2017 Annual Groundwater Monitoring Report

Jal Number 4 Former Tank Battery
Lea County, New Mexico
RP-1457

ETC Field Services LLC

GHD | 6121 Indian School Road Suite 200 Albuquerque New Mexico USA

11103550 | 2017 | Report No 3 | March 15 2018

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1. Introduction

1.1 Introduction

This report presents the results of semi-annual groundwater monitoring during 2017 at the ETC Field Services LLC (ETC) Jal No. 4 former tank battery (Site). The Site is located on Deep Wells Road about ½ mile west of Highway 128 and approximately 10 miles north of Jal, New Mexico (Figure 1). The Site is regulated by the New Mexico Oil Conservation Division (NMOCD). Fieldwork was conducted by CK Associates, LLC (CK) during March and June 2015 and GHD Services, Inc. (GHD) since December 2015.

1.2 Background

The Site is a former tank battery that stored natural gas condensate (condensate) and produced water. A condensate release was discovered from a 410 barrel (bbl) tank in April 2007. Approximately 140 bbls of condensate and 140 bbls of produced water were estimated to have been released in an area of approximately 2,772 square feet.

Approximately 7,500 cubic yards of soil were excavated from the release area during November 2012 and January 2013. A liner was placed in the bottom of the excavation, at approximately 15 feet (ft) below ground surface (bgs), to prevent the vertical migration of the contaminants left in place. Excavated soil with concentrations greater than 5,000 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons (TPH) was disposed of at the Southern Union Gas landfarm. Soil with TPH concentrations meeting NMOCD recommended guidelines was mixed with clean native soil and used as backfill upon NMOCD approval.

Six monitoring wells and one recovery well were installed around the release area following backfill of the excavation. Recovery well RW-1 was installed presumably to recover light non aqueous phase liquids (LNAPL), although only a sheen has ever been noted in the well (Figure 2). Monitoring well MW-1, however, has consistently contained LNAPL since installation.

CK performed groundwater monitoring at the Site during March and June of 2015. Additionally, CK conducted a bail down test and paraffin, isoparaffin, aromatics, naphthalene and olefins (PIANO) analysis on LNAPL collected from MW-1 during March 2015.

GHD assumed consulting responsibilities for the Site in August 2015. GHD conducted a groundwater monitoring event in October of that year. A QED in-well skimmer pump was installed to recover LNAPL from MW-1 by GHD in November 2015.

GHD performed groundwater monitoring in April and October 2017. GHD also performed periodic (outside of the semi-annual groundwater monitoring schedule) gauging for LNAPL in MW-1 and conducted operations and maintenance (O&M) on the skimmer system as needed. This report details all work conducted at the Site during 2017.

2. Groundwater Monitoring Summary, Methodology, and Analytical Results

2.1 Groundwater Monitoring Summary

Groundwater elevation measurements were recorded from Site monitoring wells by GHD on May 10 and November 30, 2017 using an oil/water interface probe. Groundwater elevations for the Site are presented in Table 1.

The groundwater flow direction is to the southeast and consistent with historical groundwater flow data. The groundwater gradient was calculated for each monitoring period. The groundwater gradient was 0.0018 ft/ft (May) and 0.0016 ft/ft (November).Groundwater potentiometric surface maps for each monitoring period are presented as Figures 3 and 4.

2.2 Groundwater Monitoring Methodology

GHD purged monitoring wells of at least three casing volumes of water using a dedicated, polyethylene bailer prior to sampling. Groundwater quality parameters including pH, temperature, oxidation reduction potential, total dissolved solids, and conductivity were collected using a multi-parameter groundwater quality meter and were recorded on GHD groundwater sampling field forms. A summary of groundwater field parameters is included as Table 2.

2.3 Groundwater Monitoring Analytical Results

Groundwater samples were placed in laboratory prepared bottles, packed on ice, and delivered to Hall Environmental Analysis Laboratory located in Albuquerque, New Mexico under chain of custody for the May and November events.

The laboratory analytical results indicate that groundwater samples collected from MW-2, MW-3, MW-4, MW-5, and MW-6 were below laboratory detection limits for benzene, toluene, ethylbenzene, and xylenes (BTEX) and below New Mexico Water Quality Control Commission (NMWQCC) standards for TDS and chlorides. Historical data indicates that these wells have never been over the NMWQCC standard since sampling began.

Groundwater in RW-1 was found to contain concentrations of BTEX during both 2017 monitoring events. Benzene concentrations exceeded the NMWQCC standard during the May 2017 sampling event but was below the standard in November. Chloride and TDS concentrations in RW-1 were below the NMWQCC standards for 2017 monitoring events.

LNAPL was measured in monitoring well MW-1 during both of the groundwater monitoring events and therefore the groundwater was not sampled. A groundwater concentration map is included as Figure 5.

A summary of the groundwater laboratory analytical results is presented in Table 3 and Figure 5. The corresponding laboratory analytical reports are included in Appendix A.

3. LNAPL Recovery Skimmer Operation and Maintenance

3.1 Skimmer System & Product Recovery

GHD gauged LNAPL thickness in MW-1 in February, May, November and December 2017 and conducted operations and maintenance (O&M) on the skimmer system as needed. LNAPL thickness ranged from 2.33 feet (February) to 0.79 feet (December). During October 2017, approximately 165 gallons of water/LNAPL were pumped and disposed of by Sundance Services, Inc. GHD estimates approximately 147 gallons consisted of LNAPL.

4. Conclusions and Recommendations

4.1 Conclusions

Based on the above referenced information, GHD makes the following conclusions:

- Groundwater collected from five Site wells (MW-2, MW-3, MW-4, MW-5, and MW-6) have consistently been below laboratory detection limits or below NMWQCC standards for constituents of concern since sampling began.
- Groundwater in MW-3 was previously found to contain concentrations of benzene beginning in December 2014. Since skimming commenced in 2015, the benzene concentrations have steadily decreased.
- Groundwater in RW-1 showed concentrations of benzene exceeding the NMWQCC standard for the May 2017 event. The 2017 groundwater analytical results for RW-1 continued the trend of below standard concentrations of chlorides and TDS that began in the second half of 2016.

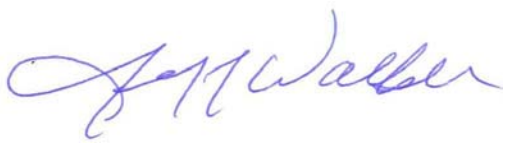
4.2 Recommendations

GHD recommends the following work be conducted based on 2017 monitoring results:

- Continue monthly O&M site visits to optimize recovery of LNAPL.
- Continue groundwater monitoring on a semi-annual basis.

