:35 PM	R59906
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Toluene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Ethylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Naphthalene	ND	2.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1-Methylnaphthalene	ND	4.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
2-Methylnaphthalene	ND	4.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Acetone	ND	10		µg/L	1	5/15/2019 6:37:35 PM	W59906
Bromobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Bromodichloromethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Bromoform	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Bromomethane	ND	3.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
2-Butanone	ND	10		µg/L	1	5/15/2019 6:37:35 PM	W59906
Carbon disulfide	ND	10		µg/L	1	5/15/2019 6:37:35 PM	W59906
Carbon Tetrachloride	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Chlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Chloroethane	ND	2.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Chloroform	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Chloromethane	ND	3.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
2-Chlorotoluene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
4-Chlorotoluene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
cis-1,2-DCE	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Dibromochloromethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Dibromomethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC 5/7/2018
Collection Date: 5/8/2019 10:56:00 AM
Lab ID: 1905465-002 **Matrix:** AQUEOUS **Received Date:** 5/9/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,4-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Dichlorodifluoromethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1-Dichloroethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1-Dichloroethene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2-Dichloropropane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,3-Dichloropropane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
2,2-Dichloropropane	ND	2.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Hexachlorobutadiene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
2-Hexanone	ND	10		µg/L	1	5/15/2019 6:37:35 PM	W59906
Isopropylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
4-Isopropyltoluene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
4-Methyl-2-pentanone	ND	10		µg/L	1	5/15/2019 6:37:35 PM	W59906
Methylene Chloride	ND	3.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
n-Butylbenzene	ND	3.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
n-Propylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
sec-Butylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Styrene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
tert-Butylbenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
trans-1,2-DCE	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1,1-Trichloroethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,1,2-Trichloroethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Trichloroethene (TCE)	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Trichlorofluoromethane	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
1,2,3-Trichloropropane	ND	2.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Vinyl chloride	ND	1.0		µg/L	1	5/15/2019 6:37:35 PM	W59906
Xylenes, Total	ND	1.5		µg/L	1	5/15/2019 6:37:35 PM	W59906
Surr: 1,2-Dichloroethane-d4	83.8	70-130		%Rec	1	5/15/2019 6:37:35 PM	W59906
Surr: 4-Bromofluorobenzene	94.6	70-130		%Rec	1	5/15/2019 6:37:35 PM	W59906
Surr: Dibromofluoromethane	101	70-130		%Rec	1	5/15/2019 6:37:35 PM	W59906
Surr: Toluene-d8	88.3	70-130		%Rec	1	5/15/2019 6:37:35 PM	W59906

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 5/7/2018
Collection Date: 5/8/2019 11:00:00 AM
Lab ID: 1905465-003 **Matrix:** AQUEOUS **Received Date:** 5/9/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	5/17/2019 6:09:17 PM	44932
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/17/2019 6:09:17 PM	44932
Surr: DNOP	107	52.7-168		%Rec	1	5/17/2019 6:09:17 PM	44932
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.21	0.050		mg/L	1	5/15/2019 7:06:12 PM	R59906
Surr: BFB	95.4	70-130		%Rec	1	5/15/2019 7:06:12 PM	R59906
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Toluene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Ethylbenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Naphthalene	ND	2.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1-Methylnaphthalene	ND	4.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
2-Methylnaphthalene	ND	4.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Acetone	ND	10		µg/L	1	5/15/2019 7:06:12 PM	W59906
Bromobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Bromodichloromethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Bromoform	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Bromomethane	ND	3.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
2-Butanone	ND	10		µg/L	1	5/15/2019 7:06:12 PM	W59906
Carbon disulfide	ND	10		µg/L	1	5/15/2019 7:06:12 PM	W59906
Carbon Tetrachloride	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Chlorobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Chloroethane	ND	2.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Chloroform	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Chloromethane	ND	3.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
2-Chlorotoluene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
4-Chlorotoluene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
cis-1,2-DCE	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Dibromochloromethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Dibromomethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 5/7/2018
Collection Date: 5/8/2019 11:00:00 AM
Lab ID: 1905465-003 **Matrix:** AQUEOUS **Received Date:** 5/9/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,4-Dichlorobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Dichlorodifluoromethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1-Dichloroethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1-Dichloroethene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2-Dichloropropane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,3-Dichloropropane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
2,2-Dichloropropane	ND	2.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Hexachlorobutadiene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
2-Hexanone	ND	10		µg/L	1	5/15/2019 7:06:12 PM	W59906
Isopropylbenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
4-Isopropyltoluene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
4-Methyl-2-pentanone	ND	10		µg/L	1	5/15/2019 7:06:12 PM	W59906
Methylene Chloride	ND	3.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
n-Butylbenzene	ND	3.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
n-Propylbenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
sec-Butylbenzene	3.3	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Styrene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
tert-Butylbenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
trans-1,2-DCE	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1,1-Trichloroethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,1,2-Trichloroethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Trichloroethene (TCE)	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Trichlorofluoromethane	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
1,2,3-Trichloropropane	ND	2.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Vinyl chloride	ND	1.0		µg/L	1	5/15/2019 7:06:12 PM	W59906
Xylenes, Total	ND	1.5		µg/L	1	5/15/2019 7:06:12 PM	W59906
Surr: 1,2-Dichloroethane-d4	86.5	70-130		%Rec	1	5/15/2019 7:06:12 PM	W59906
Surr: 4-Bromofluorobenzene	91.1	70-130		%Rec	1	5/15/2019 7:06:12 PM	W59906
Surr: Dibromofluoromethane	100	70-130		%Rec	1	5/15/2019 7:06:12 PM	W59906
Surr: Toluene-d8	85.6	70-130		%Rec	1	5/15/2019 7:06:12 PM	W59906

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1905465**
24-May-19

Client: Western Refining Southwest, Inc.
Project: GAC 5/7/2018

Sample ID: **1905465-001BMS** SampType: **MS** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag** Batch ID: **44932** RunNo: **59949**
Prep Date: **5/15/2019** Analysis Date: **5/17/2019** SeqNo: **2024723** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.5	0.40	2.500	0	141	68.3	147			
Surr: DNOP	0.30		0.2500		119	52.7	168			

Sample ID: **1905465-001BMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag** Batch ID: **44932** RunNo: **59949**
Prep Date: **5/15/2019** Analysis Date: **5/17/2019** SeqNo: **2024724** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.6	0.40	2.500	0	144	68.3	147	2.18	20	
Surr: DNOP	0.29		0.2500		117	52.7	168	0	0	

Sample ID: **MB-44932** SampType: **MBLK** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW** Batch ID: **44932** RunNo: **59949**
Prep Date: **5/15/2019** Analysis Date: **5/17/2019** SeqNo: **2024728** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.62		0.5000		125	52.7	168			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1905465**

24-May-19

Client: Western Refining Southwest, Inc.

Project: GAC 5/7/2018

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **W59906**	RunNo: **59906**
Prep Date:	Analysis Date: **5/15/2019**	SeqNo: **2021373** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	85.8	70	130			
Toluene	18	1.0	20.00	0	90.8	70	130			
Chlorobenzene	19	1.0	20.00	0	93.3	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.7	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	78.9	70	130			
Surr: 1,2-Dichloroethane-d4	8.3		10.00		83.1	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.4	70	130			
Surr: Dibromofluoromethane	9.4		10.00		94.3	70	130			
Surr: Toluene-d8	8.8		10.00		88.0	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W59906**	RunNo: **59906**
Prep Date:	Analysis Date: **5/15/2019**	SeqNo: **2021394** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1905465**
24-May-19

Client: Western Refining Southwest, Inc.
Project: GAC 5/7/2018

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W59906**	RunNo: **59906**
Prep Date:	Analysis Date: **5/15/2019**	SeqNo: **2021394** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1905465**
24-May-19

Client: Western Refining Southwest, Inc.
Project: GAC 5/7/2018

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **W59906**	RunNo: **59906**	
Prep Date:	Analysis Date: **5/15/2019**	SeqNo: **2021394**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.1	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.0	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.7	70	130			
Surr: Toluene-d8	8.8		10.00		88.2	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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1905465**
24-May-19

Client: Western Refining Southwest, Inc.
Project: GAC 5/7/2018

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R59906**	RunNo: **59906**
Prep Date:	Analysis Date: **5/15/2019**	SeqNo: **2021415** 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	92.8	70	130			
Surr: BFB	9.4		10.00		94.5	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R59906**	RunNo: **59906**
Prep Date:	Analysis Date: **5/15/2019**	SeqNo: **2021416** 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	9.6		10.00		95.5	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1905465** RcptNo: 1

Received By: **Erin Melendrez** **5/9/2019 8:15:00 AM**

Completed By: **Leah Baca** **5/9/2019 9:43:56 AM** Leah SBaca

Reviewed By: DAD 5/9/19

Labeled by TMM 5-9-19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by:

TMM 5-9-19

Special Handling (if applicable)

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

Person Notified: Date

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good	Yes			
2	3.2	Good	Yes			
3	4.1	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

☐ Other _____

☒ EDD (Type) _____

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: **GAC**

5/7/2018

Project #:

PO#4500079769

Project Manager:

Gregory McCartney
Kelly Robinson

Sampler: Travis Short

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8°C, 3.2°C, 4.1°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1905465	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8015 B DRO Extended				Air Bubbles (Y or N)
5/8	11:05	H_2O	Lag	5 - VOA	HCl	-001			X							X						
				1 - Amber	Cool	-001 ~~-002~~ LRS 5/9/19												X				
5/8	10:56	H_2O	Lead	5 - VOA	HCl	-002			X							X						
				1 - Amber	Cool	1												X				
5/8	11:00	H_2O	Inlet	5 - VOA	HCl	-003			X							X						
				1 - Amber	Cool	1												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/8	15:27	Travis Short	Chastity Watts	5/8/19	1527
Date:	Time:	Relinquished by:	Received by:	Date	Time
		Chastity Watts	Courier ENM 5/9/19	5/9/19	0815

Remarks: CC: kelly.robinson@andeavor.com; gimccartney@marathonpetroleum.com; ecarroll@ltenv.com

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 12, 2019

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX:

