

**3R – 446**

**2014 AGWMR**

**01 / 05 / 2015**



ENTERPRISE PRODUCTS PARTNERS L.P.  
ENTERPRISE PRODUCTS HOLDINGS LLC  
(General Partner)

ENTERPRISE PRODUCTS OPERATING LLC

January 5, 2015

Return Receipt Requested  
7012 3460 0001 7236 2640

Mr. Glenn von Gonten  
New Mexico Energy, Minerals & Natural Resources  
Department - Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: Annual Groundwater Monitoring Report (April and November 2014 Events)  
K-51 Pipeline Release Site  
Off County Road 537  
NE ¼ Section 34 & NW ¼, Sec 35, T26N, R6W  
Rio Arriba County, New Mexico**

Dear Mr. Von Gonten:


Enterprise Field Services, LLC (Enterprise) is submitting two (2) copies of the enclosed report entitled: *Annual Groundwater Monitoring Report (April and November 2014 Events)* for the K-51 release site. This report documents the results of the April and November 2014 groundwater monitoring events conducted at the release site. Remedial actions are being conducted at the site in response to a natural gas condensate release occurring on April 13, 2010.


During these monitoring events, dissolved-phase benzene concentrations exceeding applicable Water Quality Control Commission (WQCC) Groundwater Quality Standards were present at two monitor well locations (MW-1 and MW-19). No measurable accumulation of phase-separated hydrocarbon (PSH) was present at any monitoring location.

Groundwater constituent concentrations at this site are degrading naturally; with the exception of dissolved-phase benzene concentration in downgradient monitor well MW-19. Enterprise is currently working with the Bureau of Land Management (BLM) to obtain approval for an additional monitor well downgradient of MW-19.

Enterprise will continue routine groundwater monitor events, and evaluate whether additional remedial actions are necessary to complete site closure. If you have any questions concerning the enclosed report, please do not hesitate to contact me at (713) 381-2286, or via email at: [drsmith@eprod.com](mailto:drsmith@eprod.com).

Sincerely,

  
David R. Smith, P.G.  
Sr. Environmental Scientist

  
Gregory E. Miller, P.G.  
Supervisor, Environmental

/dep  
Enclosures

cc: Brandon Powell - New Mexico Oil Conservation Division, Aztec, NM  
Bill Liess - Bureau of Land Management, Farmington, NM

ec: Jim Griswold - New Mexico Oil Conservation Division, Santa Fe, NM  
Shari Ketcham - Bureau of Land Management, Farmington, NM  
Liz Scaggs - Apex TITAN Inc., (formerly Southwest Geoscience), Dallas, TX  
Kyle Summers - Apex TITAN Inc. (formerly Southwest Geoscience), Farmington, NM



**ANNUAL GROUNDWATER MONITORING REPORT  
(April and November 2014 Sampling Events)  
OCD RP: 3R-446 (Formerly 3R-206)**

Property:

**K-51 Pipeline Release (3/19/2010)  
Sections 34 and 35, T26N R6W  
Rio Arriba County, New Mexico**

December 12, 2014  
Apex Project No. 7030410G003

Prepared for:

**Enterprise Field Services, LLC  
P.O. Box 4324  
Houston, Texas 77210-4324  
Attn: Mr. David R. Smith, P.G.**

Prepared by:

A handwritten signature in blue ink that reads 'Heather M. Woods'.

---

Heather M. Woods, P.G.  
Senior Project Manager

A handwritten signature in black ink that reads 'Liz Scaggs'.

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Elizabeth Scaggs, P.G.  
Senior Program Manager

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**ANNUAL GROUNDWATER MONITORING REPORT  
(April and November 2014 Sampling Events)  
OCD RP: 3R-446 (Formerly 3R-206)**

**K-51 Pipeline Release (3/19/2010)**  
Sections 34 and 35, T26N R6W  
Rio Arriba County, New Mexico

**Apex Project No. 7030410G003**

## **1.0 INTRODUCTION**

### **1.1 Site Description & Background**

The K-51 pipeline release site is located at the boundary of Sections 34 and 35, Township 26 North, Range 6 West, in Rio Arriba County, New Mexico (36.4465N, 107.4461W), referred to hereinafter as the “Site” or “subject Site”. The Site consists of silty/sandy canyon bottomland with native grasses, and is crossed by a natural gas pipeline operated by Enterprise Field Services, LLC (Enterprise).

On April 13, 2010, approximately 10 barrels of natural gas condensate were released from the Enterprise natural gas gathering pipeline at the Site, due to internal corrosion. Subsequent to the completion of excavation and off-site disposal of petroleum hydrocarbon affected soils, confirmation soil samples were collected from the excavation by Souder, Miller and Associates (SMA). In addition, one (1) groundwater sample was collected from the groundwater which recharged into the excavation. The excavation was then backfilled with unaffected soils.

In June 2010, eight (8) soil borings (BH-1 through BH-8) were advanced on-site by LT Environmental (LTE). Subsequent to advancement, four (4) of the soil borings were completed as groundwater monitoring wells (MW-1 through MW-4) (*Subsurface Investigation Report, dated August 9, 2010 – LTE*). Based on the results of soil and groundwater sampling activities, constituent of concern (COC) concentrations were identified in soil above the New Mexico Energy, Minerals and Natural Resources Department (EMNRD), Oil Conservation Division (OCD) *Remediation Action Levels* (RALs) and in groundwater above the New Mexico Water Quality Control Commission (WQCC) *Groundwater Quality Standards* (GQSS).

During April 2011, nine (9) soil borings/monitoring wells (SB-9, SB-10, MW-11 through MW-14, SB-15, MW-16, and MW-17) were advanced by Apex TITAN, Inc. (formerly Southwest Geoscience (SWG)) in and around the former K-51 release area to further evaluate the extent of dissolved phase COCs in groundwater. Additionally, fifteen (15) injection points were installed to allow in-situ chemical oxidation (ISCO) of the COCs. ISCO activities were performed during May 2011 (*Supplemental Site Investigation and Corrective Action Report, dated October 5, 2011 - SWG*).

Based on the distribution of COCs in groundwater, a former drip valve, tank, or pit may have been a historic source of petroleum hydrocarbon impact to groundwater (OCD reference 3R-446, El Paso Natural Gas, Final Pit Closure) in the vicinity of monitoring well MW-14. During March 2012, three (3) additional soil borings/monitoring wells (MW-18, MW-19 and MW-20) were advanced in and around the former drip valve area to further evaluate the extent COCs in groundwater as a result of the release (*Supplemental Site Investigation & Corrective Action Work Plan, dated April 23, 2012 – SWG*). Soil boring MW-18 was advanced to the west of the former

drip valve, hydrogeologically cross-gradient, and soil borings MW-19 and MW-20 were advanced to the north and northwest of the drip valve, hydrogeologically down-gradient.