All of Which is Respectfully Submitted,

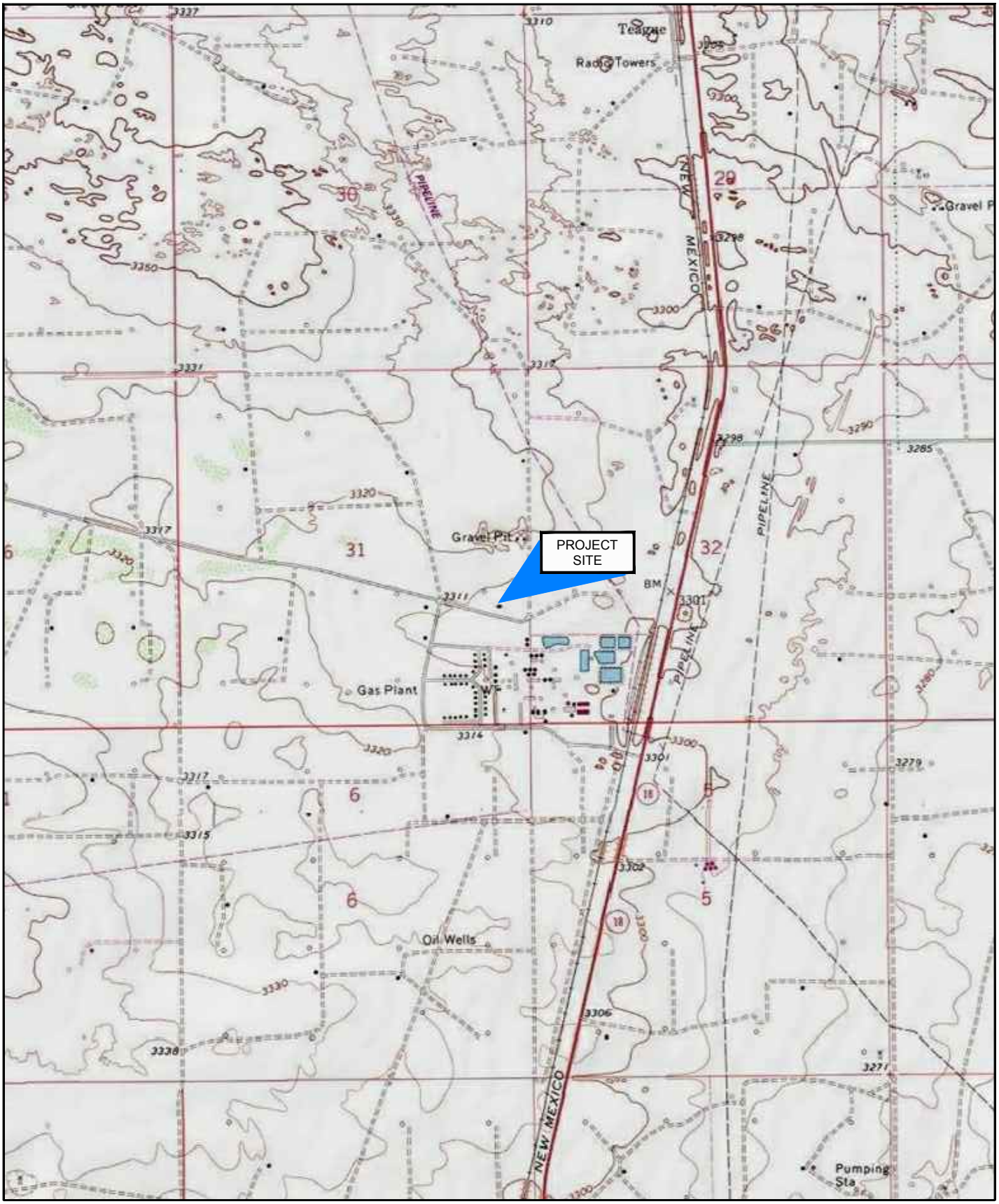
GHD



Jeffrey Walker
Project Manager

Bernard Bockisch, PMP
Senior Project Manager

Figures



Source: USGS 7.5 Minute quad "Rattlesnake Canyon and JAL NW, New Mexico"

Lat/Long: 32.258541° North, 103.195023° West

0 1000 2000ft

Coordinate System:
NAD 83 State Plane -
New Mexico East (US Feet)

ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
JAL 4 REMEDIATION

11103550-00

Feb 26, 2018

SITE LOCATION MAP

FIGURE 1

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1110----\11103550-Energy Transfer-Jal 4 Remediation\11103550-00\11103550-00(004)\11103550-00(004)GN-DL001.dwg

Source: USDA FSA Imagery, May 10, 2014

Lat/Long: 32.258541° North, 103.195023° West

0 50 100ft

Coordinate System:
NAD 83 State Plane -
New Mexico East (US Feet)

ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
JAL 4 REMEDIATION

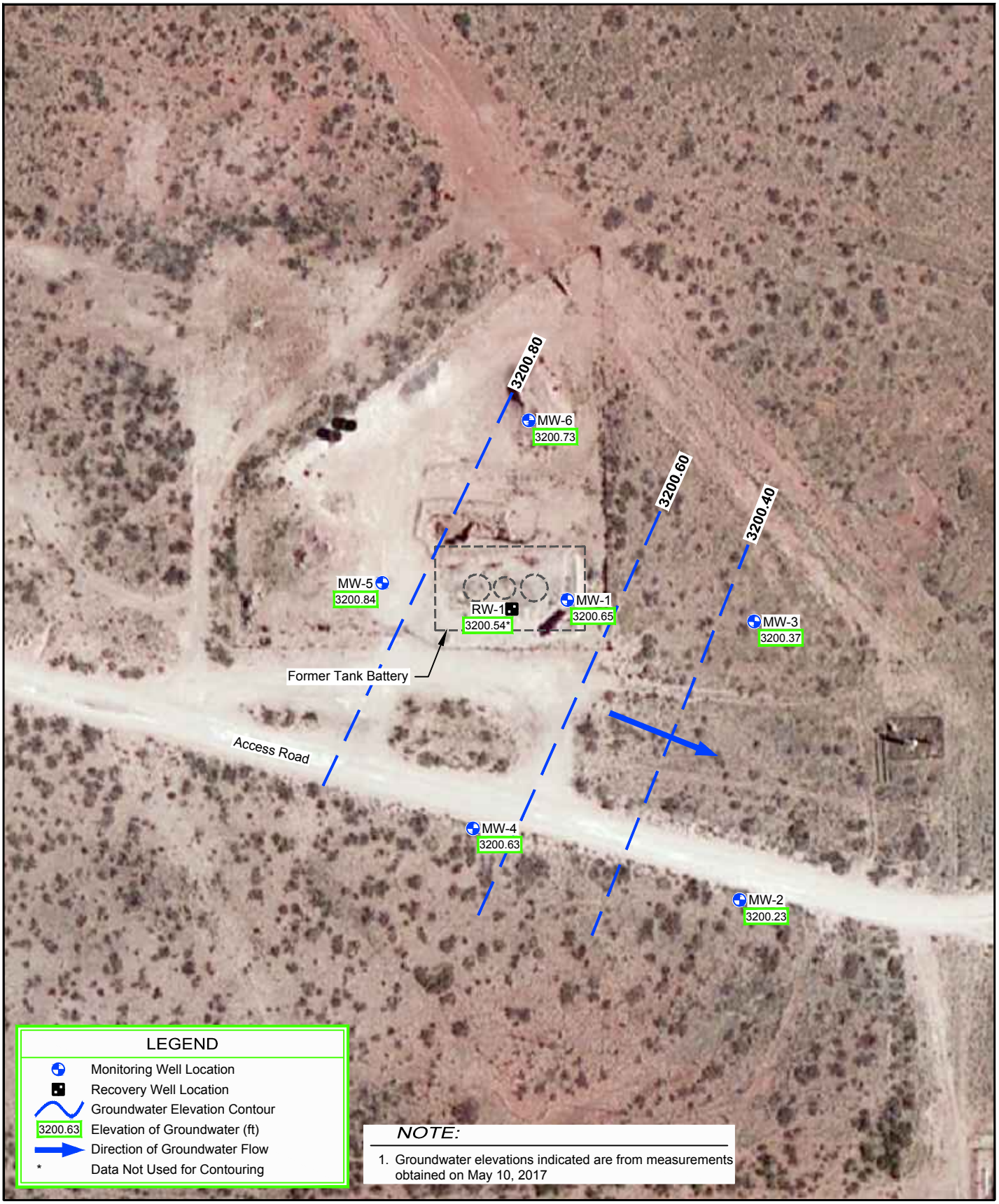
11103550-00

Feb 26, 2018

SITE PLAN

FIGURE 2

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1110----\11103550-Energy Transfer-Jal 4 Remediation\11103550-00\11103550-00(004)\11103550-00(004)GN-DL001.dwg



Source: USDA FSA Imagery, May 10, 2014

Lat/Long: 32.258541° North, 103.195023° West

0 50 100ft

Coordinate System:
NAD 83 State Plane -
New Mexico East (US Feet)

ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
JAL 4 REMEDIATION

GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2017

11103550-00

Mar 12, 2018

FIGURE 3

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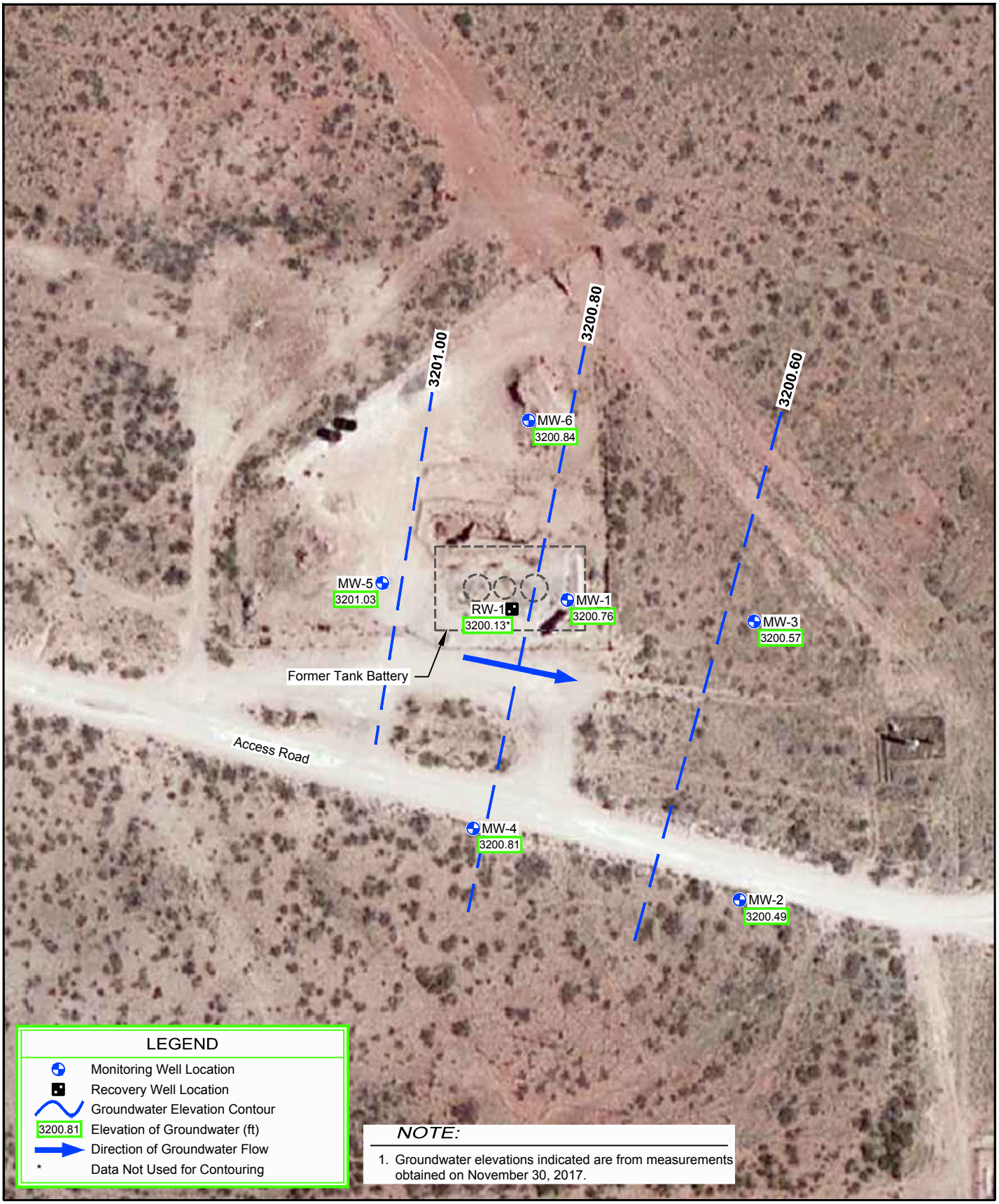

Source: USDA FSA Imagery, May 10, 2014

Lat/Long: 32.258541° North, 103.195023° West

0 50 100ft

Coordinate System:
NAD 83 State Plane -
New Mexico East (US Feet)

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LEA COUNTY, NEW MEXICO
JAL 4 REMEDIATION

GROUNDWATER POTENTIOMETRIC SURFACE MAP - NOVEMBER 2017

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Mar 12, 2018

FIGURE 4

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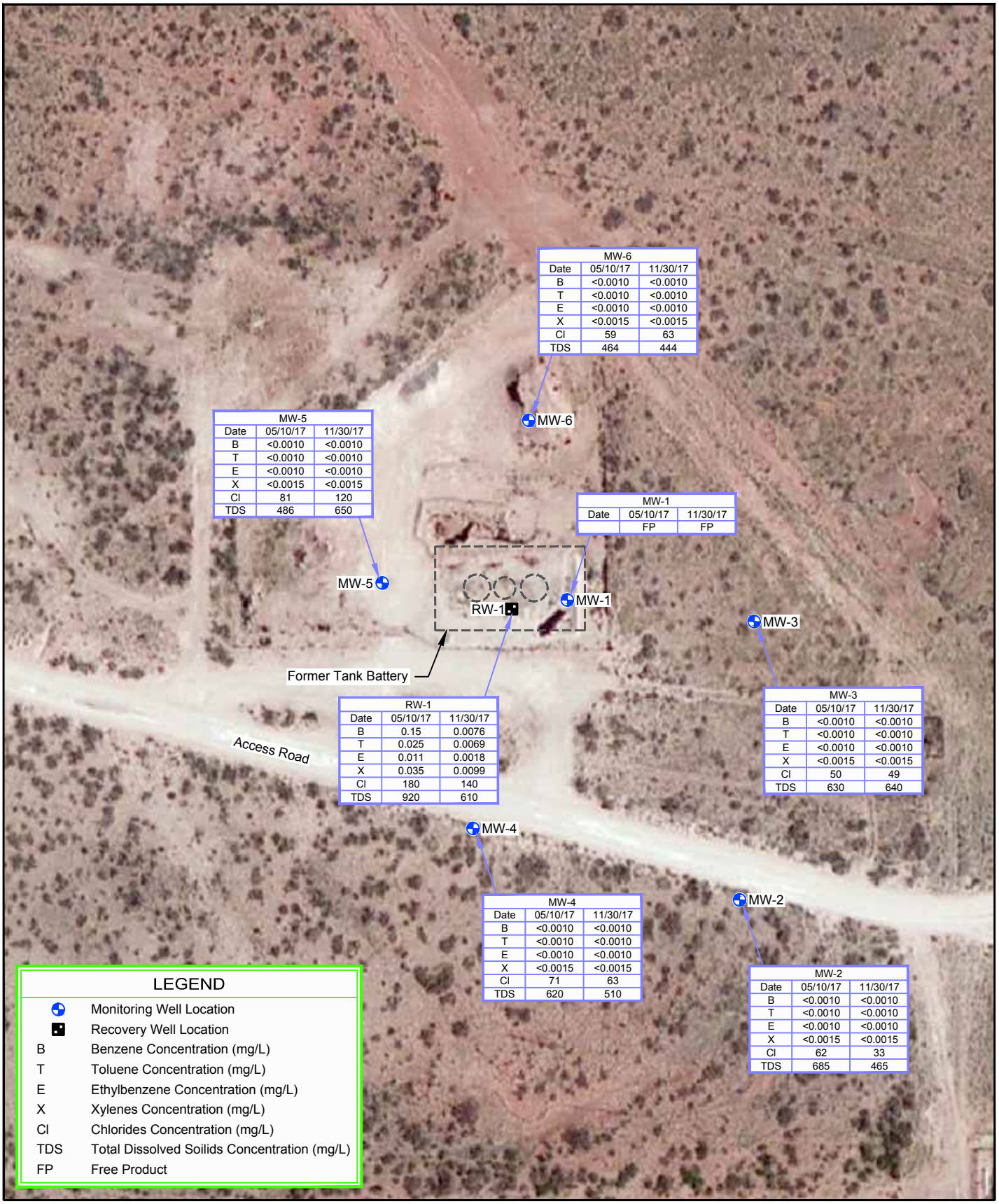

Source: USDA FSA Imagery, May 10, 2014

Lat/Long: 32.258541° North, 103.195023° West

0 50 100ft

Coordinate System:
NAD 83 State Plane -
New Mexico East (US Feet)

ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
JAL 4 REMEDIATION

2017 GROUNDWATER CONCENTRATION MAP

11103550-00

Feb 27, 2018

FIGURE 5

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Tables

Table 1

Monitor Well Specifications And Groundwater Elevation Data
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Well Number	Total Depth (feet below ground surface)	Casing Well Elevation	Date Measured	Depth to LNAPL	Depth to Water	LNAPL Thickness	Corrected Groundwater Elevation
RW-1	120.90	3,312.88	11/1/2013	--	112.60	--	3,200.28
			5/27/2014	--	112.79	--	3,200.09
			6/20/2014	--	112.66	--	3,200.22
			8/11/2014	--	112.99	--	3,199.89
			9/5/2014	--	112.65	--	3,200.23
			12/10/2014	--	113.47	--	3,199.41
			3/2/2015	--	112.20	--	3,200.68
			6/18/2015	--	112.39	--	3,200.49
			10/1/2015	--	112.47	--	3,200.41
			11/24/2015	--	112.42	--	3,200.46
			12/17/2015	--	112.44	--	3,200.44
			1/28/2016	--	112.30	--	3,200.58
			2/24/2016	--	112.30	--	3,200.58
			4/7/2016	--	112.36	--	3,200.52
			5/26/2016	--	112.30	--	3,200.58
			6/30/2016	--	112.35	--	3,200.53
			7/26/2016	--	112.27	--	3,200.61
			9/22/2016	--	112.40	--	3,200.48
			10/5/2016	--	112.41	--	3,200.47
			11/30/2016	--	112.22	--	3,200.66
			2/23/2017	--	112.25	--	3,200.63
			5/10/2017	--	112.34	--	3,200.54
			11/30/2017	--	112.75	--	3,200.13
MW-1	117.70	3,313.54	10/31/2013	112.25	115.80	3.55	3,200.40
			11/1/2013	--	112.41	--	3,201.13
			5/27/2014	112.70	115.75	3.05	3,200.08
			6/20/2014	112.65	115.73	3.08	3,200.12
			7/10/2014	112.37	116.12	3.75	3,200.23
			7/24/2014	112.30	116.21	3.91	3,200.26
			7/28/2014	112.47	116.10	3.63	3,200.16
			8/5/2014	112.50	116.18	3.68	3,200.12
			8/11/2014	112.48	116.16	3.68	3,200.14
			8/18/2014	112.45	116.12	3.67	3,200.17
			9/5/2014	112.46	116.12	3.66	3,200.17
			12/10/2014	112.22	115.77	3.55	3,200.43
			3/2/2015	112.05	115.56	3.51	3,200.61
			6/18/2015	112.23	115.71	3.48	3,200.44
			10/1/2015	112.33	115.72	3.39	3,200.36
			11/24/2015	112.30	115.40	3.10	3,200.47
			12/17/2015	112.44	115.03	2.59	3,200.45
			1/28/2016	112.23	114.82	2.59	3,200.66
			2/24/2016	112.32	114.55	2.23	3,200.66
			4/7/2016	112.36	114.99	2.63	3,200.52
			5/26/2016	112.25	114.98	2.73	3,200.61
			6/30/2016	112.36	114.89	2.53	3,200.55
			7/26/2016	112.30	114.71	2.41	3,200.64
			8/25/2016	112.34	114.93	2.59	3,200.55
			9/22/2016	112.55	114.37	1.82	3,200.54
			10/5/2016	112.44	114.83	2.39	3,200.50
			11/30/2016	111.23	114.64	3.41	3,201.46
			2/23/2017	112.21	114.54	2.33	3,200.75
			5/10/2017	112.56	114.05	1.49	3,200.61
			5/30/2017	112.53	113.97	1.44	3,200.65
			11/30/2017	112.43	114.09	1.66	3,200.70
			12/13/2017	112.58	113.37	0.79	3,200.76

Table 1

Monitor Well Specifications And Groundwater Elevation Data
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Well Number	Total Depth (feet below ground surface)	Casing Well Elevation	Date Measured	Depth to LNAPL	Depth to Water	LNAPL Thickness	Corrected Groundwater Elevation
MW-2	128.10	3,312.39	11/1/2013	--	112.44	--	3,199.95
			5/27/2014	--	112.62	--	3,199.77
			6/20/2014	--	112.49	--	3,199.90
			8/11/2014	--	112.91	--	3,199.48
			9/5/2014	--	112.50	--	3,199.89
			12/10/2014	--	112.31	--	3,200.08
			3/2/2015	--	112.15	--	3,200.24
			6/18/2015	--	112.32	--	3,200.07
			10/1/2015	--	112.42	--	3,199.97
			11/24/2015	--	112.26	--	3,200.13
			12/17/2015	--	112.33	--	3,200.06
			1/28/2016	--	112.11	--	3,200.28
			2/24/2016	--	112.12	--	3,200.27
			4/7/2016	--	112.27	--	3,200.12
			5/26/2016	--	112.18	--	3,200.21
			6/30/2016	--	112.22	--	3,200.17
			7/26/2016	--	112.11	--	3,200.28
			9/22/2016	--	112.22	--	3,200.17
			10/5/2016	--	112.26	--	3,200.13
			11/30/2016	--	112.05	--	3,200.34
			5/10/2017	--	112.16	--	3,200.23
			11/30/2017	--	111.90	--	3,200.49
MW-3	127.20	3,312.78	11/1/2013	--	112.75	--	3,200.03
			5/27/2014	--	112.90	--	3,199.88
			6/20/2014	--	112.47	--	3,200.31
			8/11/2014	--	112.90	--	3,199.88
			9/5/2014	--	112.79	--	3,199.99
			12/10/2014	--	112.60	--	3,200.18
			3/2/2015	--	112.41	--	3,200.37
			6/18/2015	--	112.58	--	3,200.20
			10/1/2015	--	112.63	--	3,200.15
			11/24/2015	--	112.54	--	3,200.24
			12/17/2015	--	112.61	--	3,200.17
			1/28/2016	--	112.39	--	3,200.39
			2/24/2016	--	112.37	--	3,200.41
			4/7/2016	--	112.54	--	3,200.24
			5/26/2016	--	112.44	--	3,200.34
			6/30/2016	--	112.47	--	3,200.31
			7/26/2016	--	112.37	--	3,200.41
			9/22/2016	--	112.49	--	3,200.29
			10/5/2016	--	112.53	--	3,200.25
			11/30/2016	--	112.32	--	3,200.46
			5/10/2017	--	112.41	--	3,200.37
			11/30/2017	--	112.21	--	3,200.57
MW-4	128.70	3,313.19	11/1/2013	--	112.85	--	3,200.34
			5/27/2014	--	113.05	--	3,200.14
			6/20/2014	--	112.93	--	3,200.26
			8/11/2014	--	113.03	--	3,200.16
			9/5/2014	--	112.91	--	3,200.28
			12/10/2014	--	112.75	--	3,200.44
			3/2/2015	--	112.55	--	3,200.64
			6/18/2015	--	112.74	--	3,200.45
			10/1/2015	--	112.81	--	3,200.38
			11/24/2015	--	112.70	--	3,200.49
			12/17/2015	--	112.77	--	3,200.42
			1/28/2016	--	112.53	--	3,200.66
			2/24/2016	--	112.53	--	3,200.66
			4/7/2016	--	112.66	--	3,200.53
			5/26/2016	--	112.58	--	3,200.61
			6/30/2016	--	112.64	--	3,200.55
			7/26/2016	--	112.64	--	3,200.55
			9/22/2016	--	112.65	--	3,200.54
			10/5/2016	--	112.69	--	3,200.50
			11/30/2016	--	112.46	--	3,200.73
			5/10/2017	--	112.56	--	3,200.63
			11/30/2017	--	112.38	--	3,200.81