RE: GAC 7 30 2018 OrderNo.: 1908007

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 8/1/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 7 30 2018
Collection Date: 7/31/2019 9:35:00 AM
Lab ID: 1908007-001
Matrix: AQUEOUS
Received Date: 8/1/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	8/9/2019 1:23:05 AM	46619
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/9/2019 1:23:05 AM	46619
Surr: DNOP	156	52.7-168		%Rec	1	8/9/2019 1:23:05 AM	46619
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/2/2019 2:45:48 PM	R61871
Surr: BFB	109	72.8-125		%Rec	1	8/2/2019 2:45:48 PM	R61871
EPA METHOD 8260B: VOLATILES						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Toluene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Ethylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Naphthalene	ND	2.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1-Methylnaphthalene	ND	4.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
2-Methylnaphthalene	ND	4.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Acetone	ND	10		µg/L	1	8/6/2019 12:23:30 AM	R61922
Bromobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Bromodichloromethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Bromoform	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Bromomethane	ND	3.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
2-Butanone	ND	10		µg/L	1	8/6/2019 12:23:30 AM	R61922
Carbon disulfide	ND	10		µg/L	1	8/6/2019 12:23:30 AM	R61922
Carbon Tetrachloride	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Chlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Chloroethane	ND	2.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Chloroform	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Chloromethane	ND	3.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
2-Chlorotoluene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
4-Chlorotoluene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
cis-1,2-DCE	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Dibromochloromethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Dibromomethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 7 30 2018
Collection Date: 7/31/2019 9:35:00 AM
Lab ID: 1908007-001
Matrix: AQUEOUS
Received Date: 8/1/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **JMR**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1-Dichloroethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1-Dichloroethene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2-Dichloropropane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,3-Dichloropropane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
2,2-Dichloropropane	ND	2.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Hexachlorobutadiene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
2-Hexanone	ND	10		µg/L	1	8/6/2019 12:23:30 AM	R61922
Isopropylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
4-Isopropyltoluene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
4-Methyl-2-pentanone	ND	10		µg/L	1	8/6/2019 12:23:30 AM	R61922
Methylene Chloride	ND	3.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
n-Butylbenzene	ND	3.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
n-Propylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
sec-Butylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Styrene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
tert-Butylbenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
trans-1,2-DCE	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Trichlorofluoromethane	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Vinyl chloride	ND	1.0		µg/L	1	8/6/2019 12:23:30 AM	R61922
Xylenes, Total	ND	1.5		µg/L	1	8/6/2019 12:23:30 AM	R61922
Surr: 1,2-Dichloroethane-d4	96.0	70-130		%Rec	1	8/6/2019 12:23:30 AM	R61922
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	8/6/2019 12:23:30 AM	R61922
Surr: Dibromofluoromethane	96.8	70-130		%Rec	1	8/6/2019 12:23:30 AM	R61922
Surr: Toluene-d8	99.7	70-130		%Rec	1	8/6/2019 12:23:30 AM	R61922

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC 7 30 2018
Collection Date: 7/31/2019 9:25:00 AM
Lab ID: 1908007-002
Matrix: AQUEOUS
Received Date: 8/1/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	8/8/2019 3:45:18 PM	46619
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/8/2019 3:45:18 PM	46619
Surr: DNOP	151	52.7-168		%Rec	1	8/8/2019 3:45:18 PM	46619
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/2/2019 3:08:40 PM	R61871
Surr: BFB	109	72.8-125		%Rec	1	8/2/2019 3:08:40 PM	R61871
EPA METHOD 8260B: VOLATILES						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Toluene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Ethylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Naphthalene	ND	2.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1-Methylnaphthalene	ND	4.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
2-Methylnaphthalene	ND	4.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Acetone	ND	10		µg/L	1	8/6/2019 12:52:14 AM	R61922
Bromobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Bromodichloromethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Bromoform	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Bromomethane	ND	3.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
2-Butanone	ND	10		µg/L	1	8/6/2019 12:52:14 AM	R61922
Carbon disulfide	ND	10		µg/L	1	8/6/2019 12:52:14 AM	R61922
Carbon Tetrachloride	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Chlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Chloroethane	ND	2.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Chloroform	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Chloromethane	ND	3.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
2-Chlorotoluene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
4-Chlorotoluene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
cis-1,2-DCE	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Dibromochloromethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Dibromomethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC 7 30 2018
Collection Date: 7/31/2019 9:25:00 AM
Lab ID: 1908007-002
Matrix: AQUEOUS
Received Date: 8/1/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **JMR**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1-Dichloroethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1-Dichloroethene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2-Dichloropropane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,3-Dichloropropane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
2,2-Dichloropropane	ND	2.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Hexachlorobutadiene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
2-Hexanone	ND	10		µg/L	1	8/6/2019 12:52:14 AM	R61922
Isopropylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
4-Isopropyltoluene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
4-Methyl-2-pentanone	ND	10		µg/L	1	8/6/2019 12:52:14 AM	R61922
Methylene Chloride	ND	3.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
n-Butylbenzene	ND	3.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
n-Propylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
sec-Butylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Styrene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
tert-Butylbenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
trans-1,2-DCE	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Trichlorofluoromethane	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Vinyl chloride	ND	1.0		µg/L	1	8/6/2019 12:52:14 AM	R61922
Xylenes, Total	ND	1.5		µg/L	1	8/6/2019 12:52:14 AM	R61922
Surr: 1,2-Dichloroethane-d4	97.1	70-130		%Rec	1	8/6/2019 12:52:14 AM	R61922
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	8/6/2019 12:52:14 AM	R61922
Surr: Dibromofluoromethane	101	70-130		%Rec	1	8/6/2019 12:52:14 AM	R61922
Surr: Toluene-d8	98.4	70-130		%Rec	1	8/6/2019 12:52:14 AM	R61922

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 7 30 2018
Collection Date: 7/31/2019 9:44:00 AM
Lab ID: 1908007-003
Matrix: AQUEOUS
Received Date: 8/1/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	8/8/2019 4:09:33 PM	46619
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/8/2019 4:09:33 PM	46619
Surr: DNOP	138	52.7-168		%Rec	1	8/8/2019 4:09:33 PM	46619
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.073	0.050		mg/L	1	8/2/2019 3:31:34 PM	R61871
Surr: BFB	110	72.8-125		%Rec	1	8/2/2019 3:31:34 PM	R61871
EPA METHOD 8260B: VOLATILES						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Toluene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Ethylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Naphthalene	ND	2.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1-Methylnaphthalene	ND	4.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
2-Methylnaphthalene	ND	4.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Acetone	ND	10		µg/L	1	8/6/2019 1:20:57 AM	R61922
Bromobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Bromodichloromethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Bromoform	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Bromomethane	ND	3.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
2-Butanone	ND	10		µg/L	1	8/6/2019 1:20:57 AM	R61922
Carbon disulfide	ND	10		µg/L	1	8/6/2019 1:20:57 AM	R61922
Carbon Tetrachloride	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Chlorobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Chloroethane	ND	2.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Chloroform	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Chloromethane	ND	3.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
2-Chlorotoluene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
4-Chlorotoluene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
cis-1,2-DCE	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Dibromochloromethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Dibromomethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 7 30 2018
Collection Date: 7/31/2019 9:44:00 AM
Lab ID: 1908007-003 **Matrix:** AQUEOUS **Received Date:** 8/1/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **JMR**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1-Dichloroethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1-Dichloroethene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2-Dichloropropane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,3-Dichloropropane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
2,2-Dichloropropane	ND	2.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Hexachlorobutadiene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
2-Hexanone	ND	10		µg/L	1	8/6/2019 1:20:57 AM	R61922
Isopropylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
4-Isopropyltoluene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
4-Methyl-2-pentanone	ND	10		µg/L	1	8/6/2019 1:20:57 AM	R61922
Methylene Chloride	ND	3.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
n-Butylbenzene	ND	3.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
n-Propylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
sec-Butylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Styrene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
tert-Butylbenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
trans-1,2-DCE	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Trichlorofluoromethane	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Vinyl chloride	ND	1.0		µg/L	1	8/6/2019 1:20:57 AM	R61922
Xylenes, Total	ND	1.5		µg/L	1	8/6/2019 1:20:57 AM	R61922
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	8/6/2019 1:20:57 AM	R61922
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	8/6/2019 1:20:57 AM	R61922
Surr: Dibromofluoromethane	104	70-130		%Rec	1	8/6/2019 1:20:57 AM	R61922
Surr: Toluene-d8	99.2	70-130		%Rec	1	8/6/2019 1:20:57 AM	R61922

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908007**

12-Aug-19

Client: Western Refining Southwest, Inc.

Project: GAC 7 30 2018

Sample ID: **MB-46619**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **46619**	RunNo: **61952**
Prep Date: **8/6/2019**	Analysis Date: **8/7/2019**	SeqNo: **2101996** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.66		0.5000		132	52.7	168			

Sample ID: **1908007-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag**	Batch ID: **46619**	RunNo: **61980**
Prep Date: **8/6/2019**	Analysis Date: **8/8/2019**	SeqNo: **2103479** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4	0.40	2.500	0	136	68.3	147	0.801	20	
Surr: DNOP	0.31		0.2500		125	52.7	168	0	0	

Sample ID: **1908007-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag**	Batch ID: **46619**	RunNo: **61951**
Prep Date: **8/6/2019**	Analysis Date: **8/9/2019**	SeqNo: **2104242** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4	0.40	2.500	0	135	68.3	147			
Surr: DNOP	0.32		0.2500		127	52.7	168			

Sample ID: **LCS-46619**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **46619**	RunNo: **61951**
Prep Date: **8/6/2019**	Analysis Date: **8/9/2019**	SeqNo: **2104245** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.2	0.40	2.500	0	127	66.7	148			
Surr: DNOP	0.30		0.2500		118	52.7	168			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908007**
12-Aug-19

Client: Western Refining Southwest, Inc.
Project: GAC 7 30 2018

Sample ID: **2.5UG GRO LCS** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW** Batch ID: **R61871** RunNo: **61871**
Prep Date: Analysis Date: **8/2/2019** SeqNo: **2097943** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	95.3	77.7	130			
Surr: BFB	24		20.00		119	72.8	125			

Sample ID: **RB** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW** Batch ID: **R61871** RunNo: **61871**
Prep Date: Analysis Date: **8/2/2019** SeqNo: **2097944** 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	21		20.00		104	72.8	125			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908007**
12-Aug-19

Client: Western Refining Southwest, Inc.
Project: GAC 7 30 2018

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R61922** RunNo: **61922**
Prep Date: Analysis Date: **8/5/2019** SeqNo: **2099988** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.4	70	130			
Toluene	20	1.0	20.00	0	100	70	130			
Chlorobenzene	19	1.0	20.00	0	95.8	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	92.4	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		93.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.8	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.6	70	130			
Surr: Toluene-d8	9.5		10.00		95.2	70	130			

Sample ID: **rb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R61922** RunNo: **61922**
Prep Date: Analysis Date: **8/5/2019** SeqNo: **2099989** Units: **µg/L**

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

Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908007**
12-Aug-19

Client: Western Refining Southwest, Inc.
Project: GAC 7 30 2018

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R61922**	RunNo: **61922**
Prep Date:	Analysis Date: **8/5/2019**	SeqNo: **2099989** Units: **µg/L**

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

Qualifiers:

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P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908007**
12-Aug-19

Client: Western Refining Southwest, Inc.
Project: GAC 7 30 2018

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R61922**	RunNo: **61922**
Prep Date:	Analysis Date: **8/5/2019**	SeqNo: **2099989** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.3	70	130			
Surr: Toluene-d8	9.6		10.00		96.1	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
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RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1908007** RcptNo: 1

Received By: **Desiree Dominguez** **8/1/2019 8:40:00 AM** DD

Completed By: **Leah Baca** **8/1/2019 9:35:58 AM** Leah Baca

Reviewed By: IO 08/01/19

Chain of Custody

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

Log In

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

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

Adjusted?

