



2016 Annual Groundwater Monitoring Report

A 7 Bettis Pipeline Release

Lea County, New Mexico

NMOCD Nos. 1RP 09-5-2186 and 1RP 1540

ETC Field Services LLC

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

082150| 2016| Report No 2 | March 22 2017



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1. Introduction

1.1 Introduction

This report presents the results of groundwater monitoring during 2016 at the ETC Field Services LLC (ETC) A 7 Bettis pipeline release site (Site). The Site is located about 2.5 miles north of Eunice, New Mexico on NM Highway 18 and approximately 0.5 mile east of NM Highway 18 off of Jones City Road. The Site is regulated by the New Mexico Oil Conservation Division (NMOCD). Field work was conducted by APEX Environmental (APEX) during July and October of 2014 and January and April of 2015. Field work has been performed by GHD Services, Inc. (GHD) since December 2015.

1.2 Background

The A 7 Bettis is a 10 inch (in.) diameter low pressure natural gas pipeline located in Unit letter L, Section 14, Township 21 South, Range 37 East in Lea County, New Mexico. The property at the pipeline release location is owned by Mr. Charlie Bettis of Eunice, New Mexico. Site coordinates are 32.475367 N, 103.142150 W and are shown on Figure 1, Site Location Map.

Southern Union Gas Services, Ltd. discovered and verbally notified NMOCD that failure of a section of 10 in. low pressure natural gas pipeline had occurred on August 22, 2007. The rupture resulted in the release of a mixture of crude oil, produced water, and natural gas. A recent rain shower had added an unknown volume of water to the release. The "Release Notification and Corrective Action" (Form C 141) indicated a release of approximately 200 barrels of fluid. A vacuum truck was used to recover approximately 130 barrels of fluid. About 81 million cubic feet (MCF) of natural gas was also released into the atmosphere as a result of the release.

NMOCD Form C 141 (1RP 1540) was submitted and approved by the NMOCD Hobbs District Office on August 31, 2007. On March 24, 2009, the initial Form C 141 was resubmitted and again approved by the NMOCD Hobbs District Office and assigned the NMOCD reference #1RP 09 5 2186.

Horizontal delineation of the impacted area was conducted with the collection and analysis of 10 surface soil samples on February 26, 2009. Between March 12, 2009 and July 10, 2009 approximately 2550 cubic yards of impacted soil was excavated, stockpiled onsite, and sampled for a disposal profile. The dimensions of the excavation were approximately 45 feet (ft) wide, 60 ft long, and up to 44 ft deep. Additional impacted soil remained in place that could not be removed due to safety considerations (Table 1).

NMOCD requested a minimum of five soil borings advanced around the perimeter of the excavation in October 2010. Five borings (SB 1 through SB 5) were installed during October 2012 to assess the lateral extent of soil concentrations. Soil borings SB 1, SB 4 and SB 5 were converted into 2 inch (2") monitoring wells MW 1, MW 2 and MW 3, respectively, to assess groundwater concentrations.



Initial laboratory results indicated that with the exception of MW 1, the concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) were below the laboratory method detection limits. TDS concentrations ranged from 777 mg/L to 2,620 mg/L for the samples collected from MW 3 and MW 1, respectively. Chloride concentrations ranged from 103 mg/L to 1,060 mg/L for the samples collected from MW 3 and MW 1, respectively.

The excavation was partially backfilled and compacted with clean imported soil to 15 ft below ground surface (bgs) on November 7, 2012. A 20 mil liner was installed over the backfilled soil to minimize the vertical migration of contaminants left in situ. The remainder of the excavation was backfilled and compacted.

Basin Environmental Services Technologies, LLC (Basin) installed monitoring wells MW 4, MW 5, MW 6, and MW 7 on August 28, 2013 to assess groundwater concentrations. Select soil samples were submitted for laboratory analysis of total petroleum hydrocarbons (TPH) and chlorides. The bottom sample collected from each borehole was submitted for laboratory analysis of BTEX in conjunction with TPH and chlorides. All of the samples submitted for laboratory analysis were below the NMOCD Recommended Remedial Action Limits (RRAL) for the Site.

Monitoring wells MW 8 and MW 9 appear to have been installed sometime during late 2014 or early 2015, presumably by Apex TITAN, Inc. (Apex). Apex collected groundwater samples from Site wells on July 30, 2014, October 31, 2014, January 21, 2015, and April 21, 2015.

GHD assumed consulting responsibilities for the Site in August 2015. GHD installed monitoring wells MW 10 and MW 11 on December 14 and 15th, 2015 and conducted a groundwater monitoring event on December 21, 2015.

GHD performed semi-annual groundwater monitoring on June 1st and December 9th, 2016. This report details all work conducted at the Site during 2016. Groundwater Monitoring Summary, Methodology, and Analytical Results

1.3 Groundwater Monitoring Summary

On the above referenced dates, groundwater elevation measurements were recorded from Site monitoring wells. Groundwater elevations for the Site are presented in Table 1.

Groundwater flow direction is towards the southeast and is consistent with historical Site data. The groundwater gradient was calculated for each monitoring period and it was 0.0021 ft/ft (June 2016) and 0.0021 ft/ft (December). Groundwater elevation potentiometric surface maps for each sampling period are included as Figure 3 and Figure 4.

1.4 Groundwater Monitoring Methodology

Monitoring wells MW-1, MW-2, and MWs 6-11 were sampled during the two 2016 events. During the groundwater monitoring events conducted by GHD, monitoring wells were purged of at least three casing volumes of water using a dedicated, polyethylene, disposable bailer prior to sampling. Groundwater quality parameters including pH, temperature, oxidation reduction potential, total dissolved solids, and conductivity were collected using a decontaminated and calibrated multi



parameter groundwater quality meter and were recorded on GHD groundwater sampling field forms. A summary of groundwater parameters is included as Table 2.

In order to enhance aerobic biodegradation of hydrocarbons in the groundwater, GHD installed O Sox™ in monitoring wells MW 1, MW 6, MW 7, MW 8, and MW 9 on July 19, 2016. O Sox™ are replaceable socks that can be placed in wells to deliver EHC O™, a proprietary compound that contains a long term source of dissolved oxygen and nutrients, into the groundwater. The O Sox™ were replaced in the wells on December 9, 2016.

Groundwater samples were placed in laboratory prepared bottles, packed on ice, and delivered under chain of custody to Hall Environmental Analysis Laboratory located in Albuquerque, New Mexico. The samples were analyzed for BTEX by EPA Method 8260 and Chlorides by EPA Method 300.0.

Groundwater collected from monitoring wells MW 2, MW 3, MW 4, and MW 5 have been below NMWQCC standards since sampling began. The 2016 laboratory analytical results indicated that groundwater samples collected from monitoring wells MW 1, MW 6, MW 8, MW 9, and MW 10 contained benzene and/or chloride concentrations above the NMWQCC Groundwater Quality Standards.

Groundwater collected from MW 1, MW 6, and MW-10 has consistently exceeded the NMWQCC standard for chlorides. During the most recent sampling event (December 2016) the concentration of chloride in Site wells ranged from 43 in MW-9 to 1,400 mg/L in MW 6. The NMWQCC standard for chloride is 250 mg/L. A concentration map depicting chloride concentrations for each sampling event has been included as Figure 5.

Groundwater collected from MW 1, MW 6, MW 7, and MW 9 has consistently exceeded the NMWQCC standard for benzene. During the most recent sampling event (December 2016), groundwater collected from Site wells contained concentrations of benzene from below laboratory detection limits to 0.099 mg/L in MW 6. The NMWQCC standard for benzene in groundwater is 0.01 mg/L. A concentration map depicting benzene concentrations for each sampling event has been adapted from Apex data and is included as Figure 6.

A summary of the historical groundwater laboratory analytical results is presented in Table 3. Corresponding laboratory analytical reports are included as Appendix A.

2. Conclusions and Recommendations

2.1 Conclusions

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

- Groundwater samples collected from monitoring wells MW 2, MW 3, MW 4, and MW 5 have been below NMWQCC standards since sampling began.
- Groundwater collected from MW 1, MW 6, and MW-10 exceeded the NMWQCC standard for chlorides. The furthest well southeast of the release point, MW-11, contained 44 mg/L chloride.



The concentration of chloride in this well indicates the chloride plume may be sufficiently delineated towards the southeast.