Table 1

Monitor Well Specifications And Groundwater Elevation Data
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Well Number	Total Depth (feet below ground surface)	Casing Well Elevation	Date Measured	Depth to LNAPL	Depth to Water	LNAPL Thickness	Corrected Groundwater Elevation
MW-5	127.30	3,314.39	11/1/2013	--	113.85	--	3,200.54
			5/27/2014	--	114.05	--	3,200.34
			6/20/2014	--	113.94	--	3,200.45
			8/11/2014	--	114.03	--	3,200.36
			9/5/2014	--	113.94	--	3,200.45
			12/10/2014	--	113.76	--	3,200.63
			3/2/2015	--	113.58	--	3,200.81
			6/18/2015	--	113.17	--	3,201.22
			10/1/2015	--	113.79	--	3,200.60
			11/24/2015	--	113.69	--	3,200.70
			12/17/2015	--	113.72	--	3,200.67
			1/28/2016	--	113.53	--	3,200.86
			2/24/2016	--	113.51	--	3,200.88
			4/7/2016	--	113.62	--	3,200.77
			5/26/2016	--	113.56	--	3,200.83
			6/30/2016	--	113.61	--	3,200.78
			7/26/2016	--	113.52	--	3,200.87
			9/22/2016	--	113.63	--	3,200.76
			10/5/2016	--	113.66	--	3,200.73
			11/30/2016	--	113.45	--	3,200.94
			2/23/2017	--	113.42	--	3,200.97
			5/10/2017	--	113.55	--	3,200.84
			11/30/2017	--	113.36	--	3,201.03
MW-6	128.00	3,314.39	11/1/2013	--	113.95	--	3,200.44
			5/27/2014	--	114.12	--	3,200.27
			6/20/2014	--	114.04	--	3,200.35
			8/11/2014	--	114.10	--	3,200.29
			9/5/2014	--	114.01	--	3,200.38
			12/10/2014	--	113.82	--	3,200.57
			3/2/2015	--	113.66	--	3,200.73
			6/18/2015	--	113.81	--	3,200.58
			10/1/2015	--	113.89	--	3,200.50
			11/24/2015	--	113.77	--	3,200.62
			12/17/2015	--	113.82	--	3,200.57
			1/28/2016	--	113.63	--	3,200.76
			2/24/2016	--	113.62	--	3,200.77
			4/7/2016	--	113.72	--	3,200.67
			5/26/2016	--	113.68	--	3,200.71
			6/30/2016	--	113.71	--	3,200.68
			7/26/2016	--	113.61	--	3,200.78
			9/22/2016	--	113.73	--	3,200.66
			10/5/2016	--	113.76	--	3,200.63
			11/30/2016	--	113.55	--	3,200.84
			2/23/2017	--	114.49	--	3,199.90
			5/10/2017	--	113.66	--	3,200.73
			11/30/2017	--	113.55	--	3,200.84

Notes:

Well casing elevations from survey conducted by Asel Surveying on April 22, 2015
LNAPL = Light Non-Aqueous Phase Liquid
-- = No LANPL
A specific gravity value of 0.75 was used to calculate the potentiometric water level in LNAPL-affected wells.
Elevations reported in feet above mean sea level

Table 2

Groundwater Field Parameter Summary
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Sample ID	Date	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)
RW-1	10/1/2015	22.23	6.79	7.87	-159.9	1069
	4/7/2016	21.2	7.17	0.08	-149.8	1260
	10/5/2016	23.43	7.21	2.71	-177	1340
	5/10/2017	20.08	6.88	0.31	-170.8	1081
	11/30/2017	19.55	8.14	2.39	-168	1496
MW-1	LNAPL Present Since October 2013					
MW-2	6/20/2014	--	--	--	--	--
	9/23/2014	--	--	--	--	--
	12/10/2014	22.3	7.33	6.8	7.33	825
	3/2/2015	--	--	--	--	--
	6/16/2015	24	7.23	913	88.2	913
	10/1/2015	21.12	7.13	7.47	112.2	947
	4/7/2016	21.1	7.23	6.51	99.3	930
	10/5/2016	23.14	7.01	6.68	215	1050
	5/10/2017	20.13	6.93	7.11	-20.3	1013
	11/30/2017	19.45	7.59	4.08	-48.9	1275
MW-3	6/20/2014	--	--	--	--	--
	9/23/2014	--	--	--	--	--
	12/10/2014	22.5	6.86	0.2	-105.2	1166
	3/2/2015	--	--	--	--	--
	6/16/2015	24.9	7.26	0.1	-190.9	1065
	10/1/2015	21.67	6.90	1.27	-48.7	1011
	4/11/2016	21.5	7.15	1.40	9.1	890
	10/5/2016	23.56	7.07	3.39	47	968
	5/10/2017	20.76	7.12	1.67	-115.8	787
	11/30/2017	20.01	7.68	1.82	-135.1	1030
MW-4	6/20/2014	--	--	--	--	--
	9/22/2014	--	--	--	--	--
	12/10/2014	21.4	7.18	6.04	7.18	810
	3/3/2015	22	7.13	6.6	7.13	892
	6/16/2015	23.7	7.32	7.26	7.32	844
	10/1/2015	20.79	7.13	6.91	96.3	842
	4/7/2016	20.9	7.18	5.54	69.5	850
	10/5/2016	22.93	7.10	6.50	223	985
	5/10/2017	19.94	7.24	6.36	-71.1	846
	11/30/2017	18.97	7.49	2.76	-40.9	1093

Table 2

Groundwater Field Parameter Summary
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Sample ID	Date	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)
MW-5	6/20/2014	--	--	--	--	--
	9/22/2014	--	--	--	--	--
	12/10/2014	23	6.79	.16	-123.5	1489
	3/3/2015	22.2	6.79	.21	-70.3	1688
	6/16/2015	23.4	7.02	.17	-90.2	1204
	10/1/2015	21.18	7.03	1.34	-113.7	1138
	4/7/2016	21.2	7.44	0.49	-73.0	890
	10/5/2016	23.16	7.36	3.62	-69	979
	5/10/2017	19.97	7.23	2.20	-13.3	835
	11/30/2017	19.29	7.65	2.48	-152.9	1614
MW-6	6/20/2014	--	--	--	--	--
	9/22/2014	--	--	--	--	--
	12/10/2014	23	7.13	4.23	7.13	655
	3/3/2015	23.8	7.17	5.48	7.17	709
	6/16/2015	24.4	7.23	4.92	7.23	697
	10/1/2015	21.29	7.02	6.29	52.9	708
	4/7/2016	21.9	7.15	3.39	71.0	660
	10/5/2016	23.35	7.25	4.87	142	753
	5/10/2017	20.60	7.08	4.01	-93.8	656
	11/30/2017	19.58	7.87	3.62	-97.4	911

Notes:

-- = Not available or not recorded
°C = degress celcius
mg/L = milligrams per liter
mV = millivolts
mS/cm = microsiemens per centimeter

Table 3

Groundwater Analytical Results Summary
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Sample Location	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)
RW-1	10/1/2015	**1.00**	0.47	0.026	0.2	**1110**	**320**
	4/7/2016	**0.12**	0.11	0.012	0.11	**1070**	**290**
	4/7/2016 (DUP)	**0.12**	0.099	0.0091	0.08	**1030**	**280**
	10/5/2016	**0.57**	0.02	0.0099	0.093	950	200
	10/5/2016 (DUP)	**0.51**	0.023	0.011	0.1	--	--
	5/10/2017	**0.15**	0.025	0.011	0.035	920	180
	5/10/2017(DUP)	**0.12**	0.018	0.0091	0.024	810	190
	11/30/2017	0.0076	0.0069	0.0018	0.0099	610	140
MW-1	2/24/2013	4.91	6.21	0.798	2.24	650	57.1
	10/1/2015	Not Sampled - Free Product					
	4/7/2016	Not Sampled - Free Product					
	10/5/2016	Not Sampled - Free Product					
	5/10/2017	Not Sampled - Free Product					
	11/30/2017	Not Sampled - Free Product					
MW-2	6/20/2014	<0.00100	<0.00100	<0.00100	<0.00100	--	--
	9/23/2014	<0.00100	<0.00100	<0.00100	<0.00100	--	--
	12/10/2014	<0.00019	<0.00018	<0.00016	<0.00051	--	--
	3/2/2015	<0.00019	<0.00018	<0.00016	<0.00051	--	--
	6/16/2015	<0.00019	<0.00018	<0.00016	<0.00051	--	--
	10/1/2015	<0.0020	<0.0020	<0.0020	<0.0030	690	65
	4/7/2016	<0.0010	<0.0010	<0.0010	<0.0015	910	60
	10/5/2016	<0.0010	<0.0010	<0.0010	<0.0015	680	57
	5/10/2017	<0.0010	<0.0010	<0.0010	<0.0015	685	62
	11/30/2017	<0.0010	<0.0010	<0.0010	<0.0015	465	33
MW-3	6/20/2014	<0.00100	<0.00100	<0.00100	0.0398	--	--
	9/23/2014	<0.00100	<0.00100	<0.00100	0.204	--	--
	12/10/2014	0.00066	0.00035 [1]	0.00018 [1]	0.012	--	--
	3/2/2015	0.0007 [1]	0.00067 [1]	0.00029 [1]	0.0231 [1]	--	--
	6/16/2015	0.000673	<0.000180	<0.000160	0.00282	--	--
	10/1/2015	<0.0020	<0.0020	<0.0020	<0.0030	200	120
	4/11/2016	<0.0010	<0.0010	<0.0010	<0.0015	530	79
	10/5/2016	<0.0010	<0.0010	<0.0010	<0.0015	580	64
	5/10/2017	<0.0010	<0.0010	<0.0010	<0.0015	630	50
	11/30/2017	<0.0010	<0.0010	<0.0010	<0.0015	640	49