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to crude oil/condensate releases, the New Mexico OCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the EMNRD OCD rules, specifically New Mexico Administrative Code (NMAC) 19.15.29 Remediation Plan. These guidance documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

The Site location is depicted on Figure 1 of Appendix A which was reproduced from a portion of the United States Geological Survey (USGS) 7.5-minute series topographic map. A Site Vicinity Map, created from an aerial photograph, is provided as Figure 2, and a Site Map, which indicates the approximate locations of the monitoring wells in relation to pertinent structures and general Site boundaries, is included as Figure 3 of Appendix A.

## **1.2 Scope of Work**

The objective of the groundwater monitoring events was to further evaluate the concentrations of constituents of concern (COCs) in groundwater at the Site.

## **1.3 Standard of Care, Limitations & Reliance**

Apex Companies, LLC's (Apex's) services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. Apex makes no warranties, expressed or implied, as to the services performed hereunder. Additionally, Apex does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services was performed in accordance with the scope of work agreed with the client.

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-Site activities and other services performed under this scope of work and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and Apex cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this scope of services. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. Apex's findings and recommendations are based solely upon data available to Apex at the time of these services.

This report has been prepared for the exclusive use of Enterprise, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the expressed written authorization of Enterprise and Apex. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, the report, and Apex's Agreement. The limitation of liability defined in the agreement is the aggregate limit of Apex's liability to the client.

## **2.0 SAMPLING PROGRAM**

Semi-annual groundwater sampling events were conducted during April and November, 2014 by Aaron Bryant, an Apex environmental professional.

Apex's groundwater sampling program consisted of the following:

Prior to sample collection, Apex gauged the depth to fluids in each monitoring well using an interface probe capable of detecting non-aqueous phase liquids (NAPL). Monitoring wells exhibiting measurable NAPL were not sampled during the completion of the groundwater monitoring event.

Please note, due to the depth of groundwater at monitoring well MW-20, which exceeds the lift capacity of the peristaltic pump, monitoring well MW-20 was purged and sampled utilizing a disposable bailer. In addition, monitoring well MW-18 appears to be silted in and was not sampled during these events

Each monitoring well was micro-purged utilizing low-flow sampling techniques. Low-flow refers to the velocity with which groundwater enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen. It does not necessarily refer to the flow rate of water discharged at the surface which can be affected by flow regulators or restrictions. Water level drawdown provides the best indication of the stress imparted by a given flow-rate for a given hydrological situation. The objective is to pump in a manner that minimizes stress (drawdown) to the system, to the extent practical, taking into account established Site sampling objectives. Flow rates on the order of 0.1 to 0.5 L/min are maintained during sampling activities, using dedicated sampling equipment.

The utilization of low-flow minimal drawdown techniques enables the isolation of the screened interval groundwater from the overlying stagnant casing water. The pump intake is placed within the screened interval such that the groundwater recovered is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone.

Subsequent to the completion of the micro-purge process, one (1) groundwater sample was collected from each monitoring well not observed to contain NAPL. The groundwater samples were collected from each monitoring well once produced groundwater was consistent in color, clarity, pH, dissolved oxygen, oxidation-reduction potential, temperature and conductivity.

Monitoring well MW-20 was purged of three (3) casing volumes utilizing a disposable bailer, and sampled following groundwater recharge.

Groundwater samples were collected in laboratory supplied containers, sealed with custody tape and placed on ice in a cooler secured with a custody seal. The sample coolers and completed chain-of-custody forms were relinquished to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico.

### **3.0 LABORATORY ANALYTICAL PROGRAM**

The groundwater samples collected from the monitoring wells during the groundwater sampling events were analyzed for total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and diesel range organics (DRO) utilizing EPA method SW-846 #8015, and benzene, toluene, ethylbenzene and xylenes (BTEX) utilizing EPA method SW-846 #8021. The containers containing the samples for organic analyses were pre-preserved with HgCl<sub>2</sub>. TPH GRO/GRO analyses were eliminated after the April 2014 sampling event due to the lack of a regulatory driver and the lack of interpretative benefit provided by the resulting data (based on past sampling events).

A summary of the per-event analysis, sample type, sample frequency and EPA-approved methods are presented on the following table.

Analysis	Sample Type	No. of Samples (April/November)	EPA Method
TPH GRO/DRO	Groundwater	12/0	SW-846 8015
BTEX	Groundwater	12/12	SW-846 8021

Laboratory results are summarized in Table 1 included in Appendix B. The executed chain-of-custody form and laboratory data sheets are provided in Appendix C.

#### 4.0 GROUNDWATER FLOW DIRECTION

Each of the monitoring wells has been surveyed for top-of-casing (TOC) elevations. Prior to sample collection, Apex gauged the depth to fluids in each monitoring well. The groundwater flow direction (gradient) at the Site is generally toward the west-northwest. The observed gradient during the April and November 2014 monitoring events averages approximately 0.009 ft/ft across the Site.

Groundwater measurements collected during the April and November 2014 gauging events are presented with TOC elevations in Table 2 (Appendix B). Groundwater gradient maps for the April and November 2014 events are included as Figure 4A and 4B (Appendix A).

#### 5.0 DATA EVALUATION

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to crude oil/condensate related releases, the New Mexico EMNRD OCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the EMNRD/OCD rules, specifically NMAC 19.15.29 *Remediation Plan*. These guidance documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective time.

##### 5.1 Groundwater Samples

Apex compared BTEX concentrations or laboratory reporting limits (RLs) associated with the groundwater samples collected from monitoring wells during the April and November 2014 sampling events to the New Mexico WQCC GQSs; however, the New Mexico WQCC GQSs may not be applicable since the initial groundwater-bearing unit may not be considered an "Underground Source of Drinking Water" in accordance with 19.15.30 NMAC *Remediation* due to elevated Total Dissolved Solids concentrations. The results of the groundwater sample analyses are summarized in Table 1 of Appendix B. Groundwater Quality Standards Exceedance Zone maps are provided as Figures 5A and 5B of Appendix A.

##### April 2014:

##### Benzene, Toluene, Ethylbenzene, and Xylenes

The groundwater samples collected from monitoring wells MW-1 and MW-19 exhibited benzene



concentrations of 23 micrograms per liter ( $\mu\text{g/L}$ ) and 230  $\mu\text{g/L}$ , respectively, which exceeded the WQCC GQS of 10  $\mu\text{g/L}$ . The groundwater samples collected from the remaining monitoring wells exhibited benzene concentrations ranging from below laboratory RLs to 1.4  $\mu\text{g/L}$  (MW-16), which are below the WQCC GQS of 10  $\mu\text{g/L}$ .

The groundwater samples collected from the monitoring wells did not exhibit toluene concentrations above the laboratory RLs, which are below the WQCC GQS of 750  $\mu\text{g/L}$ .

The groundwater samples collected from monitoring wells MW-1, MW-4, and MW-19 exhibited ethylbenzene concentrations ranging from 28  $\mu\text{g/L}$  (MW-1) to 76  $\mu\text{g/L}$  (MW-4), which are below the WQCC GQS of 750  $\mu\text{g/L}$ . The groundwater samples collected from the remaining monitoring wells did not exhibit ethylbenzene concentrations above the laboratory RLs, which are below the WQCC GQS of 750  $\mu\text{g/L}$ .