Checked by: YG 8/1/19

Special Handling (if applicable)

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

Person Notified: Date

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) _____

Turn-Around Time:

X Standard ☐ **Rush** _____

Project Name: **GAC**

7/30/2018

Project #: 029519001-0003

PO#4500079769

Project Manager:

Gregory McCartney
Kelly Robinson

Sampler: Travis Short

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.9 - 0.2 = 3.7°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908007	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8015 B DRO Extented				Air Bubbles (Y or N)
7/31	9:35	H_2O	Lag	5 - VOA	HCl				X							X						
7/31	9:35			1 - Amber	Cool													X				
7/31	9:25	H_2O	Lead	5 - VOA	HCl				X							X						
7/31	9:25			1 - Amber	Cool													X				
7/31	9:44	H_2O	Inlet	5 - VOA	HCl				X							X						
7/31	9:44			1 - Amber	Cool													X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/31	15:55	Travis Short	[signature]	7/31/19	1555
7/31/19	2010	[signature]	[signature] Courier	8/1/19	8:40

Remarks: CC: kelly.robinson@andeavor.com; gimccartney@marathonpetroleum.com; ecarroll@ltenv.com

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 05, 2019

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: GAC OrderNo.: 1910D07

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 10/24/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC
Collection Date: 10/23/2019 2:00:00 PM
Lab ID: 1910D07-001 **Matrix:** AQUEOUS **Received Date:** 10/24/2019 8:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.13	0.40		mg/L	1	10/29/2019 11:21:55 P	48425
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/29/2019 11:21:55 P	48425
Surr: DNOP	85.6	0	81.5-152		%Rec	1	10/29/2019 11:21:55 P	48425
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/1/2019 2:37:58 PM	R64171
Surr: BFB	93.7	0	65.8-143		%Rec	1	11/1/2019 2:37:58 PM	R64171
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.17	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Ethylbenzene	ND	0.13	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 4:52:51 AM	R64075
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 4:52:51 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 4:52:51 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC
Collection Date: 10/23/2019 2:00:00 PM
Lab ID: 1910D07-001
Matrix: AQUEOUS
Received Date: 10/24/2019 8:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 4:52:51 AM	R64075
Isopropylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
4-Methyl-2-pentanone	1.7	0.71	10	J	µg/L	1	10/30/2019 4:52:51 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
n-Propylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 4:52:51 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 4:52:51 AM	R64075
Surr: 1,2-Dichloroethane-d4	96.7	0	70-130		%Rec	1	10/30/2019 4:52:51 AM	R64075
Surr: 4-Bromofluorobenzene	91.4	0	70-130		%Rec	1	10/30/2019 4:52:51 AM	R64075
Surr: Dibromofluoromethane	101	0	70-130		%Rec	1	10/30/2019 4:52:51 AM	R64075
Surr: Toluene-d8	101	0	70-130		%Rec	1	10/30/2019 4:52:51 AM	R64075

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC
Collection Date: 10/23/2019 2:10:00 PM
Lab ID: 1910D07-002 **Matrix:** AQUEOUS **Received Date:** 10/24/2019 8:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	1.5	0.13	0.40		mg/L	1	10/30/2019 12:34:35 A	48425
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/30/2019 12:34:35 A	48425
Surr: DNOP	103	0	81.5-152		%Rec	1	10/30/2019 12:34:35 A	48425
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/1/2019 3:01:02 PM	R64171
Surr: BFB	90.7	0	65.8-143		%Rec	1	11/1/2019 3:01:02 PM	R64171
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.17	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Ethylbenzene	ND	0.13	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Methyl tert-butyl ether (MTBE)	0.85	0.46	1.0	J	µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 5:21:23 AM	R64075
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 5:21:23 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 5:21:23 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC
Collection Date: 10/23/2019 2:10:00 PM
Lab ID: 1910D07-002
Matrix: AQUEOUS
Received Date: 10/24/2019 8:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 5:21:23 AM	R64075
Isopropylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
4-Methyl-2-pentanone	15	0.71	10		µg/L	1	10/30/2019 5:21:23 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
n-Propylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 5:21:23 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 5:21:23 AM	R64075
Surr: 1,2-Dichloroethane-d4	94.6	0	70-130		%Rec	1	10/30/2019 5:21:23 AM	R64075
Surr: 4-Bromofluorobenzene	93.9	0	70-130		%Rec	1	10/30/2019 5:21:23 AM	R64075
Surr: Dibromofluoromethane	101	0	70-130		%Rec	1	10/30/2019 5:21:23 AM	R64075
Surr: Toluene-d8	103	0	70-130		%Rec	1	10/30/2019 5:21:23 AM	R64075

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC
Collection Date: 10/23/2019 2:20:00 PM
Lab ID: 1910D07-003
Matrix: AQUEOUS
Received Date: 10/24/2019 8:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	0.73	0.13	0.40		mg/L	1	10/30/2019 12:58:48 A	48425
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/30/2019 12:58:48 A	48425
Surr: DNOP	95.4	0	81.5-152		%Rec	1	10/30/2019 12:58:48 A	48425
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.047	0.021	0.050	J	mg/L	1	11/1/2019 3:24:06 PM	R64171
Surr: BFB	107	0	65.8-143		%Rec	1	11/1/2019 3:24:06 PM	R64171
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.26	0.17	1.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Ethylbenzene	0.95	0.13	1.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
Methyl tert-butyl ether (MTBE)	0.72	0.46	1.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1-Methylnaphthalene	0.37	0.31	4.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 5:49:55 AM	R64075
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 5:49:55 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 5:49:55 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075

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Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC
Collection Date: 10/23/2019 2:20:00 PM
Lab ID: 1910D07-003
Matrix: AQUEOUS
Received Date: 10/24/2019 8:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 5:49:55 AM	R64075
Isopropylbenzene	0.52	0.19	1.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
4-Methyl-2-pentanone	6.2	0.71	10	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
n-Propylbenzene	0.66	0.21	1.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
sec-Butylbenzene	0.95	0.25	1.0	J	µg/L	1	10/30/2019 5:49:55 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 5:49:55 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 5:49:55 AM	R64075
Surr: 1,2-Dichloroethane-d4	98.6	0	70-130		%Rec	1	10/30/2019 5:49:55 AM	R64075
Surr: 4-Bromofluorobenzene	92.9	0	70-130		%Rec	1	10/30/2019 5:49:55 AM	R64075
Surr: Dibromofluoromethane	103	0	70-130		%Rec	1	10/30/2019 5:49:55 AM	R64075
Surr: Toluene-d8	100	0	70-130		%Rec	1	10/30/2019 5:49:55 AM	R64075

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D07**
05-Nov-19

Client: Western Refining Southwest, Inc.
Project: GAC

Sample ID: **1910D07-001BMS** SampType: **MS** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag** Batch ID: **48425** RunNo: **64037**
Prep Date: **10/28/2019** Analysis Date: **10/29/2019** SeqNo: **2192180** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.0	0.40	2.500	0	118	68.3	147			
Surr: DNOP	0.22		0.2500		86.5	81.5	152			

Sample ID: **1910D07-001BMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag** Batch ID: **48425** RunNo: **64037**
Prep Date: **10/28/2019** Analysis Date: **10/30/2019** SeqNo: **2192181** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.40	2.500	0	114	68.3	147	3.42	20	
Surr: DNOP	0.21		0.2500		85.8	81.5	152	0	0	

Sample ID: **LCS-48425** SampType: **LCS** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW** Batch ID: **48425** RunNo: **64116**
Prep Date: **10/28/2019** Analysis Date: **11/1/2019** SeqNo: **2196070** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1	0.40	2.500	0	123	82	138			
Surr: DNOP	0.28		0.2500		114	81.5	152			

Sample ID: **MB-48425** SampType: **MBLK** TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW** Batch ID: **48425** RunNo: **64116**
Prep Date: **10/28/2019** Analysis Date: **11/1/2019** SeqNo: **2196071** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.56		0.5000		112	81.5	152			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D07**
05-Nov-19

Client: Western Refining Southwest, Inc.
Project: GAC

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195897** 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		97.4	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195898** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.39	0.050	0.5000	0	77.4	73.6	119			
Surr: BFB	22		20.00		109	65.8	143			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D07**
05-Nov-19

Client: Western Refining Southwest, Inc.
Project: GAC

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.5	70	130			
Toluene	19	1.0	20.00	0	93.8	70	130			
Chlorobenzene	20	1.0	20.00	0	99.5	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	84.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D07**
05-Nov-19

Client: Western Refining Southwest, Inc.
Project: GAC

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

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

Qualifiers:

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D07**
05-Nov-19

Client: Western Refining Southwest, Inc.
Project: GAC

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.8	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1910D07** RcptNo: 1

Received By: Juan Rojas **10/24/2019 8:05:00 AM**

Completed By: **Leah Baca** **10/24/2019 9:16:37 AM** Leah Baca

Reviewed By: LB 10/24/19

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: ENM 10/24/19

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.6	Good	Yes			
2	0.1	Good	Yes			

July 25, 2019

John Kieling, Bureau Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Carl Chavez
NM Energy, Minerals & Natural Resources
Oil Conservation Division, Env Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

Certified Mail#: 7016 0750 0000 1998 7406 (Delivery to NMED)
Certified Mail#: 7016 0750 0000 1998 7406 (Delivery to OCD)
7413

RE: Response to Approval with Modifications
River Terrace Annual Report - Voluntary Bioventing / Air Sparging System
(January – December 2017) Revised July 2018
Western Refining Southwest, Inc. – Bloomfield Terminal
EPA ID# NMD089416416
HWB-WRB-18-001

Dear Mr. Kieling and Mr. Chavez,

On behalf of Marathon Petroleum Company (dba Western Refining Southwest, Inc.), please find enclosed the responses required in the referenced approval letter and the revised Tables. If you have questions, then please contact Mr. Gregory McCartney at 419-421-2338.