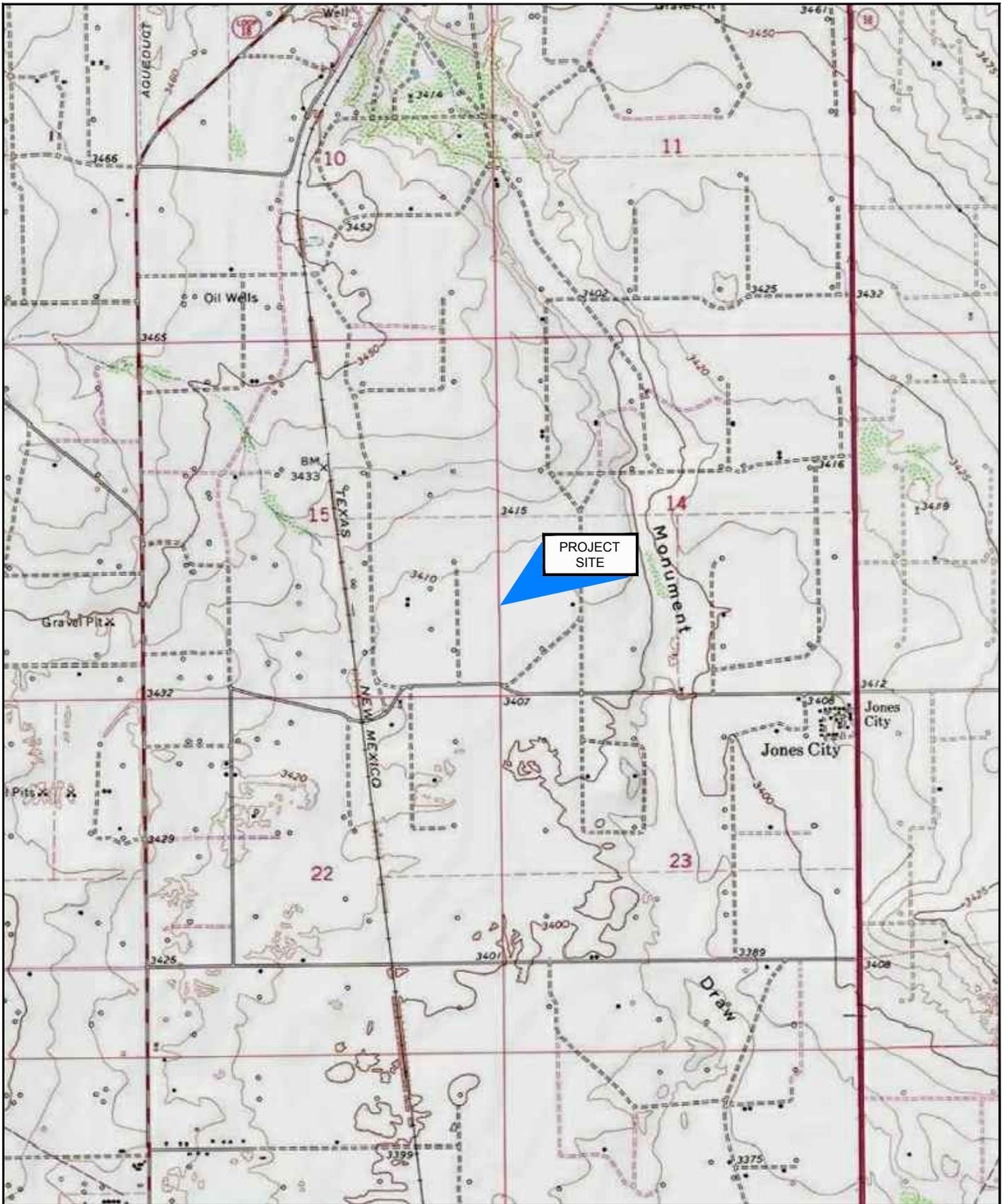
- Groundwater collected from MW-10 has exceeded the NMWQCC standard for chloride since the initial sampling performed in December 2015. This well is located to the west and cross-gradient of the apparent chloride plume which may indicate a secondary release to the northwest of the site.
- Groundwater collected from MW 1, MW 6, MW 8, and MW 9 exceeded the NMWQCC standard for benzene in at least one 2016 sampling event.
- O Sox™ were installed in MW 1, MW 6, MW 7, MW 8, and MW 9 on July 19, 2016 and were replaced on December 9, 2016. Benzene concentrations decreased in all five wells from the installation date to the sampling event performed in December 2016.

2.2 Recommendations

Due to the above conclusions, GHD recommends:

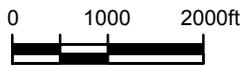
- Continue sampling monitoring wells MW 1, MW 2, MW 6, MW 7, MW 8, MW 9, MW 10, and MW 11 on a semi-annual basis.
- Monitoring wells MW 3, MW 4, and MW 5 will be sampled on an annual basis and will coincide with the first semi-annual event. These wells have never exceeded the NMWQCC standard for target constituents.
- Continue the use of O sox with replacement as needed during the semi-annual sampling events.
- Recommend that the NMOCD contact pipeline owners who have pipelines to the northwest of the Site to inquire if any have had a release.

Figures



Source: USGS 7.5 MINUTE QUAD "EUNICE AND EUNICE NE, NEW MEXICO"

Lat/Long: 32.47536° North, 103.14215° West



Coordinate System:
NAD 83 (2011) State Plane-
New Mexico East (US Feet)



ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
A-7 BETTIS PIPELINE

SITE LOCATION MAP

082150-2016

Mar 9, 2016

FIGURE 1



Source: NAIP Imagery, New Mexico 2014

Lat/Long: 32.47536° North, 103.14215° West



Coordinate System:
NAD 83 (2011) State Plane-
New Mexico East (US Feet)



ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
A-7 BETTIS PIPELINE

SITE PLAN

082150-2016

Apr 14, 2016

FIGURE 2



Source: NAIP Imagery, New Mexico 2014

Lat/Long: 32.47536° North, 103.14215° West



Coordinate System:
NAD 83 (2011) State Plane-
New Mexico East (US Feet)



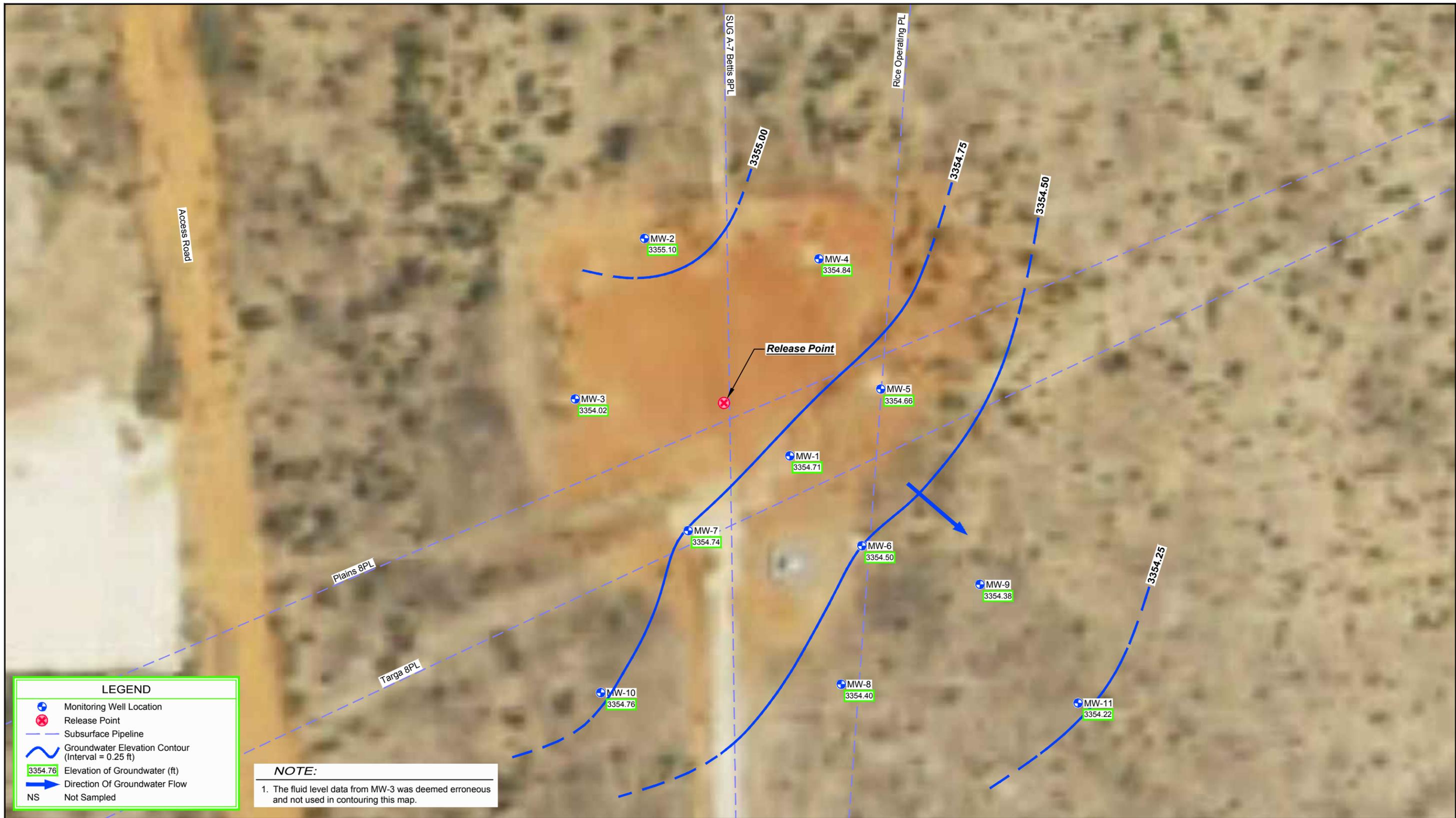
ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
A-7 BETTIS PIPELINE

082150-2016

Mar 17, 2017

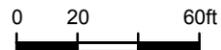
GROUNDWATER GRADIENT MAP - JUNE 2016

FIGURE 3



Source: NAIP Imagery, New Mexico 2014

Lat/Long: 32.47536° North, 103.14215° West



Coordinate System:
NAD 83 (2011) State Plane-
New Mexico East (US Feet)