Table 3

Groundwater Analytical Results Summary
ETC Field Services LLC
Jal 4
Lea County, New Mexico

Sample Location	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)
MW-4	6/20/2014	<0.00100	<0.00100	<0.00100	<0.00100	--	--
	9/22/2014	<0.00100	<0.00100	<0.00100	0.0031	--	--
	12/10/2014	<0.00019	0.00020 [1]	<0.00016	<0.00051	--	--
	3/3/2015	<0.00019	<0.00018	<0.00016	<0.00051	560	70
	6/16/2015	<0.00019	0.000197*[1]	<0.00016	<0.00051	--	--
	10/1/2015	<0.0020	<0.0020	<0.0020	<0.0030	560	69
	4/7/2016	<0.0010	<0.0010	<0.0010	<0.0015	680	71
	10/5/2016	<0.0010	<0.0010	<0.0010	<0.0015	600	79
	5/10/2017	<0.0010	<0.0010	<0.0010	<0.0015	620	71
	11/30/2017	<0.0010	<0.0010	<0.0010	<0.0015	510	63
MW-5	6/20/2014	<0.00100	<0.00100	<0.00100	<0.00100	--	--
	9/22/2014	<0.00100	<0.00100	<0.00100	0.0014	--	--
	12/10/2014	0.016	0.00019 [1]	0.00020 [1]	0.00086 [1]	--	--
	3/3/2015	0.0043	<0.00018	<0.00016	0.00075 [1]	930	230
	6/16/2015	0.000503	0.000262*[1]	<0.000160	0.000521 [1]	--	--
	10/1/2015	0.0037	<0.0010	<0.0010	<0.0015	355	140
	4/7/2016	<0.0010	<0.0010	<0.0010	<0.0015	615	95
	10/5/2016	<0.0010	<0.0010	<0.0010	<0.0015	516	70
	5/10/2017	<0.0010	<0.0010	<0.0010	<0.0015	486	81
	11/30/2017	<0.0010	<0.0010	<0.0010	<0.0015	650	120
MW-6	6/20/2014	<0.00100	<0.00100	<0.00100	<0.00100	--	--
	9/22/2014	<0.00100	<0.00100	<0.00100	<0.00100	--	--
	12/10/2014	<0.00019	0.0020 [1]	<0.00016	<0.00051	--	--
	3/3/2015	<0.00019	<0.00018	<0.00016	<0.00051	430	56
	6/16/2015	<0.00019	0.000229*[1]	<0.00016	<0.00051	--	--
	10/1/2015	<0.0010	<0.0010	<0.0010	<0.0015	520	68
	4/7/2016	<0.0010	<0.0010	<0.0010	<0.0015	476	58
	10/5/2016	<0.0010	<0.0010	<0.0010	<0.0015	460	52
	5/10/2017	<0.0010	<0.0010	<0.0010	<0.0015	464	59
	11/30/2017	<0.0010	<0.0010	<0.0010	<0.0015	444	63
NMWQCC Standards		**0.01**	**0.75**	**0.75**	**0.62**	**1000**	**250**

Notes:

* = Indicates analyte also noted in method blank

[1] = Denotes J-Flag value

NMWQCC = New Mexico Water Quality Control Commission

mg/L = milligrams per liter

-- = Not analyzed

Appendices

Appendix A
Groundwater Laboratory Analytical Reports

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

May 23, 2017

Bernie Bockish

GHD
6121 Indian School Road, NE #200
Albuquerque, NM 87110
TEL: (505) 884-0672
FAX

RE: Jal-4 OrderNo.: 1705670

Dear Bernie Bockish:

Hall Environmental Analysis Laboratory received 7 sample(s) on 5/12/2017 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1705670**
Date Reported: **5/23/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-RW-1
Project: Jal-4
Collection Date: 5/10/2017 4:45:00 PM
Lab ID: 1705670-001
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	180	50		mg/L	100	5/16/2017 2:06:51 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	920	200	*D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	150	5.0		µg/L	5	5/15/2017 1:11:05 PM	R42800
Toluene	25	5.0		µg/L	5	5/15/2017 1:11:05 PM	R42800
Ethylbenzene	11	5.0		µg/L	5	5/15/2017 1:11:05 PM	R42800
Xylenes, Total	35	7.5		µg/L	5	5/15/2017 1:11:05 PM	R42800
Surr: 1,2-Dichloroethane-d4	97.9	70-130		%Rec	5	5/15/2017 1:11:05 PM	R42800
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	5	5/15/2017 1:11:05 PM	R42800
Surr: Dibromofluoromethane	103	70-130		%Rec	5	5/15/2017 1:11:05 PM	R42800
Surr: Toluene-d8	100	70-130		%Rec	5	5/15/2017 1:11:05 PM	R42800

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-MW-2
Project: Jal-4
Collection Date: 5/10/2017 2:30:00 PM
Lab ID: 1705670-002
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	62	5.0		mg/L	10	5/16/2017 2:19:15 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	685	100	*D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	5/15/2017 1:39:59 PM	R42800
Toluene	ND	1.0		µg/L	1	5/15/2017 1:39:59 PM	R42800
Ethylbenzene	ND	1.0		µg/L	1	5/15/2017 1:39:59 PM	R42800
Xylenes, Total	ND	1.5		µg/L	1	5/15/2017 1:39:59 PM	R42800
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%Rec	1	5/15/2017 1:39:59 PM	R42800
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	5/15/2017 1:39:59 PM	R42800
Surr: Dibromofluoromethane	106	70-130		%Rec	1	5/15/2017 1:39:59 PM	R42800
Surr: Toluene-d8	101	70-130		%Rec	1	5/15/2017 1:39:59 PM	R42800

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-MW-3
Project: Jal-4
Collection Date: 5/10/2017 2:15:00 PM
Lab ID: 1705670-003
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	50	5.0		mg/L	10	5/16/2017 3:08:54 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	630	200	*D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	5/15/2017 2:09:04 PM	R42800
Toluene	ND	1.0		µg/L	1	5/15/2017 2:09:04 PM	R42800
Ethylbenzene	ND	1.0		µg/L	1	5/15/2017 2:09:04 PM	R42800
Xylenes, Total	ND	1.5		µg/L	1	5/15/2017 2:09:04 PM	R42800
Surr: 1,2-Dichloroethane-d4	98.4	70-130		%Rec	1	5/15/2017 2:09:04 PM	R42800
Surr: 4-Bromofluorobenzene	96.5	70-130		%Rec	1	5/15/2017 2:09:04 PM	R42800
Surr: Dibromofluoromethane	104	70-130		%Rec	1	5/15/2017 2:09:04 PM	R42800
Surr: Toluene-d8	101	70-130		%Rec	1	5/15/2017 2:09:04 PM	R42800

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-MW-4
Project: Jal-4
Collection Date: 5/10/2017 3:10:00 PM
Lab ID: 1705670-004
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	71	5.0		mg/L	10	5/16/2017 3:33:44 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	620	200	*D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	5/15/2017 2:37:54 PM	R42800
Toluene	ND	1.0		µg/L	1	5/15/2017 2:37:54 PM	R42800
Ethylbenzene	ND	1.0		µg/L	1	5/15/2017 2:37:54 PM	R42800
Xylenes, Total	ND	1.5		µg/L	1	5/15/2017 2:37:54 PM	R42800
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%Rec	1	5/15/2017 2:37:54 PM	R42800
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	1	5/15/2017 2:37:54 PM	R42800
Surr: Dibromofluoromethane	103	70-130		%Rec	1	5/15/2017 2:37:54 PM	R42800
Surr: Toluene-d8	99.9	70-130		%Rec	1	5/15/2017 2:37:54 PM	R42800