Sincerely,

Western Refining Southwest, Inc.

Gregory J. McCartney P.E.
Senior Environmental Professional

cc D. Cobrain, NMED HWB
L. Tsinnajinnie – NMED HWB
Kelly Robinson – Bloomfield Terminal
Scott T. Crouch, P.G. DiSorbo

Enclosures

NMED Comment No. 1

Western's response to NMED's *Disapproval* Comment 2 states that "upon further review, it was noted that none of these locations were designed and installed as bioventing wells and thus collection of "soil gas" from these locations may not be entirely possible. For example, the collection gallery is a long-perforated pipe placed below the water table with riser on the end to allow placement of a pump to recover groundwater, thus there is no entrance point for soil gas into the collection gallery." It should be noted that NMED's Comment 2 directs Western to collect soil gas samples from all wells (e.g., TP, BV, DW and MW) at the site, rather than the collection gallery. Regardless, it is not clear why collection of soil gas is not possible from these wells unless the wells are not equipped to allow soil gas samples to be collected. Explain why collection of soil gas is not possible in the response letter.

Western's Response No. 1 The request to add the collection of soil gas samples has already been addressed in the 2019 Facility-Wide Ground Water Monitoring Plan, which was submitted to NMED on June 25, 2019. New Section 5.4.3 includes the collection of soil gas samples from wells located within the remediation area. Some wells, such as MW-49, are located on the opposite side the slurry wall and are not included.

NMED Comment No. 2

Western' s response to NMED 's *Disapproval* Comment 8 states, "[t]he requested information along with the screened interval as measured from the ground surface has been added to Table 1 of the revised report for DW-1, DW-2, DW-3, and MW-49." Table 1 did not include the information regarding the depths of well-screen intervals. Provide this information in a separate table (see Comment 3) for all of the wells at the site, separating the analytical data from the measured groundwater levels and water quality measurements.

Western's Response No. 2 Table 1 has been separated into three sections as requested. In order to avoid revising the entire report, the table reference "Table 1 Groundwater Monitoring Data Summary" is retained for all three sections of the table. The table incudes screened intervals that can be directly compared to the water level elevations with a new column that indicates whether the well screen is submerged on a particular gauging event.

NMED Comment No. 3

Western's response to NMED's *Disapproval* Comment 8 states, "[i]t is not clear how NMED compared the screen interval in TP-5 to the water level elevation without the land surface elevation. Perhaps the land surface elevation was presented in a historical document that is not reflected in Table 1 of the FWGWMP. If NMED can provide the source of the land surface elevation for the TP locations, then we will update Table 1." NMED did not use the land surface elevation to compare the depths of groundwater and screened interval in TP-5 because the information was not available. The screened interval elevation was calculated with information available in Table 1 and the Facility-wide Groundwater Monitoring Plan (FWGMP). According to Table 1, the depth to water (DTW) in TP-5 was recorded as 4.91 feet in the week of April 26, 2017 which was measured from the top of casing (TOC). The depth of screened interval relative to the TOC was calculated by adding the stickup length to the reported depth of screened interval in Table I (Well Summary) from the 2016 FWGMP. Then, the depth of screened interval relative to TOC in TP-5 was calculated as 3.83 - 8.83 feet, assuming a five-foot screen. Comparing the DTW and the calculated depth of screened interval below TOC in TP-5, NMED determined that the screened interval was not submerged. Comment 8 stating that the screen interval in TP-5 was submerged is not correct based on the available information. Western must evaluate whether the screened intervals of monitoring wells, temporary piezometers and dewatering wells are appropriate for SPH measurement at the River Terrace. Include the three most recent monitoring events that summarize the DTW data and depths of screened intervals in all of the wells at the River Terrace area in the table required by Comment 2 and evaluate whether each well-screen interval intersects the water table.

Western's Response No. 3 Although the report is only for the January to December 2017 reporting period, we have included data through the end of 2018 per the request for the three most recent monitoring events. Table 1 includes a new column that indicates whether a particular water level measurement would be above the top of the well screen. Monitoring points TP-6, TP-7, TP-8, DW-1, DW-3, and MW-48 have the most frequent water level measurements indicating a submerged well screen. Based on the dissolved-phase concentrations of organic contaminants in groundwater samples collected from these wells, it appears very unlikely that SPH is present in the area monitored by these wells.

NMED Comment No. 4

Western's response to NMED's *Disapproval* Comment 10 states, "[t]he requested information [elevation, DTW, and total well depth data] has been added to Table 1 of the revised report." The DTW and total well depth data were added for TP-3, TP-10, TP-11, TP-12 and TP-13; however, the groundwater elevation data was not included in Table I. NMED's *Disapproval*

Comment 10 directs Western to include the elevation data. Since the TOC elevation data after 2006 is available (except TP-11), the groundwater elevation data can be calculated and added to the table using the information from Table I (Well Summary) of the 2016 FWGMP. Include the groundwater elevation data in the table required by Comment 2.

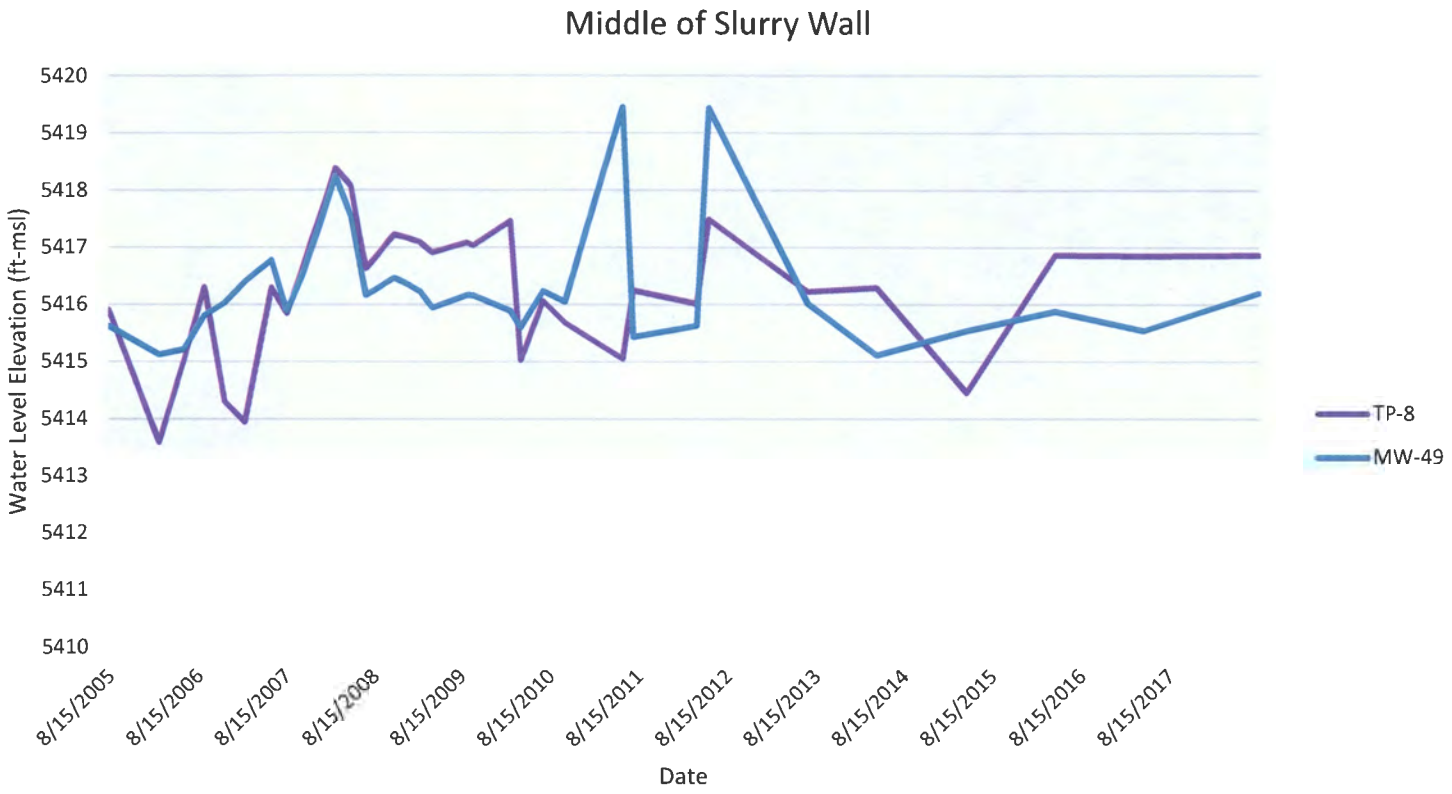
Western's Response No. 4 The groundwater elevation data is included in the revised table.