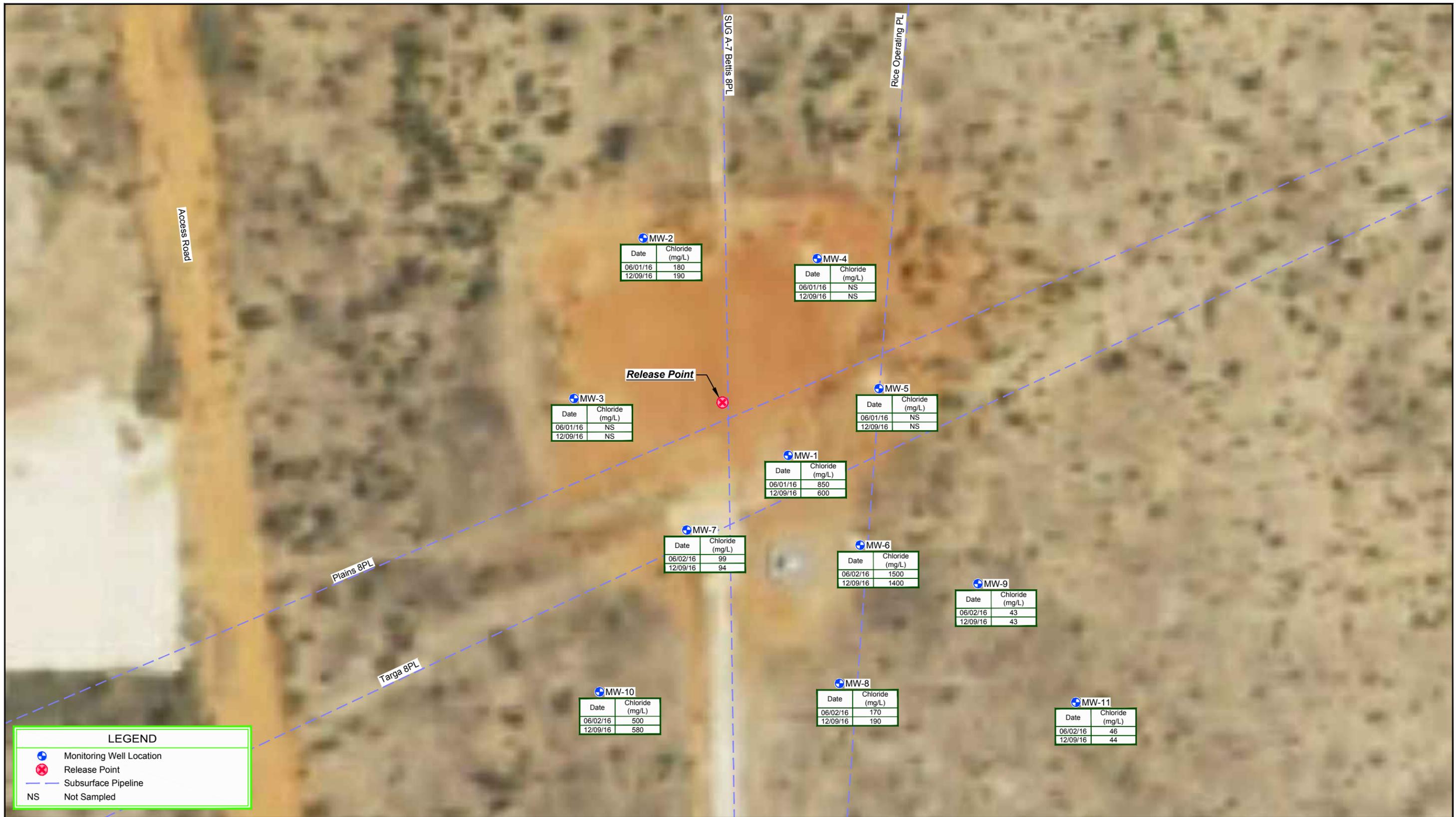
ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
A-7 BETTIS PIPELINE

082150-2016

Mar 3, 2017

GROUNDWATER GRADIENT MAP - DECEMBER 2016

FIGURE 4



Source: NAIP Imagery, New Mexico 2014

Lat/Long: 32.47536° North, 103.14215° West



Coordinate System:
NAD 83 (2011) State Plane-
New Mexico East (US Feet)



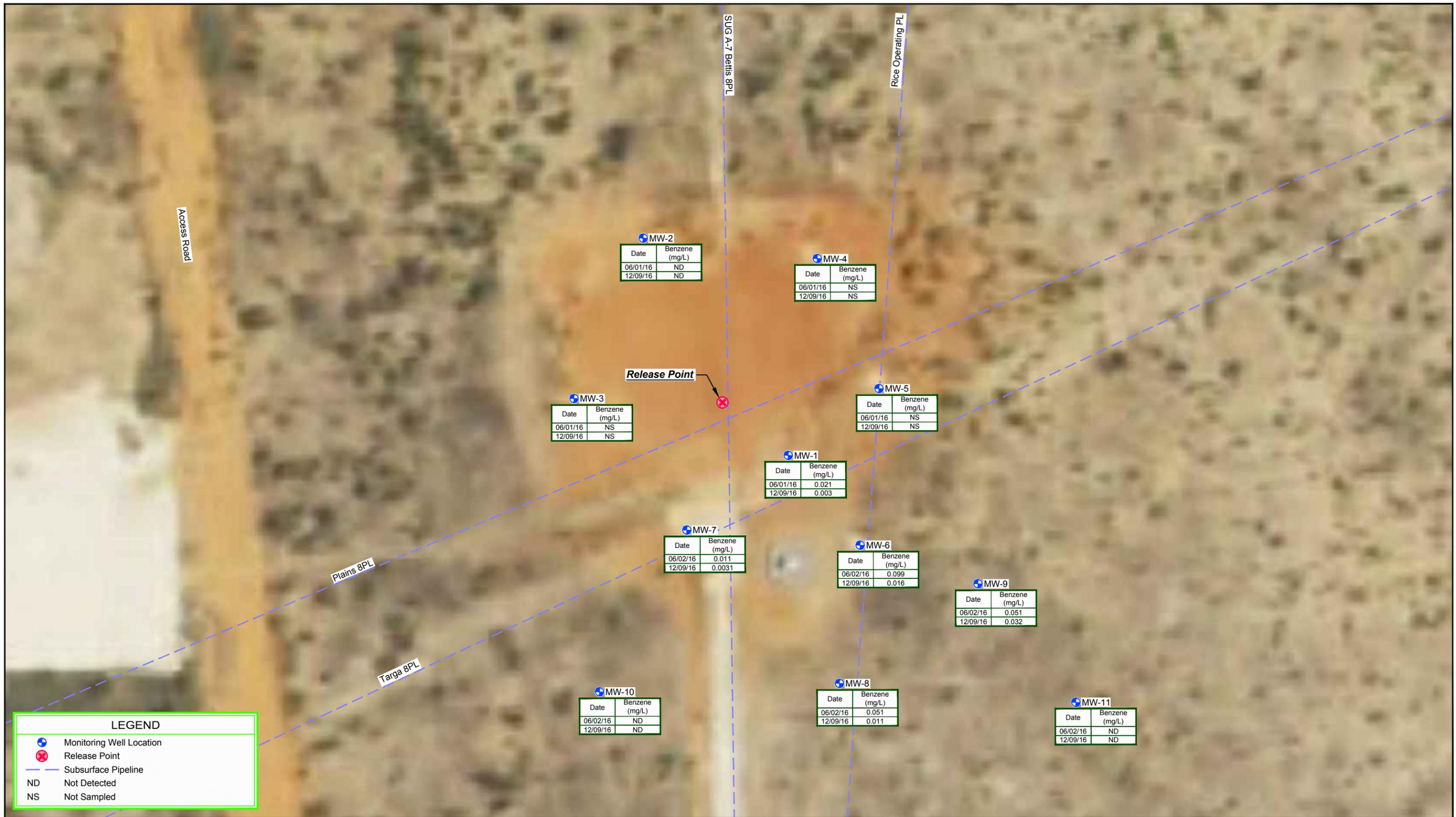
ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
A-7 BETTIS PIPELINE

082150-2016

Jan 25, 2017

CHLORIDE IN GROUNDWATER MAP - 2016

FIGURE 5



Source: NAIP Imagery, New Mexico 2014

Lat/Long: 32.47536° North, 103.14215° West



Coordinate System:
NAD 83 (2011) State Plane-
New Mexico East (US Feet)



ETC FIELD SERVICES LLC
LEA COUNTY, NEW MEXICO
A-7 BETTIS PIPELINE

082150-2016

Jan 25, 2017

BENZENE IN GROUNDWATER MAP - 2016

FIGURE 6

Tables

Table 1

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Monitor Well Specifications And Groundwater Elevation