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-MW-5
Project: Jal-4
Collection Date: 5/10/2017 3:20:00 PM
Lab ID: 1705670-005
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	81	5.0		mg/L	10	5/16/2017 3:58:34 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	486	40.0	D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	5/15/2017 3:06:41 PM	R42800
Toluene	ND	1.0		µg/L	1	5/15/2017 3:06:41 PM	R42800
Ethylbenzene	ND	1.0		µg/L	1	5/15/2017 3:06:41 PM	R42800
Xylenes, Total	ND	1.5		µg/L	1	5/15/2017 3:06:41 PM	R42800
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	5/15/2017 3:06:41 PM	R42800
Surr: 4-Bromofluorobenzene	96.5	70-130		%Rec	1	5/15/2017 3:06:41 PM	R42800
Surr: Dibromofluoromethane	107	70-130		%Rec	1	5/15/2017 3:06:41 PM	R42800
Surr: Toluene-d8	96.8	70-130		%Rec	1	5/15/2017 3:06:41 PM	R42800

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-MW-6
Project: Jal-4
Collection Date: 5/10/2017 3:45:00 PM
Lab ID: 1705670-006
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	59	5.0		mg/L	10	5/16/2017 4:23:23 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	464	40.0	D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	5/15/2017 3:35:45 PM	R42800
Toluene	ND	1.0		µg/L	1	5/15/2017 3:35:45 PM	R42800
Ethylbenzene	ND	1.0		µg/L	1	5/15/2017 3:35:45 PM	R42800
Xylenes, Total	ND	1.5		µg/L	1	5/15/2017 3:35:45 PM	R42800
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	5/15/2017 3:35:45 PM	R42800
Surr: 4-Bromofluorobenzene	99.1	70-130		%Rec	1	5/15/2017 3:35:45 PM	R42800
Surr: Dibromofluoromethane	106	70-130		%Rec	1	5/15/2017 3:35:45 PM	R42800
Surr: Toluene-d8	98.1	70-130		%Rec	1	5/15/2017 3:35:45 PM	R42800

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Client Sample ID: 11103550-051017-MG-DUP
Project: Jal-4
Collection Date: 5/10/2017
Lab ID: 1705670-007
Matrix: AQUEOUS
Received Date: 5/12/2017 9:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	190	5.0		mg/L	10	5/16/2017 4:48:13 PM	R42842
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	810	200	*D	mg/L	1	5/17/2017 5:54:00 PM	31769
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	120	5.0		µg/L	5	5/15/2017 4:33:00 PM	R42800
Toluene	18	5.0		µg/L	5	5/15/2017 4:33:00 PM	R42800
Ethylbenzene	9.1	5.0		µg/L	5	5/15/2017 4:33:00 PM	R42800
Xylenes, Total	24	7.5		µg/L	5	5/15/2017 4:33:00 PM	R42800
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	5	5/15/2017 4:33:00 PM	R42800
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	5	5/15/2017 4:33:00 PM	R42800
Surr: Dibromofluoromethane	104	70-130		%Rec	5	5/15/2017 4:33:00 PM	R42800
Surr: Toluene-d8	101	70-130		%Rec	5	5/15/2017 4:33:00 PM	R42800

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1705670**

23-May-17

Client: GHD

Project: Jal-4

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R42842**	RunNo: **42842**
Prep Date:	Analysis Date: **5/16/2017**	SeqNo: **1347810** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R42842**	RunNo: **42842**
Prep Date:	Analysis Date: **5/16/2017**	SeqNo: **1347811** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.0	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1705670**

23-May-17

Client: GHD

Project: Jal-4

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R42800**	RunNo: **42800**
Prep Date:	Analysis Date: **5/15/2017**	SeqNo: **1346090** 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								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.7	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.6	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R42800**	RunNo: **42800**
Prep Date:	Analysis Date: **5/15/2017**	SeqNo: **1346091** 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			
Toluene	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.5	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.3	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1705670**

23-May-17

Client: GHD

Project: Jal-4

Sample ID	**MB-31769**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**31769**	RunNo:	**42866**					
Prep Date:	**5/16/2017**	Analysis Date:	**5/17/2017**	SeqNo:	**1348678**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**LCS-31769**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**31769**	RunNo:	**42866**					
Prep Date:	**5/16/2017**	Analysis Date:	**5/17/2017**	SeqNo:	**1348679**	Units:	**mg/L**			

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

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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: GHD | Work Order Number: 1705670 | RcptNo: 1

Received By: **Andy Jansson** 5/12/2017 9:50:00 AM

Completed By: **Andy Jansson** 5/12/2017 10:58:51 AM

Reviewed By: 5/12/17

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: ____ Date ____

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

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: EHD Services

Mailing Address: 6121 Indian School Rd NE #200
Albuquerque, NM 87110

Phone #: 505 884 0672

email or Fax#: Bernard.Bockisch@ghd.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____

Project Name: Jal-4

Project #: 1103550

Project Manager: Bernard Bockisch

Sampler: Charles Neligh/M. Gant

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.4°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. 1705670	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX x 8260	TDS x SM 2540C	Chlorides x 300.0		Air Bubbles (Y or N)
5-10-17	1645	WT	GW-1103550-051017-MG-RW-1	4		-001												X	X	X		
5-10-17	1430	WT	GW-1103550-051017-MG-MW-2	4		-002												X	X	X		
5-10-17	1415	WT	GW-1103550-051017-MG-MW-3	4		-003												X	X	X		
5-10-17	1510	WT	GW-1103550-051017-MG-MW-4	4		-004												X	X	X		
5-10-17	1520	WT	GW-1103550-051017-MG-MW-5	4		-005												X	X	X		
5-10-17	1515	WT	GW-1103550-051017-MG-MW-6	4		-006												X	X	X		
5-10-17	—	WT	GW-1103550-051017-MG-DUP	4		-007												X	X	X		

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
5/11/17	080	Charles Neligh		5/11/17	0800	
5/11/17	1900			5/12/17	0950	

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

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

December 27, 2017

Bernie Bockish

GHD
6121 Indian School Road, NE #200
Albuquerque, NM 87110
TEL: (505) 884-0672
FAX

RE: Jal-4 OrderNo.: 1712164

Dear Bernie Bockish:

Hall Environmental Analysis Laboratory received 6 sample(s) on 12/5/2017 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued December 26, 2017.

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Jal-4

Lab Order: 1712164

Lab ID: 1712164-001 **Collection Date:** 11/30/2017 12:15:00 PM
Client Sample ID: GW-11103550-113017-MG-RW-1 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	140	5.0		mg/L	10	12/8/2017 5:05:24 AM	A47599
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	610	200	*D	mg/L	1	12/7/2017 6:50:00 PM	35355
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	7.6	1.0	D	µg/L	2	12/11/2017 11:06:00 PM	SL4769
Toluene	6.9	1.0	D	µg/L	2	12/11/2017 11:06:00 PM	SL4769
Ethylbenzene	1.8	1.0	D	µg/L	2	12/11/2017 11:06:00 PM	SL4769
Xylenes, Total	9.9	2.0	D	µg/L	2	12/11/2017 11:06:00 PM	SL4769
Surr: 1,2-Dichloroethane-d4	111	70-130	D	%Rec	2	12/11/2017 11:06:00 PM	SL4769
Surr: 4-Bromofluorobenzene	99.6	70-130	D	%Rec	2	12/11/2017 11:06:00 PM	SL4769
Surr: Dibromofluoromethane	109	70-130	D	%Rec	2	12/11/2017 11:06:00 PM	SL4769
Surr: Toluene-d8	98.0	70-130	D	%Rec	2	12/11/2017 11:06:00 PM	SL4769