NMED Comment No. 5

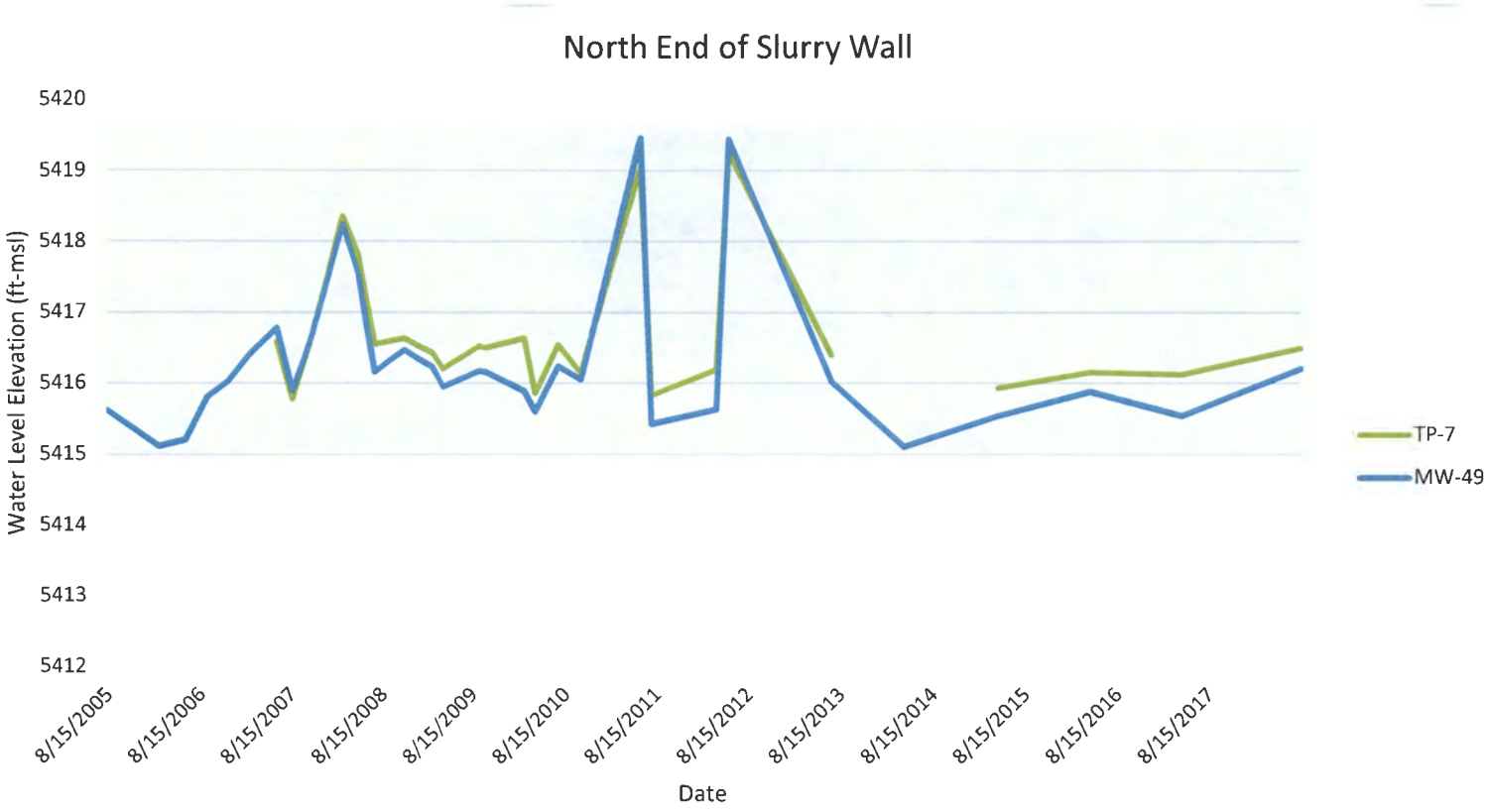
Western's response to NMED's *Disapproval* Comment 17 states, "[w]e were not able to locate as-built drawings [for sheet piling and slurry wall]." If the barrier wall was not installed to the Nacimiento Formation, groundwater would flow beneath the wall. Western must explain how the wall was appropriately installed to the impermeable layer without evaluating as-built drawings in the response letter.

Western's Response No. 5 The effectiveness of the barrier wall and the evidence that it was appropriately installed into the underlying impermeable bedrock is evident when examining water levels on opposite sides of the wall. A graph is enclosed showing water levels measured in MW-49, which is on the river side of the wall, and in TP-8, which is the nearest measuring point on the facility side of the wall. As can be seen, there a numerous times when there is significant separation in the water level elevations on opposite sides of the wall at this location.

For contrast, a second graph is enclosed that shows the water level elevations at MW-49 and TP-7. TP-7 was chosen as it is near the far north end of the slurry wall where the water level effect of the barrier wall would be less than at TP-8. In the second graph, the two water levels track each other very closely.



MW-49 is located on the river side of the slurry wall and TP-8 is located on the bank side of the slurry wall. The wells are approximately 40 feet apart. The separation in water levels indicates the effectiveness of the slurry wall in containing groundwater behind the slurry wall and controlling discharge of potentially impacted groundwater to surface water.



MW-49 is located on the river side of the slurry wall approximately mid way along the wall and TP-7 is located on the bank side of the slurry wall, but TP-7 is near the north end of the slurry wall. The two wells are approximately 80 feet apart. The fluctuations in water levels in MW-49 are interpreted to be influenced by the rise and fall of the discharge and water level in the adjacent San Juan River. The water level in TP-7, which is located near the north end of slurry, also indicates very similar fluctuations also interpreted to be associated with changes in the San Juan River water level. The fluctuations in water levels in TP-7 are anticipated, as this well is near the north end of the slurry wall where the influence of the surface water levels is expected.

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Phone (505) 476-6000 Fax (505) 476-6030
www.env.nm.gov

Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 29, 2019

Gregory J. McCartney
Western Refining Southwest, Inc.
Bloomfield Terminal
#50 County Road 4490
Bloomfield, New Mexico 87413

RE: APPROVAL WITH MODIFICATIONS
RIVER TERRACE ANNUAL REPORT
VOLUNTARY BIOVENTING / AIR SPARGING SYSTEM
(JANUARY – DECEMBER 2017), REVISED JULY 2018
WESTERN REFINING SOUTHWEST, INC. - BLOOMFIELD TERMINAL
EPA ID# NMD089416416
HWB-WRB-18-001

Dear Mr. McCartney:

The New Mexico Environment Department (NMED) has received the Western Refining Southwest, Inc., Bloomfield Terminal (Western) *River Terrace Annual Report Voluntary Bioventing/Air Sparging System (January – December 2017)* (Report), revised on July 2018. NMED has reviewed the Report and hereby issues this Approval with Modifications with the following comments.

Comment 1

Western's response to NMED's *Disapproval* Comment 2 states that "upon further review, it was noted that none of these locations were designed and installed as bioventing wells and thus collection of "soil gas" from these locations may not be entirely possible. For example, the collection gallery is a long-perforated pipe placed below the water table with riser on the end to allow placement of a pump to recover groundwater, thus there is no entrance point for soil gas into the collection gallery." It should be noted that NMED's Comment 2 directs Western to

collect soil gas samples from all wells (e.g., TP, BV, DW and MW) at the site, rather than the collection gallery. Regardless, it is not clear why collection of soil gas is not possible from these wells unless the wells are not equipped to allow soil gas samples to be collected. Explain why collection of soil gas is not possible in the response letter.

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Comment 3

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Comment 4

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however, the groundwater elevation data was not included in Table 1. NMED's *Disapproval* Comment 10 directs Western to include the elevation data. Since the TOC elevation data after 2006 is available (except TP-11), the groundwater elevation data can be calculated and added to the table using the information from Table 1 (Well Summary) of the 2016 FWGMP. Include the groundwater elevation data in the table required by Comment 2.

Comment 5

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Western must address all comments in this Approval with Modifications in a response letter cross-referencing NMED's numbered comments. The response letter and the tables required by Comments 2, 3, and 4 must be submitted no later than **July 31, 2019**.

This approval is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all information or every statement presented in the document.

If you have questions regarding this Approval with Modifications, please contact Michiya Suzuki of my staff at 505-476-6059.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
K. Van Horn, NMED HWB
L. Tsinnajinnie, NMED HWB
M. Suzuki, NMED HWB
C. Chavez, EMNRD OCD
K. Robinson, Western Refining Southwest, Inc., Bloomfield Terminal
L. King, EPA Region (6LCRRC)