Well Number	Casing Well Elevation	Total Depth	Date Measured	Depth to Product	Depth to Water	LANPL Thickness	Corrected Groundwater Elevation
MW-1	3,413.64	74.28	02/07/2013	-	59.82	-	3,353.82
			05/10/2013	-	59.36	-	3,354.28
			09/03/2013	-	59.91	-	3,353.73
			07/30/2014	-	59.19	-	3,354.45
			10/31/2014	-	59.13	-	3,354.51
			01/21/2015	-	58.99	-	3,354.65
			04/21/2015	-	58.96	-	3,354.68
			12/21/2015	-	59.04	-	3,354.60
			06/01/2016	-	58.95	-	3,354.69
12/08/2016	-	58.93	-	3,354.71			
MW-2	3,412.88	74.18	02/07/2013	-	59.10	-	3,353.78
			05/10/2013	-	58.20	-	3,354.68
			09/03/2013	-	58.21	-	3,354.67
			07/30/2014	-	58.02	-	3,354.86
			10/31/2014	-	57.91	-	3,354.97
			01/21/2015	-	57.75	-	3,355.13
			04/21/2015	-	57.76	-	3,355.12
			12/21/2015	-	57.84	-	3,355.04
			06/01/2016	-	57.79	-	3,355.09
12/08/2016	-	57.78	-	3,355.10			
MW-3	3,412.96	74.04	02/07/2013	-	58.49	-	3,354.47
			05/10/2013	-	58.35	-	3,354.61
			09/03/2013	-	58.32	-	3,354.64
			07/30/2014	-	58.26	-	3,354.70
			10/31/2014	-	58.19	-	3,354.77
			01/21/2015	-	58.01	-	3,354.95
			04/21/2015	-	58.96	-	3,354.00
			12/21/2015	-	58.04	-	3,354.92
			06/01/2016	-	57.93	-	3,355.03
12/08/2016	-	58.94	-	3,354.02			
MW-4	3,413.15	72.65	09/03/2013	-	59.18	-	3,353.97
			07/30/2014	-	58.62	-	3,354.53
			10/31/2014	-	58.47	-	3,354.68
			01/21/2015	-	58.33	-	3,354.82
			04/21/2015	-	58.31	-	3,354.84
			12/21/2015	-	58.36	-	3,354.79
			06/01/2016	-	58.32	-	3,354.83
12/08/2016	-	58.31	-	3,354.84			

Table 1

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Monitor Well Specifications And Groundwater Elevation

Well Number	Casing Well Elevation	Total Depth	Date Measured	Depth to Product	Depth to Water	LANPL Thickness	Corrected Groundwater Elevation
MW-5	3,413.53	73.32	09/03/2013	-	59.23	-	3,354.30
			07/30/2014	-	59.14	-	3,354.39
			10/31/2014	-	59.12	-	3,354.41
			01/21/2015	-	58.93	-	3,354.60
			04/21/2015	-	58.97	-	3,354.56
			06/01/2016	-	58.90	-	3,354.63
			12/08/2016	-	58.87	-	3,354.66
MW-6	3,413.30	69.21	9/3/2013*	-	59.10	-	3,354.20
			07/30/2014	-	59.03	-	3,354.27
			10/31/2014	-	59.06	-	3,354.24
			01/21/2015	-	58.94	-	3,354.36
			04/21/2015	-	58.95	-	3,354.35
			12/21/2015	-	58.89	-	3,354.41
			06/01/2016	-	58.81	-	3,354.49
			12/08/2016	-	58.80	-	3,354.50
MW-7	3,413.01	72.14	09/03/2013	-	58.62	-	3,354.39
			07/30/2014	-	58.53	-	3,354.48
			10/31/2014	-	58.57	-	3,354.44
			01/21/2015	-	58.44	-	3,354.57
			04/21/2015	-	58.35	-	3,354.66
			12/21/2015	-	58.36	-	3,354.65
			06/01/2016	-	58.27	-	3,354.74
			12/08/2016	-	58.27	-	3,354.74
MW-8	3,412.02	71.66	01/21/2015	-	57.84	-	3,354.18
			04/21/2015	-	57.75	-	3,354.27
			12/21/2015	-	57.75	-	3,354.27
			06/01/2016	-	57.65	-	3,354.37
			12/08/2016	-	57.62	-	3,354.40
MW-9	3,412.38	71.34	01/21/2015	-	58.21	-	3,354.17
			04/21/2015	-	58.10	-	3,354.28
			12/21/2015	-	58.10	-	3,354.28
			06/01/2016	-	58.02	-	3,354.36
			12/08/2016	-	58.00	-	3,354.38
MW-10	3411.86	70.32	12/21/2015	-	57.24	-	3354.62
			06/01/2016	-	57.15	-	3354.71
			12/08/2016	-	57.10	-	3354.76
MW-11	3412.14	70.32	12/21/2015	-	58.01	-	3354.13
			06/01/2016	-	57.92	-	3354.22
			12/08/2016	-	57.92	-	3354.22

N/A = Not Applicable

Table 2

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Field Parameter Summary

Sample ID	Date	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)
MW-1	07/30/2014	27	6.71	4.1	-128.5	4435
	10/30/2014	*	*	*	*	*
	01/21/2015	8.2	7.76	28.9	-31.6	2884
	04/21/2015	21	6.66	3.6	3.2	3785
	12/21/2015	19.89	6.89	3.56	-90.7	3846
	06/01/2016	20.4	6.76	1.71	-123.9	2940
	12/09/2016	19	6.37	5.22	-113.7	2559
MW-2	07/31/2014	24.4	7.05	21.5	215	1509
	10/30/2014	*	*	*	*	*
	01/21/2015	12.9	7.4	23.1	242.3	1654
	04/21/2015	19.3	6.94	4.1	322.2	1648
	12/21/2015	19.59	7.31	3.06	-41.4	1956
	06/01/2016	20.1	6.93	1.93	37.4	1650
	12/09/2016	18.61	6.97	1.76	-112.7	1640
MW-3	07/31/2014	21	7.13	16.1	571	1173
	10/30/2014	*	*	*	*	*
	01/21/2015	9.7	7.71	52.3	408.7	1425
	04/21/2015	18.7	7.12	38.1	256.1	1353
	12/21/2015	19.7	7.36	3.11	-55.3	1468
MW-4	07/30/2014	23.6	6.95	34.6	568.3	1239
	10/30/2014	*	*	*	*	*
	01/21/2015	15	7.31	26.6	525.3	1393
	04/21/2015	19.5	6.97	18	463.2	1420
	12/21/2015	19.71	7	3.01	-47.3	1620
MW-5	07/30/2014	22.7	6.86	10.1	55.7	1213
	10/30/2014	*	*	*	*	*
	01/21/2015	15.4	7.31	22.8	510.3	1188
	04/21/2015	19.9	6.79	6.3	283.2	1323

Table 2

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Field Parameter Summary

Sample ID	Date	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)
MW-6	07/30/2014	24.6	6.67	2.7	-145.4	4320
	10/30/2014	*	*	*	*	*
	01/21/2015	7.3	8.11	50.3	108.9	3479
	04/21/2015	20.8	6.6	2.3	-30.9	4923
	12/21/2015	19.56	6.99	3.14	-106.2	6450
	06/02/2016	20	6.39	1.25	-93.8	5290
	12/09/2016	18.9	6.99	1.88	-170	4387
MW-7	07/30/2014	24.1	7.01	6.5	-106.7	1412
	10/30/2014	*	*	*	*	*
	01/21/2015	7.2	7.91	43.8	110.7	2717
	04/21/2015	21.1	6.95	10	269.6	1938
	12/21/2015	19.61	7.07	2.57	-108.4	1919
	06/02/2016	20.2	7.08	1.47	-115.7	1580
	12/09/2016	19.02	7.17	3.11	74.8	1499
MW-8	01/21/2015	8.2	8.14	40.2	316.8	1202.43
	04/21/2015	20.1	6.93	10.6	517.3	1942
	12/21/2015	19.14	7.09	3.68	-55.7	2144
	06/02/2016	19.8	7.08	1.43	129.5	1820
	12/09/2016	18.54	7.22	8.28	463.9	1889
MW-9	01/21/2015	6	8.33	60.9	201.7	1180
	04/21/2015	19.8	6.89	6.5	275.9	1298
	12/21/2015	19.31	7.09	3.04	-50.1	1395
	06/02/2016	19.9	6.93	1.23	-115	1180
	12/09/2016	18.72	7.15	7.87	-122.3	1145
MW-10	12/21/2015	19.2	7.49	7.07	-9.4	3616
	06/02/2016	20.1	7.23	3.74	97.2	3250
	12/09/2016	18.64	7.23	3.76	419.5	3183
MW-11	12/21/2015	18.44	7.41	6.97	43.2	1285
	06/02/2016	19.8	7.36	6.51	385.7	1120
	12/09/2016	18.56	7.34	6.85	436.6	1086

* Low flow sampling could not be performed due to excessive silt, three casing volumes were purged.