Lab ID: 1712164-002 **Collection Date:** 11/30/2017 3:00:00 PM
Client Sample ID: GW-11103550-113017-JP-MW-2 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	33	5.0		mg/L	10	12/8/2017 5:30:14 AM	A47599
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	465	100	D	mg/L	1	12/7/2017 6:50:00 PM	35355
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	12/11/2017 11:29:00 PM	SL4769
Toluene	ND	1.0		µg/L	1	12/11/2017 11:29:00 PM	SL4769
Ethylbenzene	ND	1.0		µg/L	1	12/11/2017 11:29:00 PM	SL4769
Xylenes, Total	ND	1.5		µg/L	1	12/11/2017 11:29:00 PM	SL4769
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	12/11/2017 11:29:00 PM	SL4769
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/11/2017 11:29:00 PM	SL4769
Surr: Dibromofluoromethane	110	70-130		%Rec	1	12/11/2017 11:29:00 PM	SL4769
Surr: Toluene-d8	98.4	70-130		%Rec	1	12/11/2017 11:29:00 PM	SL4769

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: GHD
Project: Jal-4

Lab Order: 1712164

Lab ID: 1712164-003 **Collection Date:** 11/30/2017 3:20:00 AM
Client Sample ID: GW-11103550-113017-MG-MW-3 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	49	5.0		mg/L	10	12/8/2017 5:55:03 AM	A47599
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	640	200	*D	mg/L	1	12/7/2017 6:50:00 PM	35355
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	12/11/2017 11:53:00 PM	SL4769
Toluene	ND	1.0		µg/L	1	12/11/2017 11:53:00 PM	SL4769
Ethylbenzene	ND	1.0		µg/L	1	12/11/2017 11:53:00 PM	SL4769
Xylenes, Total	ND	1.5		µg/L	1	12/11/2017 11:53:00 PM	SL4769
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	12/11/2017 11:53:00 PM	SL4769
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/11/2017 11:53:00 PM	SL4769
Surr: Dibromofluoromethane	112	70-130		%Rec	1	12/11/2017 11:53:00 PM	SL4769
Surr: Toluene-d8	99.1	70-130		%Rec	1	12/11/2017 11:53:00 PM	SL4769

Lab ID: 1712164-004 **Collection Date:** 11/30/2017 3:31:00 AM
Client Sample ID: GW-11103550-113017-MG-MW-4 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	63	5.0		mg/L	10	12/8/2017 6:19:51 AM	A47599
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	510	200	*D	mg/L	1	12/7/2017 6:50:00 PM	35355
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	12/12/2017 12:16:00 AM	SL4769
Toluene	ND	1.0		µg/L	1	12/12/2017 12:16:00 AM	SL4769
Ethylbenzene	ND	1.0		µg/L	1	12/12/2017 12:16:00 AM	SL4769
Xylenes, Total	ND	1.5		µg/L	1	12/12/2017 12:16:00 AM	SL4769
Surr: 1,2-Dichloroethane-d4	115	70-130		%Rec	1	12/12/2017 12:16:00 AM	SL4769
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/12/2017 12:16:00 AM	SL4769
Surr: Dibromofluoromethane	111	70-130		%Rec	1	12/12/2017 12:16:00 AM	SL4769
Surr: Toluene-d8	98.8	70-130		%Rec	1	12/12/2017 12:16:00 AM	SL4769

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: GHD
Project: Jal-4

Lab Order: 1712164

Lab ID: 1712164-005 **Collection Date:** 11/30/2017 2:05:00 PM
Client Sample ID: GW-11103550-113017-MG-MW-5 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	120	5.0		mg/L	10	12/8/2017 6:44:41 AM	A47599
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	650	100	*D	mg/L	1	12/7/2017 6:50:00 PM	35355
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	12/12/2017 12:40:00 AM	SL4769
Toluene	ND	1.0		µg/L	1	12/12/2017 12:40:00 AM	SL4769
Ethylbenzene	ND	1.0		µg/L	1	12/12/2017 12:40:00 AM	SL4769
Xylenes, Total	ND	1.5		µg/L	1	12/12/2017 12:40:00 AM	SL4769
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	12/12/2017 12:40:00 AM	SL4769
Surr: 4-Bromofluorobenzene	99.6	70-130		%Rec	1	12/12/2017 12:40:00 AM	SL4769
Surr: Dibromofluoromethane	109	70-130		%Rec	1	12/12/2017 12:40:00 AM	SL4769
Surr: Toluene-d8	98.1	70-130		%Rec	1	12/12/2017 12:40:00 AM	SL4769

Lab ID: 1712164-006 **Collection Date:** 11/30/2017 2:10:00 PM
Client Sample ID: GW-11103550-113017-JP-MW-6 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	63	5.0		mg/L	10	12/8/2017 7:34:20 AM	A47599
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	444	40.0	D	mg/L	1	12/7/2017 6:50:00 PM	35355
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	12/12/2017 1:03:00 AM	SL4769
Toluene	ND	1.0		µg/L	1	12/12/2017 1:03:00 AM	SL4769
Ethylbenzene	ND	1.0		µg/L	1	12/12/2017 1:03:00 AM	SL4769
Xylenes, Total	ND	1.5		µg/L	1	12/12/2017 1:03:00 AM	SL4769
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	12/12/2017 1:03:00 AM	SL4769
Surr: 4-Bromofluorobenzene	97.3	70-130		%Rec	1	12/12/2017 1:03:00 AM	SL4769
Surr: Dibromofluoromethane	108	70-130		%Rec	1	12/12/2017 1:03:00 AM	SL4769
Surr: Toluene-d8	97.7	70-130		%Rec	1	12/12/2017 1:03:00 AM	SL4769

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#: **1712164**

27-Dec-17

Client: GHD

Project: Jal-4

Sample ID	**MB**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBW**	Batch ID:	**A47599**	RunNo:	**47599**					
Prep Date:		Analysis Date:	**12/7/2017**	SeqNo:	**1521935**	Units:	**mg/L**			

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

Sample ID	**LCS**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSW**	Batch ID:	**A47599**	RunNo:	**47599**					
Prep Date:		Analysis Date:	**12/7/2017**	SeqNo:	**1521936**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.8	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting 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#: **1712164**

27-Dec-17

Client: GHD

Project: Jal-4

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL47690**	RunNo: **47690**
Prep Date:	Analysis Date: **12/11/2017**	SeqNo: **1524063** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	21	1.0	20.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.9	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL47690**	RunNo: **47690**
Prep Date:	Analysis Date: **12/11/2017**	SeqNo: **1524064** 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								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.6	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	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 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#: **1712164**

27-Dec-17

Client: GHD

Project: Jal-4

Sample ID	**MB-35355**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**35355**	RunNo:	**47616**					
Prep Date:	**12/6/2017**	Analysis Date:	**12/7/2017**	SeqNo:	**1521323**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**LCS-35355**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**35355**	RunNo:	**47616**					
Prep Date:	**12/6/2017**	Analysis Date:	**12/7/2017**	SeqNo:	**1521324**	Units:	**mg/L**			

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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: GHD | Work Order Number: 1712164 | RcptNo: 1

Received By: Erin Melendrez 12/5/2017 9:30:00 AM

Completed By: Isaiah Ortiz 12/5/2017 9:41:40 AM

Reviewed By: DDS 12/6/17

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.6	Good	Yes			

Chain-of-Custody Record

Client: GHD Services Inc.

Mailing Address: 6121 Indian School Rd Ste200 NE Albuquerque NM 87110

Phone #: 505 884 0672

email or Fax#: Bernard.Borkisch@ghd.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☐ Rush _____

Project Name: Ja14

Project #: 11103550

Project Manager: Bernard Borkisch

Sampler: Michael Gant

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.6

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. 1712164
11/30/17	1215	AQ	GW-11103550-113017-MG-RW-1	Various	ICE	-001
	1500		GW-11103550-113017-JP-MW-2			-002
	1520		GW-11103550-113017-MG-MW-3			-003
	1531		GW-11103550-113017-MG-MW-4			-004
	1405		GW-11103550-113017-MG-MW-5			-005
	1410		GW-11103550-113017-JP-MW-6			-006

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's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX	8270 (Semi-VOA)	Chloride 300	TDS SM2540C			Air Bubbles (Y or N)
									X		X	X			
									X		X	X			
									X		X	X			
									X		X	X			
									X		X	X			
									X		X	X			

Remarks:

Date	Time	Relinquished by:	Received by:	Date	Time
12/4/17	0900			12/4/17	0900
12/4/17	1900			12/5/17	0830

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.

www.ghd.com