File: Reading File and WRB 2019 File
WRB-18-001

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
TP-1	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA	***
TP-2	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA	***
TP-3 (Bi-Annual)	2018	08/02/18	5423.88	5422.66	7.18	NPP	5416.70	12.37	4 - 9	5418.66 - 5413.66	No
	2017	04/28/17	5423.88	5422.66	7.16	NPP	5416.72	12.35	4 - 9	5418.66 - 5413.66	No
	2016	04/27/16	5423.88	5422.66	7.15	NPP	5416.73	12.35	4 - 9	5418.66 - 5413.66	No
	High Flow 2015	No High Flow	5423.88	5422.66	**	**	**	**	4 - 9	5418.66 - 5413.66	**
	Low Flow 2015	Week of 04/28/15	5423.88	5422.66	7.53	NPP	5416.35	12.35	4 - 9	5418.66 - 5413.66	No
	High Flow 2013 **	No High Flow	5423.88	5422.66	**	**	**	**	4 - 9	5418.66 - 5413.66	**
	Low Flow 2013	Week of 07/11/13	5423.88	5422.66	7.11	NPP	5416.77	12.35	4 - 9	5418.66 - 5413.66	No
TP-5	Low Flow 2018	Week of 10/15/18	5422.83	5422.00	4.75	NPP	5418.08	8.85	3 - 8	5419.00 - 5414.00	No
	Low Flow 2017	Week of 04/28/17	5422.83	5422.00	4.91	NPP	5417.92	8.84	3 - 8	5419.00 - 5414.00	No
	Low Flow 2016	Week of 04/28/16	5422.83	5422.00	4.87	NPP	5417.96	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2015	No High Flow	5422.83	5422.00	**	**	**	**	3 - 8	5419.00 - 5414.00	**
	Low Flow 2015	Week of 04/28/15	5422.83	5422.00	5.13	NPP	5417.7	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2014 **	No High Flow	5422.83	5422.00	**	**	**	**	3 - 8	5419.00 - 5414.00	**
	Low Flow 2014	Week of 04/22/14	5422.83	5422.00	5.19	NPP	5417.64	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2013 **	No High Flow	5422.83	5422.00	**	**	**	**	3 - 8	5419.00 - 5414.00	**
	Low Flow 2013	Week of 07/11/13	5422.83	5422.00	4.95	NPP	5417.88	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2012	Week of 05/29/12	5422.83	5422.00	3.42	NPP	5419.41	8.84	3 - 8	5419.00 - 5414.00	Yes
	Low Flow 2012	Week of 04/09/12	5422.83	5422.00	5.09	NPP	5417.74	8.84	3 - 8	5419.00 - 5414.00	No
	Low Flow 2011	Week of 07/26/11	5422.83	5422.00	5.69	NPP	5417.14	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2011	Week of 06/13/11	5422.83	5422.00	4.95	NPP	5417.88	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2010	Week of 10/18/10	5422.83	5422.00	5.65	NPP	5417.18	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2010	Week of 07/20/10	5422.83	5422.00	5.11	NPP	5417.72	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2010	Week of 04/19/10	5422.83	5422.00	5.98	NPP	5416.85	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2010	Week of 03/08/10	5422.83	5422.00	4.41	NPP	5418.42	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2009	Week of 10-05-09	5422.83	5422.00	4.57	NPP	5418.26	6.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2009	Week of 09/10/09	5422.83	5422.00	4.54	NPP	5418.29	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2009	Week of 04/20/09	5422.83	5422.00	4.96	NPP	5417.87	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2009	Week of 03/02/09	5422.83	5422.00	4.66	NPP	5417.97	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2008	Week of 11/10/08	5422.83	5422.00	4.54	NPP	5418.29	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2008	Week of 07/14/08	5422.83	5422.00	4.76	NPP	5418.07	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2008	Week of 05/12/08	5422.83	5422.00	3.43	NPP	5419.40	8.84	3 - 8	5419.00 - 5414.00	Yes
	1st Quarter 2008	Week of 03/10/08	5422.83	5422.00	3.15	NPP	5419.68	8.84	3 - 8	5419.00 - 5414.00	Yes
	4th Quarter 2007	Week of 10/29/07	5422.83	5422.00	4.78	NPP	5418.05	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2007	Week of 08/20/07	5422.83	5422.00	6.97	NPP	5415.88	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2007	Week of 06/18/07	5422.83	5422.00	6.62	NPP	5416.21	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2007	Week of 02/26/07	5422.83	5422.00	5.59	NPP	5417.24	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2006	Week of 12/04/06	5422.83	5422.00	5.95	NPP	5416.88	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2006	Week of 09/11/06	5422.83	5422.00	5.32	NPP	5417.51	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2006	Week of 06/17/06	5422.83	5422.00	5.24	NPP	5417.59	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2006	Week of 03/06/06	5422.83	5422.00	7.81	NPP	5415.02	8.84	3 - 8	5419.00 - 5414.00	No
	Baseline	Week of 08/15/05	5422.83	5422.00	5.91	NPP	5416.92	8.84	3 - 8	5419.00 - 5414.00	No

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
TP-6	Low Flow 2018	Week of 08/13/18	5422.55	5421.40	5.58	NPP	5416.99	9.94	5 - 10	5416.40 - 5411.40	Yes
	Low Flow 2017	Week of 04/26/17	5422.55	5421.40	5.71	NPP	5416.84	9.94	5 - 10	5416.40 - 5411.40	Yes
	Low Flow 2016	Week of 04/28/16	5422.55	5421.40	5.75	NPP	5416.80	9.94	5 - 10	5416.40 - 5411.40	Yes
	High Flow 2015	No High Flow	5422.55	5421.40	**	**	**	**	5 - 10	5416.40 - 5411.40	**
	Low Flow 2015	Week of 04/28/15	5422.55	5421.40	6.00	NPP	5416.55	9.94	5 - 10	5416.40 - 5411.40	Yes
	High Flow 2014 **	No High Flow	5422.55	5421.40	**	**	**	**	5 - 10	5416.40 - 5411.40	**
	Low Flow 2014	Week of 04/22/14	5422.55	5421.40	6.11	NPP	5416.44	9.94	5 - 10	5416.40 - 5411.40	Yes
	High Flow 2013 **	No High Flow	5422.55	5421.40	**	**	**	**	5 - 10	5416.40 - 5411.40	**
	Low Flow 2013	Week of 07/11/13	5422.55	5421.40	5.79	NPP	5416.76	9.94	5 - 10	5416.40 - 5411.40	Yes
TP-7 (Bi-Annual)	2018	08/02/18	5421.99	5420.90	5.49	NPP	5416.50	9.73	5 - 10	5415.90 - 5410.90	Yes
	Low Flow 2017	Week of 04/26/17****	5421.99	5420.90	5.86	NPP	5416.13	9.71	5 - 10	5415.90 - 5410.90	Yes
	2016	04/27/16	5421.99	5420.90	5.83	NPP	5416.16	9.72	5 - 10	5415.90 - 5410.90	Yes
	High Flow 2015	No High Flow	5421.99	5420.90	**	**	**	**	5 - 10	5415.90 - 5410.90	**
	Low Flow 2015	Week of 04/28/15	5421.99	5420.90	6.05	NPP	5415.94	9.72	5 - 10	5415.90 - 5410.90	Yes
	High Flow 2013 **	No High Flow	5421.99	5420.90	**	**	**	**	5 - 10	5415.90 - 5410.90	**
	Low Flow 2013	Week of 07/11/13	5421.99	5420.90	5.59	NPP	5416.40	9.72	5 - 10	5415.90 - 5410.90	Yes
TP-8	Low Flow 2018	Week of 08/13/18	5422.52	5421.13	5.65	NPP	5416.87	9.94	5 - 10	5416.13 - 5411.13	Yes
	Low Flow 2017	Week of 04/26/17	5422.52	5421.13	5.86	NPP	5416.86	9.72	5 - 10	5416.13 - 5411.13	Yes
	Low Flow 2016	Week of 04/28/16	5422.52	5421.13	5.65	NPP	5416.87	9.72	5 - 10	5416.13 - 5411.13	Yes
	High Flow 2015	No High Flow	5422.52	5421.13	**	**	**	**	5 - 10	5416.13 - 5411.13	**
	Low Flow 2015	Week of 04/28/15	5422.52	5421.13	8.06	NPP	5414.46	9.72	5 - 10	5416.13 - 5411.13	Yes
	High Flow 2014 **	No High Flow	5422.52	5421.13	**	**	**	**	5 - 10	5416.13 - 5411.13	**
	Low Flow 2014	Week of 04/22/14	5422.52	5421.13	6.22	NPP	5416.30	9.72	5 - 10	5416.13 - 5411.13	Yes
TP-9	Low Flow 2018	Week of 10/17/18	5422.14	5421.55	5.28	NPP	5416.86	10.95	5 - 10	5416.55 - 5411.55	Yes
	Low Flow 2017	Week of 04/26/17	5422.14	5421.55	5.81	NPP	5416.33	10.97	5 - 10	5416.55 - 5411.55	No
	Low Flow 2016	Week of 04/28/16	5422.14	5421.55	5.69	NPP	5416.45	10.97	5 - 10	5416.55 - 5411.55	No
	High Flow 2015	No High Flow	5422.14	5421.55	**	**	**	**	5 - 10	5416.55 - 5411.55	**
	Low Flow 2015	Week of 04/28/15	5422.14	5421.55	5.93	NPP	5416.21	10.97	5 - 10	5416.55 - 5411.55	No
	High Flow 2014 **	No High Flow	5422.14	5421.55	**	**	**	**	5 - 10	5416.55 - 5411.55	**
	Low Flow 2014	Week of 04/22/14	5422.14	5421.55	6.98	NPP	5415.16	10.97	5 - 10	5416.55 - 5411.55	No
	High Flow 2013 **	No High Flow	5422.14	5421.55	**	**	**	**	5 - 10	5416.55 - 5411.55	**
	Low Flow 2013	Week of 07/11/13	5422.14	5421.55	5.23	NPP	5416.91	10.97	5 - 10	5416.55 - 5411.55	Yes
TP-10	2018	08/02/18	5422.56	5422.56	5.15	NPP	5417.41	9.88	3.5 - 8.5	5419.06 - 5414.06	No
	2017	04/28/17	5422.56	5422.56	5.11	NPP	5417.45	9.95	3.5 - 8.5	5419.06 - 5414.06	No
	2016	04/27/16	5422.56	5422.56	5.12	NPP	5417.44	9.95	3.5 - 8.5	5419.06 - 5414.06	No
	High Flow 2015	No High Flow	5422.56	5422.56	**	**	**	**	3.5 - 8.5	5419.06 - 5414.06	**
	Low Flow 2015	Week of 04/28/15	5422.56	5422.56	5.50	NPP	5417.06	9.95	3.5 - 8.5	5419.06 - 5414.06	No
	High Flow 2013 **	No High Flow	5422.56	5422.56	**	**	**	**	3.5 - 8.5	5419.06 - 5414.06	**
	Low Flow 2013	Week of 07/11/13	5422.56	5422.56	4.99	NPP	5417.57	9.95	3.5 - 8.5	5419.06 - 5414.06	No