Table 3

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Groundwater Analytical Results Summary

Sample ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)
MW-1	2/7/2013*	0.51600	<0.00100	0.06880	0.02910	1,200
	5/10/2013*	0.55100	0.09150	0.14600	0.11400	901
	9/3/2013*	0.01940	<0.00100	0.01720	0.03660	561
	2/28/2014*	0.39500	<0.00200	0.08500	0.03500	1,220
	07/30/2014	<0.00100	<0.00200	<0.00100	0.01780	1,190
	10/31/2014	0.28400	<0.00100	0.06710	<0.00100	871
	01/21/2015	0.13700	<0.0500	0.11100	<0.05000	618
	04/21/2015	0.10400	<0.00100	0.03240	<0.00100	845
	12/21/2015	0.02600	<0.00100	0.01100	0.00210	890
	06/01/2016	0.02100	<0.00100	0.00730	<0.00150	850
12/09/2016	0.00300	<0.00100	0.00200	<0.00150	600	
MW-2	2/7/2013*	<0.00100	<0.00200	<0.00100	<0.00200	142
	5/10/2013*	<0.00100	<0.00200	<0.00100	<0.00200	138
	9/3/2013*	<0.00100	<0.00100	<0.00100	<0.00200	139
	2/28/2014*	<0.00100	<0.00200	<0.00100	<0.00100	134
	07/31/2014	<0.00100	<0.00200	<0.00100	<0.00100	144
	10/31/2014	<0.00100	<0.00100	<0.00100	<0.00100	168
	01/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	167
	04/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	159
	12/21/2015	<0.00100	<0.00100	<0.00100	<0.00150	170
	06/01/2016	<0.00100	<0.00100	<0.00100	<0.00150	180
12/09/2016	<0.00100	<0.00100	<0.00100	<0.00150	190	
MW-3	2/7/2013*	<0.00100	<0.00200	<0.00100	<0.00200	102
	5/10/2013*	<0.00100	<0.00200	<0.00100	<0.00200	91.3
	9/3/2013*	<0.00100	<0.00100	<0.00100	<0.00200	75.9
	2/28/2014*	<0.00100	<0.00200	<0.00100	<0.00100	95.4
	07/31/2014	<0.00100	<0.00200	<0.00100	<0.00100	89.9
	10/31/2014	0.00460	<0.00100	<0.00100	<0.00100	114
	01/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	111
	04/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	114
	12/21/2015	<0.00100	<0.00100	<0.00100	<0.00150	110
	06/01/2016	Not Sampled				
12/09/2016	Not Sampled					

Table 3

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Groundwater Analytical Results Summary

Sample ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	
MW-4	9/3/2013*	<0.00100	<0.00100	<0.00100	<0.00100	86.9	
	2/28/2014*	<0.00100	<0.00200	<0.00100	<0.00100	89.7	
	07/30/2014	<0.00100	<0.00200	<0.00100	<0.00100	98.8	
	10/31/2014	<0.00100	<0.00100	<0.00100	<0.00100	106	
	01/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	131	
	04/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	120	
	12/21/2015	<0.00100	<0.00100	<0.00100	<0.00150	120	
	06/01/2016	Not Sampled					
	12/09/2016	Not Sampled					
MW-5	9/3/2013*	0.00200	<0.00100	<0.00100	<0.00100	85.7	
	2/28/2014*	<0.00100	<0.00200	<0.00100	<0.00100	87.1	
	07/30/2014	<0.00100	<0.00200	<0.00100	0.00410	73.4	
	10/31/2014	0.00440	<0.00100	<0.00100	0.01450	77.1	
	01/21/2015	<0.00100	<0.00100	<0.00100	0.00280	69.9	
	04/21/2015	<0.00100	<0.00100	<0.00100	0.00970	73.3	
	12/21/2015	Not Sampled					
	06/01/2016	Not Sampled					
	12/09/2016	Not Sampled					
MW-6	9/3/2013*	0.46900	<0.00100	0.00613	0.03420	906	
	2/28/2014*	0.85100	<0.00100	0.01850	0.05900	1,290	
	07/30/2014	<0.00100	<0.00200	0.00965	0.01030	1,010	
	10/31/2014	0.64700	<0.0500	<0.0500	0.36800	1,420	
	01/21/2015	0.44000	<0.0500	<0.0500	<0.0500	429	
	04/21/2015	0.79000	<0.0500	<0.0500	<0.0500	1,190	
	12/21/2015	0.20000	<0.00100	0.00220	0.00340	1,700	
	06/02/2016	0.09900	<0.00100	0.00260	0.00390	1,500	
	12/09/2016	0.01600	<0.00100	0.00130	0.00150	1,400	
MW-7	9/3/2013*	0.08420	<0.00100	<0.00100	<0.00200	91.0	
	2/28/2014*	0.06060	<0.00200	0.00149	<0.00100	88.3	
	07/30/2014	<0.00100	<0.00200	<0.00100	<0.00100	70.6	
	10/31/2014	0.03510	<0.00100	0.00290	0.00660	72.2	
	01/21/2015	0.01690	<0.00100	<0.00100	<0.00100	46.6	
	04/21/2015	0.01230	<0.00100	<0.00100	<0.00100	<25.0	
	12/21/2015	0.00820	<0.00100	<0.00100	<0.00150	110	
	06/02/2016	0.01100	<0.00100	<0.00100	<0.00150	99	
	6/2/2016 (DUP)	0.01200	<0.00100	<0.00100	<0.00150	100	
	12/09/2016	0.00310	<0.00100	<0.00100	<0.00150	94	
	12/9/2016 (DUP)	0.00310	<0.00100	<0.00100	<0.00150	-	

Table 3

ETC Field Services LLC - A-7 Bettis Pipeline Release
 Section 14, Township 21 South, Range 37 East
 Lea County, New Mexico
 Groundwater Analytical Results Summary

Sample ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)
MW-8	01/21/2015	<0.00100	<0.00100	<0.00100	0.00120	362
	04/21/2015	<0.00100	<0.00100	<0.00100	<0.00100	184
	12/22/2015	0.02200	<0.00100	0.00250	<0.00150	190
	06/02/2016	0.05100	<0.00100	0.00600	<0.00150	170
	12/09/2016	0.01100	<0.00100	0.00320	<0.00150	190
MW-9	01/21/2015	0.02400	<0.00100	<0.00100	0.01510	53.9
	04/21/2015	0.03050	<0.00100	<0.00100	0.03400	53.4
	12/22/2015	0.01900	<0.00100	<0.00100	0.01800	57
	06/02/2016	0.05100	<0.00100	<0.00100	0.02500	43
	12/09/2016	0.03200	<0.00100	<0.00100	0.01400	43
MW-10	12/21/2015	<0.00100	<0.00100	<0.00100	<0.00150	570
	06/02/2016	<0.00100	<0.00100	<0.00100	<0.00150	500
	12/09/2016	<0.00100	<0.00100	<0.00100	<0.00150	580
MW-11	12/21/2015	0.00130	<0.00100	<0.00100	<0.00150	55
	06/02/2016	<0.00100	<0.00100	<0.00100	<0.00150	46
	12/09/2016	<0.00100	<0.00100	<0.00100	<0.00150	44
NMWQCC Groundwater Quality Standards		0.01	0.75	0.75	0.62	250

mg/L- milligrams per Liter

Note: Concentrations in bold exceed the applicable WQCC Regulatory Limits

*Samples taken by Basin Environmental Services, LLC

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

June 15, 2016

Bernie Bockish

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: A-7 Bettis

OrderNo.: 1606148

Dear Bernie Bockish:

Hall Environmental Analysis Laboratory received 10 sample(s) on 6/3/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060116-SP-MW-1

Project: A-7 Bettis

Collection Date: 6/1/2016 3:25:00 PM

Lab ID: 1606148-001

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	850	50	*	mg/L	100	6/9/2016 1:23:29 PM	R34831
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	21	1.0		µg/L	1	6/7/2016 12:54:00 PM	A34748
Toluene	ND	1.0		µg/L	1	6/7/2016 12:54:00 PM	A34748
Ethylbenzene	7.3	1.0		µg/L	1	6/7/2016 12:54:00 PM	A34748
Xylenes, Total	ND	1.5		µg/L	1	6/7/2016 12:54:00 PM	A34748
Surr: 1,2-Dichloroethane-d4	84.8	70-130		%Rec	1	6/7/2016 12:54:00 PM	A34748
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	6/7/2016 12:54:00 PM	A34748
Surr: Dibromofluoromethane	84.2	70-130		%Rec	1	6/7/2016 12:54:00 PM	A34748
Surr: Toluene-d8	97.9	70-130		%Rec	1	6/7/2016 12:54:00 PM	A34748

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060116-SP-MW-2

Project: A-7 Bettis

Collection Date: 6/1/2016 4:22:00 PM

Lab ID: 1606148-002

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	180	10		mg/L	20	6/4/2016 2:11:52 AM	R34707
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	ND	1.0		µg/L	1	6/7/2016 2:06:00 PM	A34748
Toluene	ND	1.0		µg/L	1	6/7/2016 2:06:00 PM	A34748
Ethylbenzene	ND	1.0		µg/L	1	6/7/2016 2:06:00 PM	A34748
Xylenes, Total	ND	1.5		µg/L	1	6/7/2016 2:06:00 PM	A34748
Surr: 1,2-Dichloroethane-d4	85.9	70-130		%Rec	1	6/7/2016 2:06:00 PM	A34748
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	6/7/2016 2:06:00 PM	A34748
Surr: Dibromofluoromethane	85.3	70-130		%Rec	1	6/7/2016 2:06:00 PM	A34748
Surr: Toluene-d8	99.0	70-130		%Rec	1	6/7/2016 2:06:00 PM	A34748

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-MW-6

Project: A-7 Bettis

Collection Date: 6/2/2016 10:05:00 AM

Lab ID: 1606148-003

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	1500	100	*	mg/L	200	6/9/2016 1:35:54 PM	R34831
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	99	1.0		µg/L	1	6/7/2016 2:30:00 PM	A34748
Toluene	ND	1.0		µg/L	1	6/7/2016 2:30:00 PM	A34748
Ethylbenzene	2.6	1.0		µg/L	1	6/7/2016 2:30:00 PM	A34748
Xylenes, Total	3.9	1.5		µg/L	1	6/7/2016 2:30:00 PM	A34748
Surr: 1,2-Dichloroethane-d4	86.5	70-130		%Rec	1	6/7/2016 2:30:00 PM	A34748
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	6/7/2016 2:30:00 PM	A34748
Surr: Dibromofluoromethane	86.5	70-130		%Rec	1	6/7/2016 2:30:00 PM	A34748
Surr: Toluene-d8	99.6	70-130		%Rec	1	6/7/2016 2:30:00 PM	A34748