The groundwater samples collected from monitoring wells MW-1, MW-4, and MW-19 exhibited xylenes concentrations ranging from 14  $\mu\text{g/L}$  (MW-4) to 86  $\mu\text{g/L}$  (MW-1), which are below the WQCC GQS of 620  $\mu\text{g/L}$ . The groundwater samples collected from the remaining monitoring wells did not exhibit xylenes concentrations above the laboratory RLs, which are below the WQCC GQS of 620  $\mu\text{g/L}$ .

#### **TPH Gasoline Range Organics/Diesel Range Organics**

The groundwater samples collected from the monitoring wells during April 2014 exhibited TPH GRO concentrations ranging from <0.050 milligrams per liter ( $\text{mg/L}$ ) to 2.2  $\text{mg/L}$ , and TPH DRO concentrations ranging from <1.0  $\text{mg/L}$  to 10  $\text{mg/L}$ . The highest TPH GRO/DRO concentrations during the April 2014 sampling event were observed in the groundwater sample from monitoring well MW-19 with 2.2  $\text{mg/L}$  GRO and 10  $\text{mg/L}$  DRO.

#### **November 2014:**

#### **Benzene, Toluene, Ethylbenzene, and Xylenes**

The groundwater samples collected from monitoring wells MW-1 and MW-19 exhibited benzene concentrations of 32  $\mu\text{g/L}$  and 260  $\mu\text{g/L}$ , respectively, which exceeded the WQCC GQS of 10  $\mu\text{g/L}$ . The groundwater samples collected from the remaining monitoring wells exhibited benzene concentrations ranging from below laboratory RLs to 1.2  $\mu\text{g/L}$  (MW-16), which are below the WQCC GQS of 10  $\mu\text{g/L}$ .

The groundwater samples collected from the monitoring wells did not exhibit toluene concentrations above the laboratory RLs, which are below the WQCC GQS of 750  $\mu\text{g/L}$ .

The groundwater samples collected from monitoring wells MW-1, MW-4, and MW-19 exhibited ethylbenzene concentrations ranging from 11  $\mu\text{g/L}$  (MW-4) to 75  $\mu\text{g/L}$  (MW-19), which are below the WQCC GQS of 750  $\mu\text{g/L}$ . The groundwater samples collected from the remaining monitoring wells did not exhibit ethylbenzene concentrations above the laboratory RLs, which are below the WQCC GQS of 750  $\mu\text{g/L}$ .

The groundwater samples collected from monitoring wells MW-1, MW-4, and MW-19 exhibited xylenes concentrations ranging from 2.9  $\mu\text{g/L}$  (MW-4) to 61  $\mu\text{g/L}$  (MW-1), which are below the WQCC GQS of 620  $\mu\text{g/L}$ . The groundwater samples collected from the remaining monitoring wells did not exhibit xylenes concentrations above the laboratory RLs, which are below the WQCC GQS of 620  $\mu\text{g/L}$ .

## 6.0 FINDINGS

Apex conducted semi-annual groundwater monitoring events at the K-51 Pipeline release site during April and November 2014. The site is located at the boundary of Sections 34 and 35, Township 26 North, Range 6 West, in Rio Arriba County, New Mexico (36.4465N, 107.4461W). The Site consists of silty/sandy canyon bottomland with native grasses, and is crossed by a natural gas pipeline operated by Enterprise. The objective of the groundwater monitoring events was to further evaluate the concentrations of COCs in groundwater.

- Prior to sample collection, Apex gauged the depth to fluids in each monitoring well using an interface probe capable of detecting LNAPL.
- During the completion of the sampling event, one (1) groundwater sample was collected from each monitoring well utilizing low-flow sampling techniques or purge and sample (disposable bailer) sampling techniques. Monitoring well MW-18 appears to be silted in and was not sampled during these events. Monitoring well MW-18 has not exhibited detectable concentrations of COCs in the past and is up/cross gradient to the COC plume. It is recommended that this well be plugged and abandoned.
- The groundwater flow direction at the Site is generally towards the west-northwest, with an approximate gradient of 0.009 ft/ft across the Site.
- The groundwater samples collected from monitoring wells MW-2, MW-3, MW-4, MW-11, MW-12, MW-13, MW-14, MW-16, MW-17, and MW-20 during the April and November 2014 sampling events did not exhibit benzene, toluene, ethylbenzene, or xylenes concentrations above the respective WQCC GQSs.
- **The groundwater samples collected from monitoring wells MW-1 and MW-19 during the April and November 2014 sampling events exhibited benzene concentrations ranging from 23 µg/L to 260 µg/L, which exceed the WQCC GQS of 10 µg/L.**
- **With the exception of monitoring well MW-19, sampling events at the site have exhibited generally declining COC concentrations. In the source area of the release, concentrations have decreased by two (2) orders of magnitude, and only monitoring wells MW-19 and MW-1 continue to exhibit COC concentrations above the WQCC GQSs.**

## 7.0 RECOMMENDATIONS

Based on the results of groundwater monitoring activities, Apex has the following recommendations:

- Report the groundwater monitoring results to the OCD;
- Continue monitoring groundwater at the Site;
- Install a monitoring well down-gradient of monitoring well MW-19 and plug and abandon monitoring well MW-18;
- **Additional in situ chemical oxidation was previously recommended in the *Supplemental Site Investigation & Corrective Action Work Plan* (SWG – April 23, 2012). However, due to the continual decrease in COC concentrations at the Site,**