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
TP-11	2018	08/02/18	NA	NA	5.61	NPP	NA	9.95	4.5 - 9.5	NA	NA
	2017	04/28/17	NA	NA	5.56	NPP	NA	9.98	4.5 - 9.5	NA	NA
	2016	04/27/16	NA	NA	5.58	NPP	NA	9.98	4.5 - 9.5	NA	NA
	High Flow 2015	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA	NA
	Low Flow 2015	Week of 04/28/15	NA	NA	5.84	NPP	NA	9.98	4.5 - 9.5	NA	NA
	High Flow 2013 **	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA	NA
	Low Flow 2013	Week of 07/11/13	NA	NA	5.45	NPP	NA	9.98	4.5 - 9.5	NA	NA
TP-12	2018	08/02/18	5424.97	5424.97	7.33	NPP	5417.64	11.58	7 - 12	NA	No
	2017	04/28/17	5424.97	5424.97	7.32	NPP	5417.65	11.79	7 - 12	NA	No
	2016	04/27/16	5424.97	5424.97	7.36	NPP	5417.61	11.79	7 - 12	NA	No
	High Flow 2015	No High Flow	5424.97	5424.97	**	**	**	**	7 - 12	NA	**
	Low Flow 2015	Week of 07/11/15	5424.97	5424.97	7.57	NPP	5417.40	11.79	7 - 12	NA	No
	High Flow 2013 **	No High Flow	5424.97	5424.97	**	**	**	**	7 - 12	NA	**
	Low Flow 2013	Week of 07/11/13	5424.97	5424.97	7.10	NPP	5417.87	11.79	7 - 12	NA	No
TP-13 (Bi-Annual)	2018	08/02/18	5423.88	5423.88	6.16	NPP	5417.72	12.78	4.5 - 14.5	NA	No
	2017	04/28/17	5423.88	5423.88	6.18	NPP	5417.70	12.73	4.5 - 14.5	NA	No
	2016	04/27/16	5423.88	5423.88	6.25	NPP	5417.63	16.09	4.5 - 14.5	NA	No
	High Flow 2015	No High Flow	5423.88	5423.88	**	**	**	**	4.5 - 14.5	NA	**
	Low Flow 2015	Week of 04/28/15	5423.88	5423.88	6.45	NPP	5417.43	16.09	4.5 - 14.5	NA	No
	High Flow 2013 **	No High Flow	5423.88	5423.88	**	**	**	**	4.5 - 14.5	NA	**
	Low Flow 2013	Week of 07/11/13	5423.88	5423.88	5.88	NPP	5418.00	16.09	4.5 - 14.5	NA	No
DW-1 (Bi-Annual)	2018	08/02/18	5422.97	5420.73	5.91	NPP	5417.06	15.60	5 - 14	5415.73 - 5406.73	Yes
	Low Flow 2017	Week of 04/26/17****	5422.97	5420.73	6.16	NPP	5416.81	15.62	5 - 14	5415.73 - 5406.73	Yes
	2016	04/27/16	5422.97	5420.73	6.15	NPP	5416.82	15.82	5 - 14	5415.73 - 5406.73	Yes
	High Flow 2015	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73	**
	Low Flow 2015	Week of 04/28/15	5422.97	5420.73	8.30	NPP	5416.67	15.62	5 - 14	5415.73 - 5406.73	Yes
	High Flow 2013 **	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73	**
	Low Flow 2013	Week of 07/11/13	5422.97	5420.73	9.64	NPP	5413.33	15.82	5 - 14	5415.73 - 5406.73	No
DW-2	Low Flow 2018	Week of 08/13/18	5423.81	5422.67	6.27	NPP	5417.54	15.50	4 - 14	5418.67 - 5408.67	No
	Special Event	12/29/17	5423.81	5422.67	NM	NM	NM	NM	4 - 14	5418.67 - 5408.67	NM
DW-3	Low Flow 2018	Week of 08/13/18	5424.79	5422.43	7.60	NPP	5417.19	NM	6 - 14	5416.43 - 5408.43	Yes
	Special Event	12/29/17	5424.79	5422.43	NM	NM	NM	NM	6 - 14	5416.43 - 5408.43	NM
	Low Flow 2017	Week of 04/26/17	5424.79	5422.43	7.61	NPP	5417.18	14.64	6 - 14	5416.43 - 5408.43	Yes
	Low Flow 2016	Week of 04/28/16	5424.79	5422.43	7.59	NPP	5417.20	14.64	6 - 14	5416.43 - 5408.43	Yes
	High Flow 2015	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43	**
	Low Flow 2015	Week of 04/28/15	5424.79	5422.43	11.23	NPP	5413.56	14.64	6 - 14	5416.43 - 5408.43	No
	High Flow 2014 **	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43	**
	Low Flow 2014	Week of 04/22/14	5424.79	5422.43	8.92	NPP	5417.87	14.64	6 - 14	5416.43 - 5408.43	Yes
	High Flow 2013 **	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43	**
	Low Flow 2013	Week of 07/11/13	5424.79	5422.43	10.88	NPP	5413.93	14.84	6 - 14	5416.43 - 5408.43	No

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
MW-48	Low Flow 2018	Week of 08/13/18	5424.83	5422.21	7.43	NPP	5417.40	16.81	5 - 15	5417.21 - 5407.21	Yes
MW-49	Low Flow 2018	Week of 08/13/18	5425.20	5422.52	8.99	NPP	5416.21	16.98	4 - 14	5418.52 - 5408.52	No
	Low Flow 2017	Week of 04/26/17	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52	No
	Low Flow 2016	Week of 04/28/16	5425.20	5422.52	9.31	NPP	5415.89	16.48	4 - 14	5418.52 - 5408.52	No
	High Flow 2015	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52	**
	Low Flow 2015	Week of 04/28/15	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52	No
	High Flow 2014 **	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52	**
	Low Flow 2014	Week of 04/22/14	5425.20	5422.52	10.08	NPP	5415.12	16.48	4 - 14	5418.52 - 5408.52	No
	High Flow 2013 **	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52	**
Gallery	Low Flow 2018	Week of 08/21/18	NA	NA	6.26	NM	NA	15.11	NA	NA	NA
	Special Event	12/29/17	NA	NA	NM	NM	NA	NM	NA	NA	NA

Notes:

NPP = No Product Present
NM = Not measured
NA = Not Available
TOC - top of casing
ft-msl - feet above mean sea level
ft-bgs = feet below ground surface
** Due to drought, river conditions never met high flow requirements.
*** Well Decommissioned November 2012 as part of bioventing system enhancements.
**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017
(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-3 (Bi-Annual)	2017	04/28/17	Bi-Annual				
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	891	2.56	29.3	7.69	54.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	421	2.06	62	7.47	66.4
TP-5	Low Flow 2018	Week of 10/15/18	1,381	0.21	-358	7.89	63.5
	Low Flow 2017	Week of 04/26/17	1,165	2.37	-204	7.19	56.3
	Low Flow 2016	Week of 04/28/16	815	1.24	-279	7.03	56.2
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	828	2.28	-257	7.56	55.1
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	526	0.34	-251	7.30	53.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	431	2.55	-210	7.56	68.1
	High Flow 2012	Week of 05/29/12	470	1.48	-33	6.30	61.1
	Low Flow 2012	Week of 04/09/12	363	0.93	-266	6.80	50.9
	Low Flow 2011	Week of 07/26/11	932	1.78	192	6.70	68.5
	High Flow 2011	Week of 06/13/11	561	0.72	273	6.95	62.2
	4th Quarter 2010	Week of 10/18/10	632	2.06	71	7.01	68.2
	3rd Quarter 2010	Week of 07/20/10	707	1.11	84	6.79	65.8
	2nd Quarter 2010	Week of 04/19/10	590	0.58	121	7.02	54.1
	1st Quarter 2010	Week of 03/08/10	807	0.67	253	7.05	48.5
	4th Quarter 2009	Week of 10-05-09	759	4.57	212	6.76	67.4
	3rd Quarter 2009	Week of 09/10/09	794	1.12	152	7.04	72.6
	2nd Quarter 2009	Week of 04/20/09	1,128	0.69	106	6.69	55.2
	1st Quarter 2009	Week of 03/02/09	1,092	3.33	176	7.07	49.2
	4th Quarter 2008	Week of 11/10/08	981	1.23	129	6.83	61.8
	3rd Quarter 2008	Week of 07/14/08	852	1.49	159	6.95	69.8
	2nd Quarter 2008	Week of 05/12/08	702	1.32	54	6.87	56.8
	1st Quarter 2008	Week of 03/10/08	656	2.34	216	6.82	47.4
	4th Quarter 2007	Week of 10/29/07	857	0.23	229	7.04	66.5
	3rd Quarter 2007	Week of 08/20/07	911	0.17	129	6.88	69.8
	2nd Quarter 2007	Week of 06/18/07	884	0.80	148	6.87	63.9
	1st Quarter 2007	Week of 02/26/07	1,027	0.79	219	6.87	49.6
	4th Quarter 2006	Week of 12/04/06	1,377	1.36	229	6.99	56.0
	3rd Quarter 2006	Week of 09/11/06	879	0.29	149	7.09	71.0
	2nd Quarter 2006	Week of 06/17/06	989	0.05	39	6.94	65.3
	1st Quarter 2006	Week of 03/06/06	747	0.52	-51	7.03	54.1
	Baseline	Week of 08/15/05	923	NR	NR	6.90	68.7

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
TP-6	Low Flow 2018	Week of 08/13/18	1,878	1.09	-268	7.41	70.9
	Low Flow 2017	Week of 04/26/17	999	2.45	-132	7.00	55.0
	Low Flow 2016	Week of 04/28/16	780	1.48	-231	8.04	55.9
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	800	1.77	-185	7.73	55.8
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	552	4.25	-83	7.11	53.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	457	8.84	-7	7.71	70.2
TP-7 (Bi-Annual)	2018	Week of 08/13/18	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	978	5.25	183	7.78	49.5
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	773	3.09	-62.4	7.76	54.6
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	704	5.67	-56	7.40	64.9
TP-8	Low Flow 2018	Week of 08/13/18	1,627	0.99	-119	7.73	69.3
	Low Flow 2017	Week of 04/26/17	1,571	2.80	-80	7.27	52.5
	Low Flow 2016	Week of 04/28/16	1,084	2.57	-163	8.03	54.0
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	907	2.64	-93.6	7.76	54.0
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	957	2.33	-226	7.56	53.6
TP-9	Low Flow 2018	Week of 10/15/18	2,050	0.69	-184	7.39	15.8
	Low Flow 2017	Week of 04/26/17	1,674	2.23	-63	7.33	50.9
	Low Flow 2016	Week of 04/28/16	1,715	2.00	-123	7.19	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,833	3.38	-104	7.35	51.9
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,410	5.09	-54	7.05	50.8
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	1,330	4.80	65	7.00	65.5
TP-10	2016 - 2018	08/02/18	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	695	1.78	46.3	7.60	50.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	340	2.01	60	7.50	63.1

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
TP-11	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	797	2.06	34.4	7.67	51.9
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	500	1.92	-28	7.40	62.4
TP-12	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	1,064	2.51	-33.9	7.55	51.0
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	561	2.61	-32	7.60	56.6
TP-13 (Bi-Annual)	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	600	5.66	-15.7	7.83	50.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	365	3.23	-54	7.50	60.7
DW-1 (Bi-Annual)	2018	NA	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	981	2.79	144	7.91	55.4
	2016	NA	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	2,053	2.13	-114	7.26	53.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	1,936	2.43	-93	7.00	68.8
DW-2	Low Flow 2018	Week of 8/13/18	2,100	1.38	-180	7.73	70.1
	Special Event	12/29/17	1,426	2.22	-29	7.79	60.2
DW-3	Low Flow 2018	Week of 8/13/18	1,970	1.34	-326	7.59	69.3
	Special Event	12/29/17	1,654	0.68	41	7.78	70.1
	Low Flow 2017	Week of 04/26/17	1,975	1.45	-162	7.26	70.9
	Low Flow 2016	Week of 04/28/16	1,448	2.59	-269	7.60	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,507	6.74	-243	7.58	57.4
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,048	0.68	-266	7.36	54.6
MW-48	Low Flow 2018	Week of 8/13/18	3,077	1.4	-246.3	7.80	68.4