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-MW-7

Project: A-7 Bettis

Collection Date: 6/2/2016 10:35:00 AM

Lab ID: 1606148-004

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	99	10		mg/L	20	6/4/2016 3:01:30 AM	R34707
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	11	1.0		µg/L	1	6/7/2016 2:54:00 PM	A34748
Toluene	ND	1.0		µg/L	1	6/7/2016 2:54:00 PM	A34748
Ethylbenzene	ND	1.0		µg/L	1	6/7/2016 2:54:00 PM	A34748
Xylenes, Total	ND	1.5		µg/L	1	6/7/2016 2:54:00 PM	A34748
Surr: 1,2-Dichloroethane-d4	87.3	70-130		%Rec	1	6/7/2016 2:54:00 PM	A34748
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	6/7/2016 2:54:00 PM	A34748
Surr: Dibromofluoromethane	85.3	70-130		%Rec	1	6/7/2016 2:54:00 PM	A34748
Surr: Toluene-d8	99.4	70-130		%Rec	1	6/7/2016 2:54:00 PM	A34748

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-MW-8

Project: A-7 Bettis

Collection Date: 6/2/2016 11:25:00 AM

Lab ID: 1606148-005

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	170	10		mg/L	20	6/4/2016 3:26:19 AM	R34707
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	51	1.0		µg/L	1	6/7/2016 3:18:00 PM	A34748
Toluene	ND	1.0		µg/L	1	6/7/2016 3:18:00 PM	A34748
Ethylbenzene	6.0	1.0		µg/L	1	6/7/2016 3:18:00 PM	A34748
Xylenes, Total	ND	1.5		µg/L	1	6/7/2016 3:18:00 PM	A34748
Surr: 1,2-Dichloroethane-d4	87.4	70-130		%Rec	1	6/7/2016 3:18:00 PM	A34748
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	6/7/2016 3:18:00 PM	A34748
Surr: Dibromofluoromethane	86.2	70-130		%Rec	1	6/7/2016 3:18:00 PM	A34748
Surr: Toluene-d8	98.7	70-130		%Rec	1	6/7/2016 3:18:00 PM	A34748

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-MW-9

Project: A-7 Bettis

Collection Date: 6/2/2016 12:13:00 PM

Lab ID: 1606148-006

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	43	10		mg/L	20	6/4/2016 4:15:58 AM	R34707
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	51	1.0		µg/L	1	6/9/2016 12:48:00 PM	A34816
Toluene	ND	1.0		µg/L	1	6/9/2016 12:48:00 PM	A34816
Ethylbenzene	ND	1.0		µg/L	1	6/9/2016 12:48:00 PM	A34816
Xylenes, Total	25	1.5		µg/L	1	6/9/2016 12:48:00 PM	A34816
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	6/9/2016 12:48:00 PM	A34816
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	6/9/2016 12:48:00 PM	A34816
Surr: Dibromofluoromethane	100	70-130		%Rec	1	6/9/2016 12:48:00 PM	A34816
Surr: Toluene-d8	99.6	70-130		%Rec	1	6/9/2016 12:48:00 PM	A34816

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-MW-10

Project: A-7 Bettis

Collection Date: 6/2/2016 1:35:00 PM

Lab ID: 1606148-007

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	500	25	*	mg/L	50	6/9/2016 1:48:19 PM	R34831
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG
Benzene	ND	1.0		µg/L	1	6/8/2016 6:32:06 PM	R34788
Toluene	ND	1.0		µg/L	1	6/8/2016 6:32:06 PM	R34788
Ethylbenzene	ND	1.0		µg/L	1	6/8/2016 6:32:06 PM	R34788
Xylenes, Total	ND	1.5		µg/L	1	6/8/2016 6:32:06 PM	R34788
Surr: 1,2-Dichloroethane-d4	75.7	70-130		%Rec	1	6/8/2016 6:32:06 PM	R34788
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	6/8/2016 6:32:06 PM	R34788
Surr: Dibromofluoromethane	77.4	70-130		%Rec	1	6/8/2016 6:32:06 PM	R34788
Surr: Toluene-d8	99.1	70-130		%Rec	1	6/8/2016 6:32:06 PM	R34788

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-MW-11

Project: A-7 Bettis

Collection Date: 6/2/2016 2:10:00 PM

Lab ID: 1606148-008

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	46	10		mg/L	20	6/4/2016 1:15:01 AM	R34696
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG
Benzene	ND	1.0		µg/L	1	6/8/2016 7:00:52 PM	R34788
Toluene	ND	1.0		µg/L	1	6/8/2016 7:00:52 PM	R34788
Ethylbenzene	ND	1.0		µg/L	1	6/8/2016 7:00:52 PM	R34788
Xylenes, Total	ND	1.5		µg/L	1	6/8/2016 7:00:52 PM	R34788
Surr: 1,2-Dichloroethane-d4	81.0	70-130		%Rec	1	6/8/2016 7:00:52 PM	R34788
Surr: 4-Bromofluorobenzene	90.4	70-130		%Rec	1	6/8/2016 7:00:52 PM	R34788
Surr: Dibromofluoromethane	79.6	70-130		%Rec	1	6/8/2016 7:00:52 PM	R34788
Surr: Toluene-d8	97.8	70-130		%Rec	1	6/8/2016 7:00:52 PM	R34788

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: GW-082150-060216-SP-DUP

Project: A-7 Bettis

Collection Date: 6/2/2016

Lab ID: 1606148-009

Matrix: AQUEOUS

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	100	10		mg/L	20	6/4/2016 1:39:51 AM	R34696
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG
Benzene	12	1.0		µg/L	1	6/8/2016 7:29:40 PM	R34788
Toluene	ND	1.0		µg/L	1	6/8/2016 7:29:40 PM	R34788
Ethylbenzene	ND	1.0		µg/L	1	6/8/2016 7:29:40 PM	R34788
Xylenes, Total	ND	1.5		µg/L	1	6/8/2016 7:29:40 PM	R34788
Surr: 1,2-Dichloroethane-d4	81.3	70-130		%Rec	1	6/8/2016 7:29:40 PM	R34788
Surr: 4-Bromofluorobenzene	99.4	70-130		%Rec	1	6/8/2016 7:29:40 PM	R34788
Surr: Dibromofluoromethane	85.0	70-130		%Rec	1	6/8/2016 7:29:40 PM	R34788
Surr: Toluene-d8	97.6	70-130		%Rec	1	6/8/2016 7:29:40 PM	R34788

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1606148

Date Reported: 6/15/2016

CLIENT: GHD

Client Sample ID: TRIP BLANK

Project: A-7 Bettis

Collection Date:

Lab ID: 1606148-010

Matrix: TRIP BLANK

Received Date: 6/3/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG
Benzene	ND	1.0		µg/L	1	6/8/2016 7:58:28 PM	R34788
Toluene	ND	1.0		µg/L	1	6/8/2016 7:58:28 PM	R34788
Ethylbenzene	ND	1.0		µg/L	1	6/8/2016 7:58:28 PM	R34788
Xylenes, Total	ND	1.5		µg/L	1	6/8/2016 7:58:28 PM	R34788
Surr: 1,2-Dichloroethane-d4	96.3	70-130		%Rec	1	6/8/2016 7:58:28 PM	R34788
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	1	6/8/2016 7:58:28 PM	R34788
Surr: Dibromofluoromethane	105	70-130		%Rec	1	6/8/2016 7:58:28 PM	R34788
Surr: Toluene-d8	98.3	70-130		%Rec	1	6/8/2016 7:58:28 PM	R34788

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#: 1606148

15-Jun-16

Client: GHD
Project: A-7 Bettis

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R34696		RunNo: 34696							
Prep Date:	Analysis Date: 6/3/2016		SeqNo: 1070149		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: R34696		RunNo: 34696							
Prep Date:	Analysis Date: 6/3/2016		SeqNo: 1070150		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	94.4	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R34707		RunNo: 34707							
Prep Date:	Analysis Date: 6/3/2016		SeqNo: 1070758		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: R34707		RunNo: 34707							
Prep Date:	Analysis Date: 6/3/2016		SeqNo: 1070759		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	93.8	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R34707		RunNo: 34707							
Prep Date:	Analysis Date: 6/3/2016		SeqNo: 1070806		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: R34707		RunNo: 34707							
Prep Date:	Analysis Date: 6/3/2016		SeqNo: 1070807		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	95.1	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1606148

15-Jun-16

Client: GHD
Project: A-7 Bettis

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R34831		RunNo: 34831							
Prep Date:	Analysis Date: 6/9/2016		SeqNo: 1075195		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: R34831		RunNo: 34831							
Prep Date:	Analysis Date: 6/9/2016		SeqNo: 1075196		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.7	90	110			

Qualifiers:

- | | |
|---|---|
| * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix | E Value above quantitation range |
| H Holding times 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#: 1606148