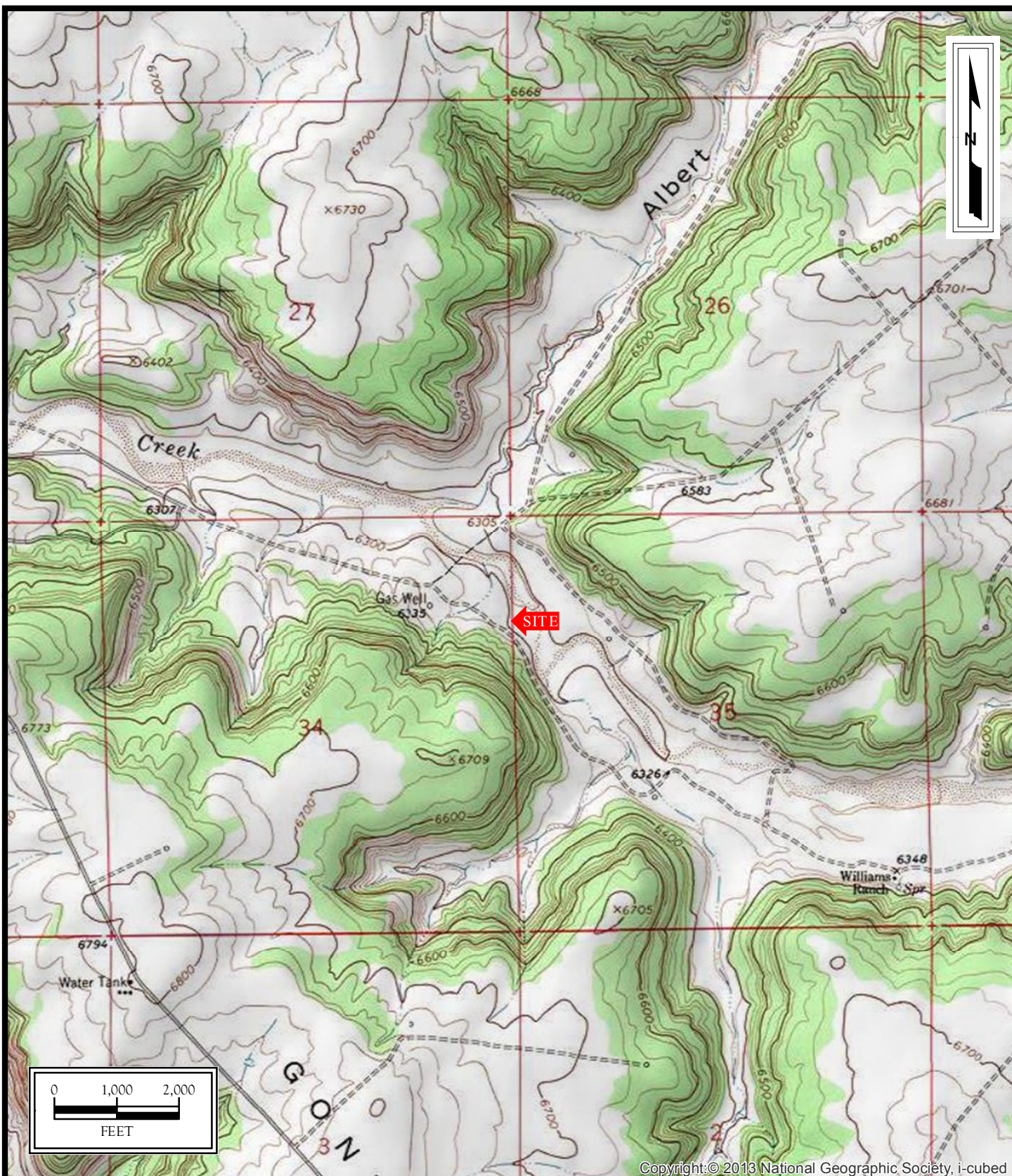
**Apex recommends evaluating groundwater conditions after the installation of the new down-gradient monitoring well prior to performing additional remediation activities.**

## APPENDIX A

### Figures

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**K-51 Pipeline Release**  
 Section 34 and 35 T26N R6W  
 Rio Arriba County, New Mexico  
 36.4465N, 107.4461W

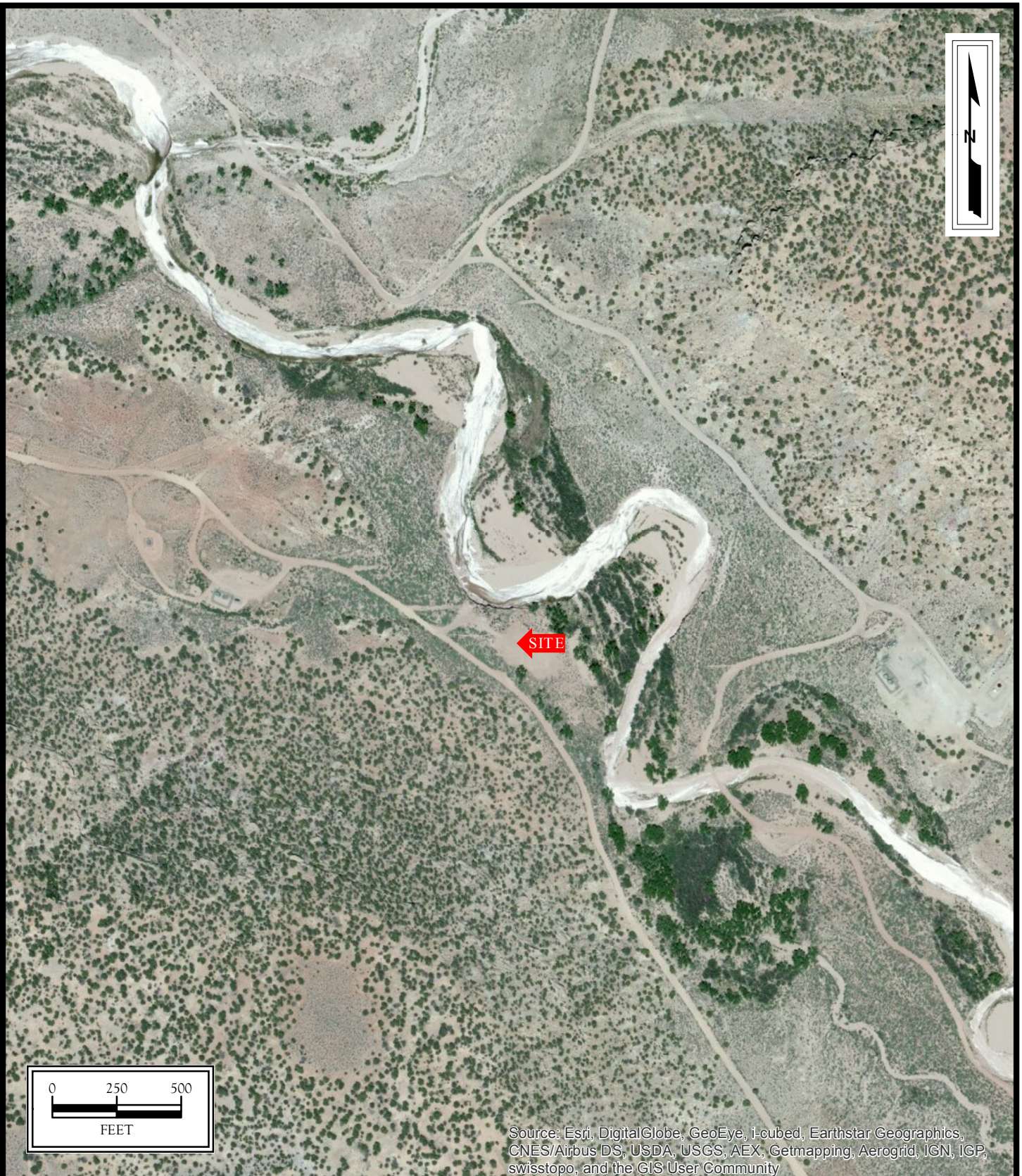
Project No. 7030410G003.001



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**FIGURE 1**  
**Topographic Map**  
 Gonzales Mesa, NM Quadrangle  
 1963





Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**K-51 Pipeline Release**  
Section 34 and 35 T26N R6W  
Rio Arriba County, New Mexico  
36.4465N, 107.4461W