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
MW-49	Low Flow 2018	Week of 8/13/18	1,527	0.81	-120.3	7.65	61.3
	Low Flow 2017	Week of 04/26/17	1,202	3.73	-85	7.18	52.3
	Low Flow 2016	Week of 04/28/16	942	3.63	-125.13	7.95	51.7
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	936	1.94	-140.80	7.65	52.90
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,255	4.84	-111.2	7.45	51.08
	High Flow 2013 **	No High Flow	**	**	**	**	**
Gallery	Low Flow 2018	Week of 8/13/18	3,286	1.76	-145	7.62	66.9
	Special Event	12/29/17	1,552	1.85	-75	6.91	51.2

Notes:

DO = Dissolved Oxygen NA - Not Applicable
ORP = Oxidation Reduction Potential
** Due to drought, river conditions never met high flow requirements.
*** Well Decommissioned November 2012 as part of biovent system enhancements.
**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017
(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-3 (Bi-Annual)	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.05	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.05	< 2.5	0.0051	NR[2]
TP-5	Low Flow 2018	Week of 10/17/18	<0.001	<0.001	0.069	0.085	<0.00021	1.7	1.5	<5.0	0.0130	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.010	<0.010	0.670	3.100	<0.010	1.6	13	< 2.5	0.068	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.010	<0.010	0.300	1.800	<0.010	1.4	11	< 2.5	0.027	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.010	<0.010	0.063	1.300	<0.010	0.75	7.1	< 2.5	0.019	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	0.027	0.450	<0.005	2.2	4.0	< 2.5	0.012	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	0.022	0.590	<0.010	0.69	4.6	< 2.5	0.013	NR[2]
	High Flow 2012	Week of 05/29/12	<0.005	<0.005	0.017	0.450	<0.005	1.10	4.20	< 2.5	0.0260	NR[2]
	Low Flow 2012	Week of 04/09/12	<0.005	<0.005	0.020	0.410	<0.005	0.60	1.80	< 2.5	0.3600	NR[2]
	Low Flow 2011	Week of 07/26/11	<0.010	<0.01	0.051	1.200	<0.025	0.24	4.9		0.0550	NR[2]
	High Flow 2011	Week of 06/13/11	<0.010	<0.01	0.350	4.200	<0.025	3.20	20		0.0580	NR[2]
	4th Quarter 2010	Week of 10/18/10	<0.005	<0.01	0.830	8.000	<0.025	3.10	30		0.0230	NR
	3rd Quarter 2010	Week of 07/20/10	<0.005	<0.01	0.310	8.300	<0.025	3.10	26		0.0830	NR
	2nd Quarter 2010	Week of 04/19/10	<0.005	<0.010	1.600	13.000	<0.025	9.00	38		0.1300	NR
	1st Quarter 2010	Week of 03/08/10	<0.005	0.0078	0.150	1.100	<0.013	9.10	31		0.0430	NR

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
	4th Quarter 2009	Week of 10-05-09	<0.005	<0.01	1.900	15.000	<0.025	7.10	40		0.0250	NR
	3rd Quarter 2009	Week of 09/10/09	<0.005	<0.01	1.300	13.000	<0.025	8.00	33		0.0330	NR
TP-5 (continued)	2nd Quarter 2009	Week of 04/20/09	0.025	0.011	2.400	15.000	<0.025	11.00	49		0.0260	NR
	1st Quarter 2009	Week of 03/02/09	0.019	<0.01	1.800	14.000	<0.025	12.00	37		0.0260	NR
	4th Quarter 2008	Week of 11/10/08	0.016	0.01	2.400	12.000	<0.025	8.50	38		0.0290	NR
	3rd Quarter 2008	Week of 07/14/08	<0.02	<0.02	1.900	18.000	<0.05	1.10	50		0.0430	NR
	2nd Quarter 2008	Week of 05/12/08	0.048	<0.02	1.100	13.000	<0.05	*<1.00	46		0.0390	NR
	1st Quarter 2008	Week of 03/10/08	<0.020	<0.020	1.600	17.000	<0.050	*<1.00	52		0.0510	NR
	4th Quarter 2007	Week of 10/29/07	<0.001	<0.001	2.600	17.000	<0.0025	1.20	56		0.0320	NR
	3rd Quarter 2007	Week of 08/20/07	0.300	<0.10	3.000	22.000	<0.25	*<1.00	69		0.0440	NR
	2nd Quarter 2007	Week of 06/18/07	0.340	<0.10	3.500	21.000	<0.25	*<1.00	78		0.0920	NR
	1st Quarter 2007	Week of 02/26/07	<0.01	<0.01	1.300	18.000	<0.025	*<1.00	85		NR	NR
	4th Quarter 2006	Week of 12/04/06	0.069	<0.050	1.200	10.000	<0.120	*<1.00	50		NR	NR
	3rd Quarter 2006	Week of 09/11/06	<0.01	<0.01	3.100	16.000	<0.025	*<1.00	110		NR	NR
	2nd Quarter 2006	Week of 06/17/06	0.054	<0.001	1.600	16.000	<0.025	*<1.00	34		NR	NR
	1st Quarter 2006	Week of 03/06/06	0.200	<0.02	0.280	20.000	<0.05	*<1.00	59		NR	NR
	Baseline	Week of 08/15/05	0.350	<0.005	3.500	21.000	<0.05	1.20	56		NR	NR

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-6	Low Flow 2018	Week of 08/13/18	<0.001	0.0002J	0.00026J	<0.0015	<0.001	<0.31	0.82	<2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	0.026	0.0038	<0.001	1.7	1.3	< 2.5	0.027	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	0.068	<0.0015	<0.0010	0.75	0.99	< 2.5	0.033	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	0.0087	0.0048	<0.001	1.6	1.5	< 2.5	0.0150	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	0.028	0.093	<0.001	1.7	3.5	< 2.5	0.0084	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0100	NR[2]
TP-7 (Bi-Annual)	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.2	<0.05	<2.5	0.020	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	<0.20	<0.50	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.20	<0.50	< 2.5	0.0014	NR[2]
TP-8	Low Flow 2018	Week of 08/13/18	<0.005	<0.005	0.0028J	< 0.0075	<0.005	<0.31	2.1	< 2.5	0.0068	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.005	<0.005	0.011	< 0.0075	<0.005	1.3	1.6	< 2.5	0.038	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.005	<0.005	0.029	0.026	<0.005	1.0	2.9	< 2.5	0.034	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.005	<0.005	0.0099	0.044	<0.005	1.3	1.4	< 2.5	0.0091	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	0.019	0.083	<0.005	2.3	4.0	< 2.5	0.0080	NR[2]

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-9	Low Flow 2018	Week of 10/17/18	<0.0001	<0.001	<0.001	<0.0025	<0.001	<0.63	0.056	<5.0	0.00026J	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	0.11	< 2.5	0.017	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	0.092	< 2.5	0.052	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	0.35	<0.050	< 2.5	0.0056	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0091	NR[2]
TP-10	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.024	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0013	NR[2]
TP-11	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[1]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0130	NR[1]
TP-12	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0058	NR[2]

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-13	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	0.22	<0.050	< 2.5	0.0064	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0068	NR[2]
DW-1 (Bi-Annual)	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	0.0068	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	****	<0.0002
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0014	<0.0002
DW-2	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	0.00091J	<0.001	<0.31	0.21	<2.5	0.016	
	Special Event	12/29/17	<0.001	<0.001	0.0036	0.0039	<0.001	0.4	1	< 2.5	0.0041	NR
DW-3	Low Flow 2018	Week of 08/13/18	0.0095	0.00019J	0.032	0.170	0.00063J	<0.31	1.5	<2.5	0.0091	NR
	Special Event	12/29/17	<0.001	<0.001	0.0040	0.0020	<0.001	<0.2	0.23	< 2.5	0.00083	NR
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	0.0032	<0.0015	<0.001	<0.20	0.099	< 2.5	0.0110	NR[2]
	Low Flow 2016	Week of 04/28/16	0.0049	<0.001	0.034	0.011	<0.001	0.35	0.33	< 2.5	0.014	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	0.082	<0.010	0.400	0.290	<0.010	0.76	2.1	<2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	0.067	<0.010	0.720	1.300	<0.010	1.7	8.8	<2.5	<0.0050	NR[2]
MW-48	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.29	<2.5	0.012	NR[2]

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
MW-49	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.019J	< 2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.029	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.040	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0064	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
Gallery	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.22	<2.5	<0.005	NR
	Special Event	12/29/17	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	0.11	< 2.5	0.11	NR

Notes:

NR = Not Required (Voluntary Corrective Measures - Revised Monitoring Plan - October 2005)

NR[1]= Not Required (Approval With Direction - June 2009)

NR[2]= Not Required (Approval With Direction - May 2011)

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

***** Analyte inadvertently not included in sample analysis. □

Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, groundwater sampling discontinued.

1. Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, high flow sampling is no longer required at the River Terrace.

0.670 Constituent detected at concentration above method detection limit

3.100 Constituent detected at concentration above screening level

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 50CR 4990
Bloomfield NM 87413

Phone #: 505 632 4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☒ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: GAC

Project #: 02951900l-0003

Project Manager: Kelly Robinson

Sampler: Travis Short

On Ice: ☒ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 0.8-0.2=0.6

0.3-0.2=0.1

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1910D07	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	8015 B DRO Extended
10/23	1400	H_2O	Lag	5 VOA	HCl	-001		X						X			
	1400		Lag	1 Amber	Cool	1											X
	1410		Lead	5 VOA	HCL	-002		X						X			
	1410		Lead	1 Amber	Cool	1											X
	1420		Inlet	5 VOA	HCL	-003		X						X			
	1420		Inlet	1 Amber	Cool	1											X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
10/23	1450		Chris Walker		10/23/19	1450
10/23/19	1821	Chris Walker		carrier	10/24/19	8:05

Remarks: cc: kelly.robinson@andeavor.com

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.