15-Jun-16

Client: GHD
Project: A-7 Bettis

Sample ID 100ng lcs	SampType: LCS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: LCSW	Batch ID: A34748		RunNo: 34748							
Prep Date:	Analysis Date: 6/7/2016		SeqNo: 1072107		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.0	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	8.4		10.00		83.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	8.7		10.00		87.0	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID rb	SampType: MBLK		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: PBW	Batch ID: A34748		RunNo: 34748							
Prep Date:	Analysis Date: 6/7/2016		SeqNo: 1072108		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	8.7		10.00		86.8	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	8.8		10.00		87.8	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID 1606148-001ams	SampType: MS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: GW-082150-060116-	Batch ID: A34748		RunNo: 34748							
Prep Date:	Analysis Date: 6/7/2016		SeqNo: 1072110		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	38	1.0	20.00	20.68	89.1	70	130			
Toluene	20	1.0	20.00	0	99.9	70	130			
Surr: 1,2-Dichloroethane-d4	8.6		10.00		86.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	8.7		10.00		86.5	70	130			
Surr: Toluene-d8	9.9		10.00		99.4	70	130			

Sample ID 1606148-001amsd	SampType: MSD		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: GW-082150-060116-	Batch ID: A34748		RunNo: 34748							
Prep Date:	Analysis Date: 6/7/2016		SeqNo: 1072111		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	38	1.0	20.00	20.68	87.2	70	130	0.950	20	
Toluene	20	1.0	20.00	0	97.7	70	130	2.20	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1606148

15-Jun-16

Client: GHD
Project: A-7 Bettis

Sample ID	1606148-001amsd	SampType:	MSD	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	GW-082150-060116-	Batch ID:	A34748	RunNo:	34748					
Prep Date:		Analysis Date:	6/7/2016	SeqNo:	1072111	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	8.8		10.00		87.9	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130	0	0	
Surr: Dibromofluoromethane	8.6		10.00		86.4	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		98.8	70	130	0	0	

Sample ID	100ng lcs2	SampType:	LCS	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	LCSW	Batch ID:	R34788	RunNo:	34788					
Prep Date:		Analysis Date:	6/8/2016	SeqNo:	1073655	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.6	70	130			
Toluene	19	1.0	20.00	0	94.7	70	130			
Surr: 1,2-Dichloroethane-d4	8.6		10.00		85.6	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.6	70	130			
Surr: Dibromofluoromethane	8.7		10.00		87.2	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Sample ID	rb2	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	R34788	RunNo:	34788					
Prep Date:		Analysis Date:	6/8/2016	SeqNo:	1073656	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	8.5		10.00		84.8	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.3	70	130			
Surr: Dibromofluoromethane	7.2		10.00		71.8	70	130			
Surr: Toluene-d8	10		10.00		99.8	70	130			

Sample ID	1606148-006ams	SampType:	MS	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	GW-082150-060216-	Batch ID:	R34788	RunNo:	34788					
Prep Date:		Analysis Date:	6/8/2016	SeqNo:	1073658	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	68	1.0	20.00	47.25	103	70	130			
Toluene	20	1.0	20.00	0	98.0	70	130			
Surr: 1,2-Dichloroethane-d4	7.3		10.00		72.6	70	130			
Surr: 4-Bromofluorobenzene	7.4		10.00		73.7	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#: 1606148

15-Jun-16

Client: GHD
Project: A-7 Bettis

Sample ID	1606148-006ams		SampType:	MS		TestCode:	EPA Method 8260: Volatiles Short List				
Client ID:	GW-082150-060216-		Batch ID:	R34788		RunNo:	34788				
Prep Date:			Analysis Date:	6/8/2016		SeqNo:	1073658	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: Dibromofluoromethane	7.3		10.00		73.3	70	130				
Surr: Toluene-d8	9.9		10.00		99.4	70	130				

Sample ID	1606148-006amsd		SampType:	MSD		TestCode:	EPA Method 8260: Volatiles Short List				
Client ID:	GW-082150-060216-		Batch ID:	R34788		RunNo:	34788				
Prep Date:			Analysis Date:	6/8/2016		SeqNo:	1073659	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	65	1.0	20.00	47.25	90.9	70	130	3.51	20		
Toluene	20	1.0	20.00	0	98.7	70	130	0.767	20		
Surr: 1,2-Dichloroethane-d4	8.1		10.00		81.0	70	130	0	0		
Surr: 4-Bromofluorobenzene	7.3		10.00		72.9	70	130	0	0		
Surr: Dibromofluoromethane	8.6		10.00		85.8	70	130	0	0		
Surr: Toluene-d8	10		10.00		102	70	130	0	0		

Sample ID	100ng lcs		SampType:	LCS		TestCode:	EPA Method 8260: Volatiles Short List				
Client ID:	LCSW		Batch ID:	A34816		RunNo:	34816				
Prep Date:			Analysis Date:	6/9/2016		SeqNo:	1074490	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	20	1.0	20.00	0	102	70	130				
Toluene	20	1.0	20.00	0	102	70	130				
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.1	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130				
Surr: Dibromofluoromethane	10		10.00		100	70	130				
Surr: Toluene-d8	10		10.00		100	70	130				

Sample ID	rb		SampType:	MBLK		TestCode:	EPA Method 8260: Volatiles Short List				
Client ID:	PBW		Batch ID:	A34816		RunNo:	34816				
Prep Date:			Analysis Date:	6/9/2016		SeqNo:	1074491	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	10		10.00		99.6	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		99.9	70	130				
Surr: Dibromofluoromethane	10		10.00		99.9	70	130				
Surr: Toluene-d8	9.8		10.00		98.0	70	130				

Qualifiers:

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

Sample Log-In Check List

Client Name: GHD

Work Order Number: 1606148

RcptNo: 1

Received by/date: JA 06/03/16

Logged By: Ashley Gallegos 6/3/2016 9:30:00 AM AG

Completed By: Ashley Gallegos 6/3/2016 11:05:50 AM AG

Reviewed By: IO 06/03/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: _____
 (<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	1.0	Good	Yes			

Chain-of-Custody Record

Client: GHD - Albuquerque

Billing Address: 621 Indian School NE

200, Albuquerque, NM, 87110

Phone #: 505-884-0672

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

QC Package:

Standard Level 4 (Full Validation)

Creditation

NELAP Other _____

EDD (Type) _____

Turn-Around Time:

Standard Rush

Project Name:

A-7 Bettis

Project #:

082150

Project Manager:

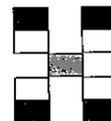
Bernard Bockisch
505-280-0572

Sampler:

Steve Perez

On Ice: Yes No

Sample Temperature: 1.0



HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	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)	PTEX 8260	Chloride 300.0	Air Bubbles (Y or N)
16	1525	GW	GW-082150-060116-SP-MW-1	Vials-3 125mL plastic-1	HCl JCS	110016148 -001												X	X	
16	1622		GW-082150-060116-SP-MW-2			-002														
16	1005		GW-082150-060116-SP-MW-6			-003														
16	1035		GW-082150-060216-SP-MW-7			-004														
	1125		GW-082150-060216-SP-MW-8			-005														
	1140 ^{SP}																			
	1213		GW-082150-060216-SP-MW-9			-006														
	1335		GW-082150-060216-SP-MW-10			-007														
	1410		GW-082150-060216-SP-MW-11			-008														
			GW-082150-060216-SP-DUP			-009														
			Trip Blank			-010														

Relinquished by: Steve Perez

Received by: Michelle Marshall Wallis Date: 06/03/16 Time: 3:52

Remarks:

Relinquished by:

Received by: Jac. Ant Date: 06/03/16 Time: 0930



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

December 19, 2016

Bernie Bockish

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: A-7 Bettis

OrderNo.: 1612684

Dear Bernie Bockish:

Hall Environmental Analysis Laboratory received 10 sample(s) on 12/13/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-1

Project: A-7 Bettis

Collection Date: 12/9/2016 10:15:00 AM

Lab ID: 1612684-001

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	600	50	*	mg/L	100	12/17/2016 12:29:47 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	3.0	1.0		µg/L	1	12/16/2016 12:15:00 AM	R39438
Toluene	ND	1.0		µg/L	1	12/16/2016 12:15:00 AM	R39438
Ethylbenzene	2.0	1.0		µg/L	1	12/16/2016 12:15:00 AM	R39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 12:15:00 AM	R39438
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%Rec	1	12/16/2016 12:15:00 AM	R39438
Surr: 4-Bromofluorobenzene	99.5	70-130		%Rec	1	12/16/2016 12:15:00 AM	R39438
Surr: Dibromofluoromethane	97.2	70-130		%Rec	1	12/16/2016 12:15:00 AM	R39438
Surr: Toluene-d8	100	70-130		%Rec	1	12/16/2016 12:15:00 AM	R39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-2

Project: A-7 Bettis

Collection Date: 12/9/2016 11:20:00 AM

Lab ID: 1612684-002

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	190	5.0		mg/L	10	12/17/2016 1:07:01 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	ND	1.0		µg/L	1	12/16/2016 1:25:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 1:25:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 1:25:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 1:25:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	12/16/2016 1:25:00 AM	SL39438
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	12/16/2016 1:25:00 AM	SL39438
Surr: Dibromofluoromethane	97.4	70-130		%Rec	1	12/16/2016 1:25:00 AM	SL39438
Surr: Toluene-d8	100	70-130		%Rec	1	12/16/2016 1:25:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-6