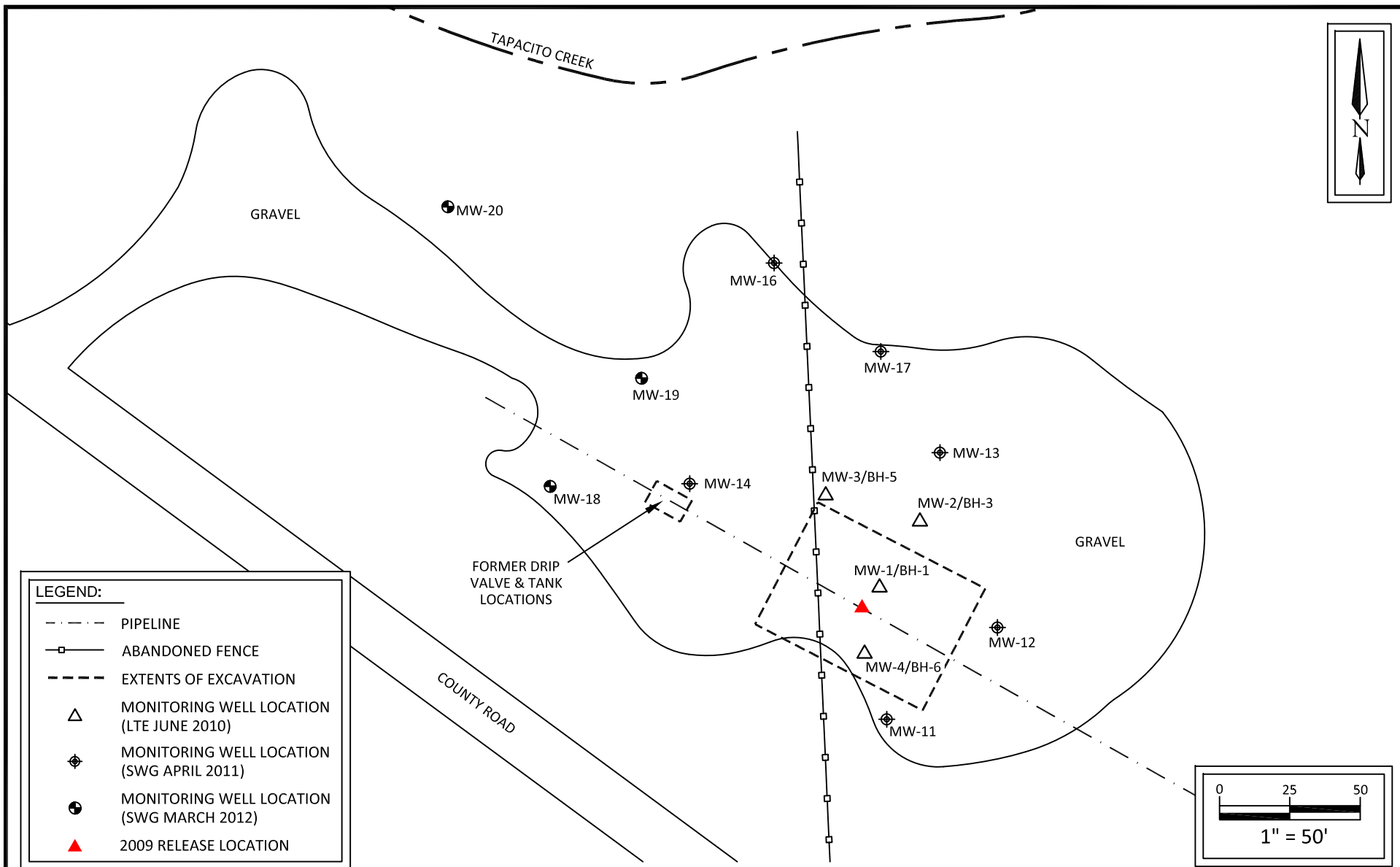
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**FIGURE 2**  
**Site Vicinity Map**





**K-51 Pipeline Release**  
 Section 34 and 35 T26N R6W  
 Rio Arriba County, New Mexico  
 36.4465N, 107.4461W

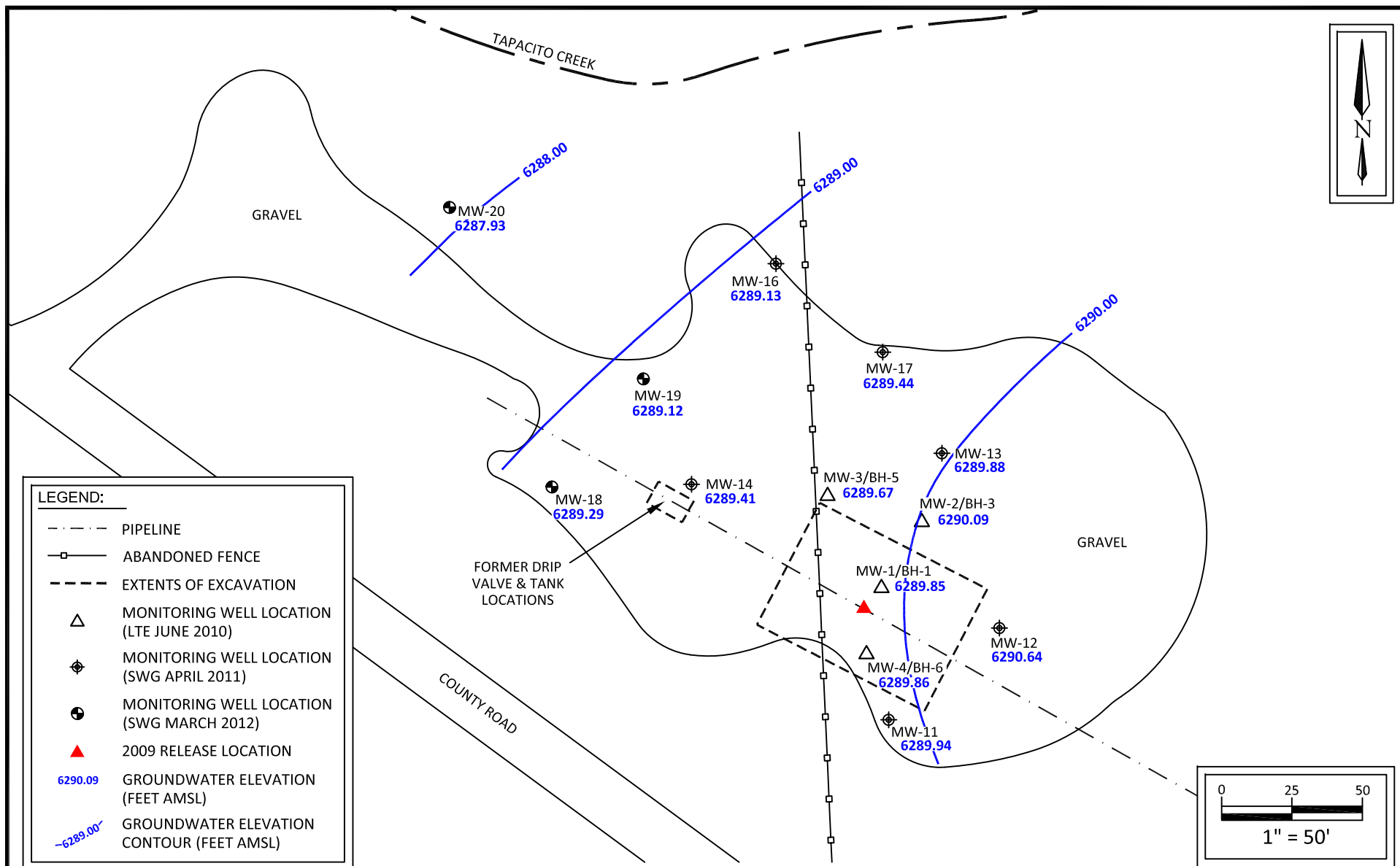
Project No. 7030410G003



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**FIGURE 3**  
**Site Map**



**K-51 Pipeline Release**  
 Section 34 and 35 T26N R6W  
 Rio Arriba County, New Mexico  
 36.4465N, 107.4461W

Project No. 7030410G003

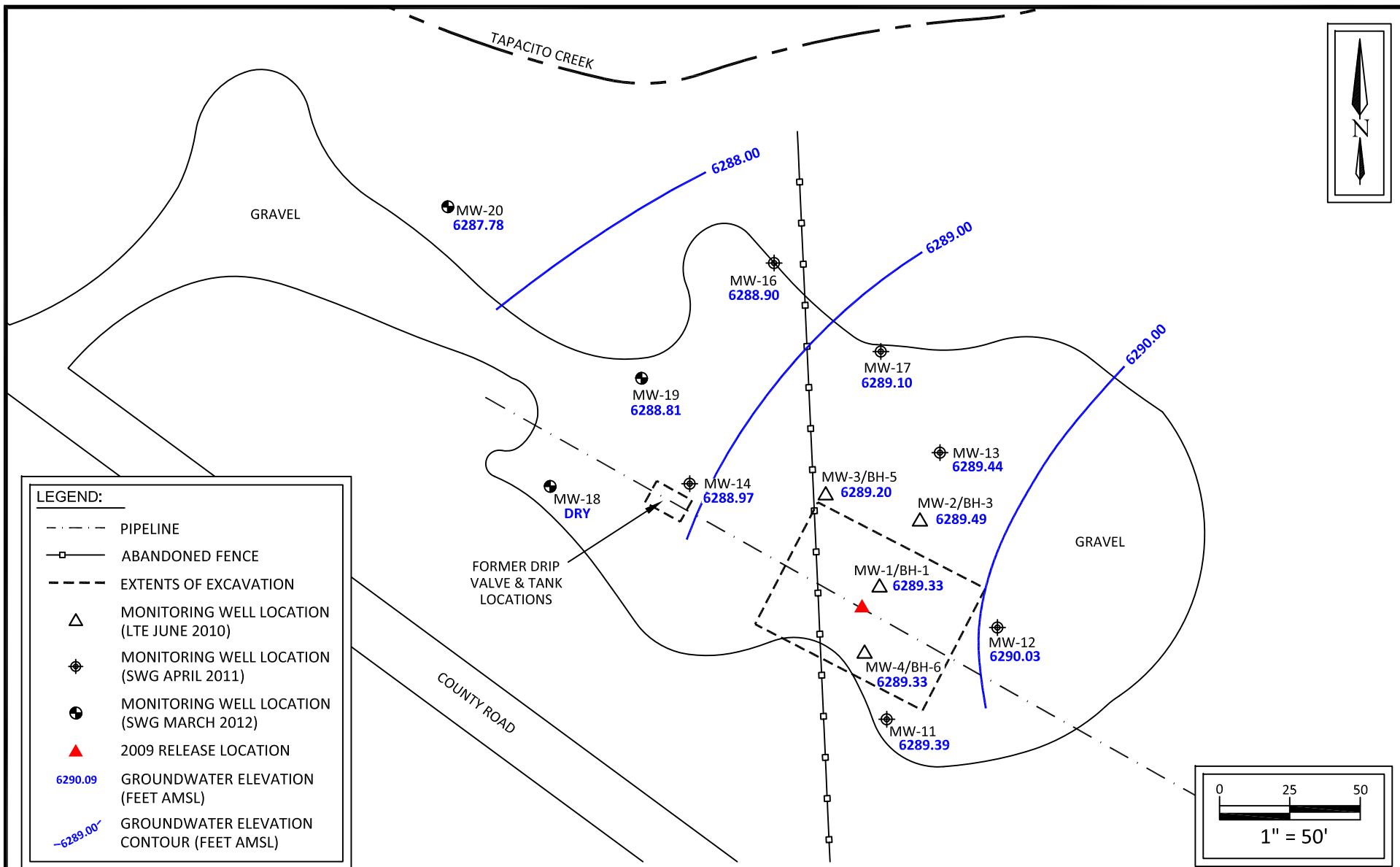


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**FIGURE 4A**  
**Groundwater Gradient Map**  
**April 2014**