Project: A-7 Bettis

Collection Date: 12/9/2016 12:05:00 PM

Lab ID: 1612684-003

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	1400	50	*	mg/L	100	12/17/2016 1:44:14 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	16	1.0		µg/L	1	12/16/2016 1:49:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 1:49:00 AM	SL39438
Ethylbenzene	1.3	1.0		µg/L	1	12/16/2016 1:49:00 AM	SL39438
Xylenes, Total	1.5	1.5		µg/L	1	12/16/2016 1:49:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	96.9	70-130		%Rec	1	12/16/2016 1:49:00 AM	SL39438
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	12/16/2016 1:49:00 AM	SL39438
Surr: Dibromofluoromethane	95.8	70-130		%Rec	1	12/16/2016 1:49:00 AM	SL39438
Surr: Toluene-d8	100	70-130		%Rec	1	12/16/2016 1:49:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-7

Project: A-7 Bettis

Collection Date: 12/9/2016 12:35:00 PM

Lab ID: 1612684-004

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	94	5.0		mg/L	10	12/17/2016 1:56:39 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	3.1	1.0		µg/L	1	12/16/2016 2:13:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 2:13:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 2:13:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 2:13:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	99.3	70-130		%Rec	1	12/16/2016 2:13:00 AM	SL39438
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	12/16/2016 2:13:00 AM	SL39438
Surr: Dibromofluoromethane	95.0	70-130		%Rec	1	12/16/2016 2:13:00 AM	SL39438
Surr: Toluene-d8	102	70-130		%Rec	1	12/16/2016 2:13:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-8

Project: A-7 Bettis

Collection Date: 12/9/2016 1:15:00 PM

Lab ID: 1612684-005

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	190	50		mg/L	100	12/17/2016 2:33:52 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	11	1.0		µg/L	1	12/16/2016 2:36:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 2:36:00 AM	SL39438
Ethylbenzene	3.2	1.0		µg/L	1	12/16/2016 2:36:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 2:36:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	98.5	70-130		%Rec	1	12/16/2016 2:36:00 AM	SL39438
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/16/2016 2:36:00 AM	SL39438
Surr: Dibromofluoromethane	95.3	70-130		%Rec	1	12/16/2016 2:36:00 AM	SL39438
Surr: Toluene-d8	102	70-130		%Rec	1	12/16/2016 2:36:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-9

Project: A-7 Bettis

Collection Date: 12/9/2016 2:15:00 PM

Lab ID: 1612684-006

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	43	5.0		mg/L	10	12/17/2016 2:46:17 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	32	1.0		µg/L	1	12/16/2016 3:00:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 3:00:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 3:00:00 AM	SL39438
Xylenes, Total	14	1.5		µg/L	1	12/16/2016 3:00:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	12/16/2016 3:00:00 AM	SL39438
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/16/2016 3:00:00 AM	SL39438
Surr: Dibromofluoromethane	96.2	70-130		%Rec	1	12/16/2016 3:00:00 AM	SL39438
Surr: Toluene-d8	101	70-130		%Rec	1	12/16/2016 3:00:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-11

Project: A-7 Bettis

Collection Date: 12/9/2016 3:00:00 PM

Lab ID: 1612684-007

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	44	5.0		mg/L	10	12/17/2016 3:35:55 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	ND	1.0		µg/L	1	12/16/2016 3:23:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 3:23:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 3:23:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 3:23:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	12/16/2016 3:23:00 AM	SL39438
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/16/2016 3:23:00 AM	SL39438
Surr: Dibromofluoromethane	95.5	70-130		%Rec	1	12/16/2016 3:23:00 AM	SL39438
Surr: Toluene-d8	101	70-130		%Rec	1	12/16/2016 3:23:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-10

Project: A-7 Bettis

Collection Date: 12/9/2016 3:50:00 PM

Lab ID: 1612684-008

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	580	50	*	mg/L	100	12/17/2016 4:13:09 AM	A39481
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	ND	1.0		µg/L	1	12/16/2016 3:47:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 3:47:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 3:47:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 3:47:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	99.7	70-130		%Rec	1	12/16/2016 3:47:00 AM	SL39438
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	12/16/2016 3:47:00 AM	SL39438
Surr: Dibromofluoromethane	96.2	70-130		%Rec	1	12/16/2016 3:47:00 AM	SL39438
Surr: Toluene-d8	100	70-130		%Rec	1	12/16/2016 3:47:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: GW-082150-120916-SP-MW-D

Project: A-7 Bettis

Collection Date: 12/9/2016

Lab ID: 1612684-009

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	3.1	1.0		µg/L	1	12/16/2016 4:11:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 4:11:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 4:11:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 4:11:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	98.9	70-130		%Rec	1	12/16/2016 4:11:00 AM	SL39438
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	12/16/2016 4:11:00 AM	SL39438
Surr: Dibromofluoromethane	95.8	70-130		%Rec	1	12/16/2016 4:11:00 AM	SL39438
Surr: Toluene-d8	102	70-130		%Rec	1	12/16/2016 4:11:00 AM	SL39438

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1612684

Date Reported: 12/19/2016

CLIENT: GHD

Client Sample ID: Trip Blank

Project: A-7 Bettis

Collection Date:

Lab ID: 1612684-010

Matrix: AQUEOUS

Received Date: 12/13/2016 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: BCN
Benzene	ND	1.0		µg/L	1	12/16/2016 4:34:00 AM	SL39438
Toluene	ND	1.0		µg/L	1	12/16/2016 4:34:00 AM	SL39438
Ethylbenzene	ND	1.0		µg/L	1	12/16/2016 4:34:00 AM	SL39438
Xylenes, Total	ND	1.5		µg/L	1	12/16/2016 4:34:00 AM	SL39438
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	12/16/2016 4:34:00 AM	SL39438
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	12/16/2016 4:34:00 AM	SL39438
Surr: Dibromofluoromethane	97.0	70-130		%Rec	1	12/16/2016 4:34:00 AM	SL39438
Surr: Toluene-d8	102	70-130		%Rec	1	12/16/2016 4:34:00 AM	SL39438

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#: 1612684

19-Dec-16

Client: GHD
Project: A-7 Bettis

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A39481		RunNo: 39481							
Prep Date:	Analysis Date: 12/16/2016		SeqNo: 1236362		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: A39481		RunNo: 39481							
Prep Date:	Analysis Date: 12/16/2016		SeqNo: 1236363		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	97.6	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1612684

19-Dec-16

Client: GHD
Project: A-7 Bettis

Sample ID 100ng lcs 2	SampType: LCS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: LCSW	Batch ID: SL39438		RunNo: 39438							
Prep Date:	Analysis Date: 12/15/2016		SeqNo: 1235083		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	20	1.0	20.00	0	97.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.3	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: SL39438		RunNo: 39438							
Prep Date:	Analysis Date: 12/15/2016		SeqNo: 1235084		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	9.7		10.00		96.9	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.7	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID 1612684-001BMS	SampType: MS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: GW-082150-120916-	Batch ID: SL39438		RunNo: 39438							
Prep Date:	Analysis Date: 12/16/2016		SeqNo: 1235093		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	3.012	92.2	70	130			
Toluene	19	1.0	20.00	0	94.2	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.3	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID 1612684-001BMSD	SampType: MSD		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: GW-082150-120916-	Batch ID: SL39438		RunNo: 39438							
Prep Date:	Analysis Date: 12/16/2016		SeqNo: 1235094		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	3.012	91.0	70	130	1.09	20	
Toluene	19	1.0	20.00	0	94.4	70	130	0.223	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1612684

19-Dec-16

Client: GHD
Project: A-7 Bettis

Sample ID	1612684-001BMSD	SampType:	MSD	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	GW-082150-120916-	Batch ID:	SL39438	RunNo:	39438					
Prep Date:		Analysis Date:	12/16/2016	SeqNo:	1235094	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130	0	0	
Surr: Dibromofluoromethane	9.7		10.00		96.8	70	130	0	0	
Surr: Toluene-d8	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 |
| R RPD outside accepted recovery limits | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |



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

Sample Log-In Check List

Client Name: GHD

Work Order Number: 1612684

RcptNo: 1

Received by/date:	LC	12/13/16
Logged By:	Andy Jansson	12/13/2016 10:30:00 AM
Completed By:	ANDY JANSSON	12/13/16
Reviewed By:	JU	12/13/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

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

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.6	Good	Yes			

Chain-of-Custody Record

Client: GHD- Albuquerque

Mailing Address: 6121 Indian School Rd NE Ste 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: A-7 Bettis

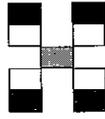
Project #: 082150

Project Manager: Bernie Bockisch
505-280-0572

Sampler: Steven Perez

On Ice: Yes No

Sample Temperature: 2.6



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

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)	8270 (Semi-VOA)	Chloride 300.0	BTEX 8260	Air Bubbles (Y or N)
											X	X	

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
12-9-16	1015	GW	GW-082150-120916-SP-MW-1	Various	HCL	1612684 -001
	1130		GW-082150-120916-SP-MW-2			-002
	1205		GW-082150-120916-SP-MW-3			-003
	1235		GW-082150-120916-SP-MW-7			-004
	1315		GW-082150-120916-SP-MW-8			-005
	1415		GW-082150-120916-SP-MW-9			-006
	1500		GW-082150-120916-SP-MW-11			-007
	1550		GW-082150-120916-SP-MW-10			-008
			GW-082150-120916-SP-DUP			-009
			Trip Blank	4 VOAs	HCL	-010 Re

Date: 12-9-16 Time: 0835 Relinquished by: [Signature] Received by: [Signature] Date: 12/11/16 Time: 0835

Date: 12/12/16 Time: 1900 Relinquished by: [Signature] Received by: [Signature] Date: 12/13/16 Time: 1030

Remarks:

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 noted on the analytical report.