**K-51 Pipeline Release**  
 Section 34 and 35 T26N R6W  
 Rio Arriba County, New Mexico  
 36.4465N, 107.4461W

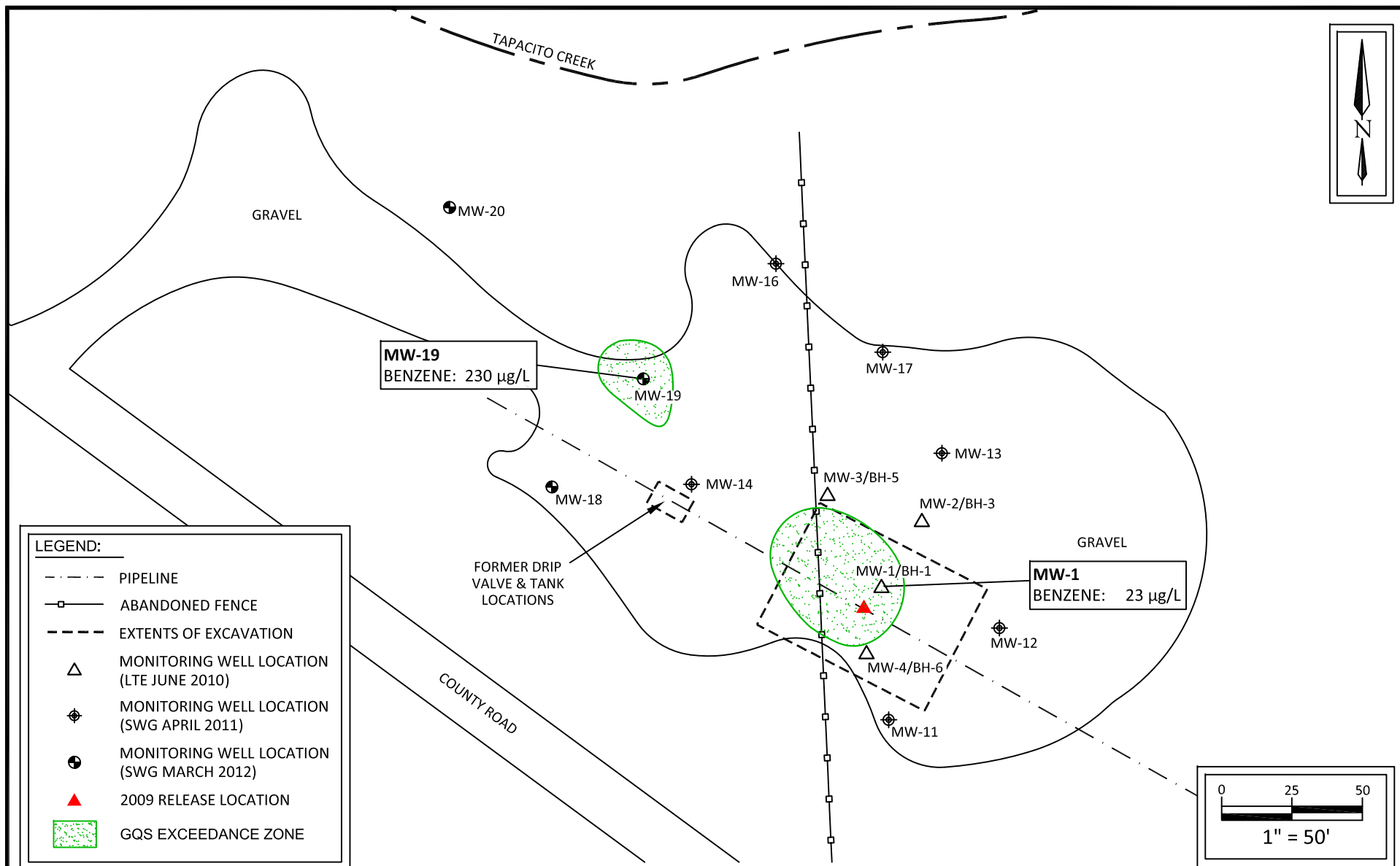
Project No. 7030410G003



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**FIGURE 4B**  
**Groundwater Gradient Map**  
**November 2014**



**K-51 Pipeline Release**  
 Section 34 and 35 T26N R6W  
 Rio Arriba County, New Mexico  
 36.4465N, 107.4461W

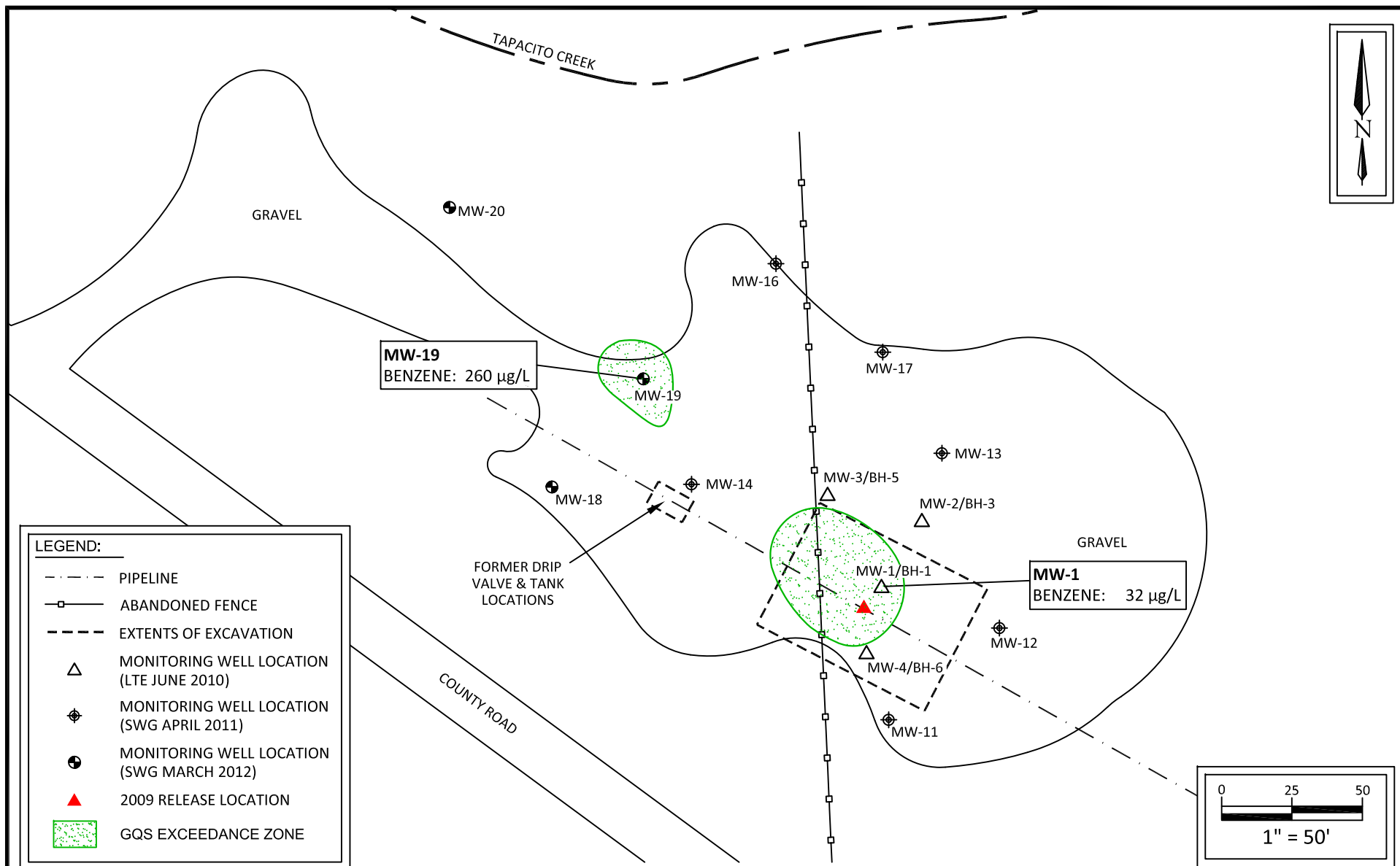
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**FIGURE 5A**  
**Groundwater GQS**  
**Exceedance Zone Map**  
**April 2014**



**K-51 Pipeline Release**  
Section 34 and 35 T26N R6W  
Rio Arriba County, New Mexico  
36.4465N, 107.4461W

Project No. 7030410G003



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**FIGURE 5B**  
**Groundwater GQS**  
**Exceedance Zone Map**  
**November 2014**

## APPENDIX B

### Tables

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**TABLE 1**  
**K-51 Pipeline Release**  
**GROUNDWATER ANALYTICAL SUMMARY**

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
SMA Sample - Open Excavation							
Excavation	4.21.10	7,000	13,000	540	5,200	NA	NA
Monitoring Wells							
MW-1	6.21.10	8,400	1,300	560	4,200	NA	NA
	9.24.10	2,300	28	200	520	8.4	<1.0
	4.21.11	430	<20	120	60	2.1	<1.0
	6.21.11	820	370	33	140	5.1	130
	9.22.11	690	1,200	120	1,200	8.9	30
	12.13.11	260	250	54	650	3.4	<1.0
	3.20.12	280	230	94	550	3.5	<1.0
	6.19.12	300	<5.0	81	96	1.7	<1.0
	9.20.12*	45	3.4	15	23	0.45	<1.0
	12.17.12	34	<1.0	11	16	0.19	<1.0
	3.25.13	41	<1.0	19	32	0.27	<1.0
	6.27.13	24	<1.0	<1.0	36	0.22	<1.0
	10.22.13	39	<1.0	24	13	0.23	<1.0
	12.16.13	10	<1.0	14	11	0.18	<1.0
MW-2	4.18.14	23	<1.0	28	86	0.38	1.1
	11.6.14	32	<1.0	27	61	NA	NA
	6.21.10	200	53	14	96	NA	NA
	9.24.10	2.3	<1.0	<1.0	<2.0	<0.050	<1.0
	4.21.11	3.3	<1.0	<1.0	<2.0	0.065	<1.0
	6.21.11	2.2	<1.0	<1.0	<2.0	<0.050	<1.0
	9.22.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	4.17.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA

**TABLE 1**  
**K-51 Pipeline Release**  
**GROUNDWATER ANALYTICAL SUMMARY**

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
MW-3	6.21.10	640	57	72	1,000	NA	NA
	9.24.10	150	<1.0	16	28	0.48	<1.0
	4.21.11	52	<1.0	17	10	0.25	<1.0
	6.21.11	62	14	13	160	0.67	<1.0
	9.22.11	3	<1.0	8.7	<2.0	0.066	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.20.12	1.3	<1.0	1.9	<2.0	<0.050	<1.0
	6.19.12	3.1	<1.0	1.4	<2.0	<0.050	<1.0
	9.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	4.17.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA
MW-4	6.21.10	3,600	10,000	600	6,600	NA	NA
	9.24.10	870	870	260	1,600	12	1
	4.21.11	670	<20	520	790	6.3	<1.0
	6.21.11	17	22	36	77	0.64	1.1
	9.22.11	62	140	220	820	3.8	1.2
	12.13.11	84	<20	430	490	2.6	<1.0
	3.20.12	36	<20	1,100	1,400	6.5	<1.0
	6.19.12	37	<5.0	250	350	2.2	<1.0
	9.19.12	9.4	1.4	74	97	0.84	<1.0
	12.17.12	<1.0	<1.0	6.2	9.7	0.12	<1.0
	3.25.13	3.2	<1.0	51	55	1.0	<1.0
	6.27.13	3.9	<1.0	61	60	1.3	<1.0
	10.22.13	<1.0	<1.0	12	3.8	0.13	<1.0
	12.13.13	<1.0	<1.0	16	6.2	0.4	<1.0
	4.17.14	<1.0	<1.0	76	14	0.78	<1.0
	11.6.14	<1.0	<1.0	11	2.9	NA	NA

**TABLE 1**  
**K-51 Pipeline Release**  
**GROUNDWATER ANALYTICAL SUMMARY**

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
MW-11	4.21.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.21.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.22.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
MW-12	4.17.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA
	4.21.11	1.9	<1.0	<1.0	<2.0	<0.050	<1.0
	6.21.11	4.6	<1.0	<1.0	<2.0	0.063	<1.0
	9.22.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	1.7	<1.0	<1.0	<2.0	<0.050	<1.0
	9.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	4.17.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA

**TABLE 1**  
**K-51 Pipeline Release**  
**GROUNDWATER ANALYTICAL SUMMARY**

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
MW-13	4.21.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.21.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.22.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.20.12	NS	NS	NS	NS	NS	NS
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.12.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
MW-14	4.17.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA
	4.21.11	2,800	<100	280	720	8.7	<1.0
	6.21.11	470	<10	37	210	1.9	<1.0
	9.22.11	540	<10	100	36	1.7	<1.0
	12.13.11	220	<10	110	<20	1.0	<1.0
	3.20.12	660	<5.0	240	15	2.9	<1.0
	6.19.12	660	<5.0	300	100	3.4	<1.0
	9.20.12*	7.3	<1.0	<1.0	<2.0	0.1	<1.0
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	1.6	<2.0	<0.050	<1.0
	6.27.13	34	4.4	30	130	0.56	1.4
	10.22.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.16.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	4.18.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA



**TABLE 1**  
**K-51 Pipeline Release**  
**GROUNDWATER ANALYTICAL SUMMARY**

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
MW-16	4.21.11	4.4	<2.0	<2.0	<4.0	<0.10	<1.0
	6.21.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.22.11	<1.0	<1.0	<1.0	<2.0	0.065	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	0.12	<1.0
	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	3.1	<1.0	2.1	14	0.19	<1.0
	3.25.13	<1.0	<1.0	<1.0	<1.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.12.13	1	<1.0	<1.0	<2.0	<0.050	<1.0
	4.17.14	1.4	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	1.2	<1.0	<1.0	<2.0	NA	NA
MW-17	6.21.11	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0
	9.22.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.13.11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	10.21.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.12.13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	4.17.14	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14	<1.0	<1.0	<1.0	<2.0	NA	NA

**TABLE 1**  
**K-51 Pipeline Release**  
**GROUNDWATER ANALYTICAL SUMMARY**

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
MW-18	3.20.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.19.12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	9.20.12*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0
	3.25.13	NS	NS	NS	NS	NS	NS
	6.27.13	NS	NS	NS	NS	NS	NS
	10.21.13	NS	NS	NS	NS	NS	NS
	12.12.13	NS	NS	NS	NS	NS	NS
MW-19	4.17.14	NS	NS	NS	NS	NS	NS
	11.6.14	NS	NS	NS	NS	NS	NS
	6.19.12	<b>NAPL</b>	<b>NAPL</b>	<b>NAPL</b>	<b>NAPL</b>	NA	NA
	9.19.12	<b>NAPL</b>	<b>NAPL</b>	<b>NAPL</b>	<b>NAPL</b>	NA	NA
	12.17.12	<b>180</b>	<5.0	5.4	23	2.2	2.6
	3.25.13	<b>160</b>	<5.0	17	<10	1.5	1.4
	6.27.13	<b>390</b>	<1.0	79	66	2.7	5.9
	10.22.13	<b>140</b>	<1.0	<1.0	<2.0	0.51	2.1
MW-20	12.16.13	<b>160</b>	<1.0	37	12	1.4	4.2
	4.18.14	<b>230</b>	<1.0	41	53	2.2	10
	11.6.14	<b>260</b>	<1.0	75	42	NA	NA
	6.19.12	3.4	<1.0	<1.0	<2.0	<0.050	<1.0
	9.20.12*	4.7	<1.0	<1.0	<2.0	<0.050	<1.0
	12.17.12*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	3.25.13*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	6.27.13*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
MW-20	10.22.13*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	12.16.13*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	4.18.14*	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0
	11.6.14*	<1.0	<1.0	<1.0	<2.0	NA	NA

Note: Concentrations in **bold** and yellow exceed the applicable WQCC GQS

\* = Monitoring well purged/sampled utilizing disposable bailer during this event

NA = Not Analyzed

NS = Not Sampled

NE = Not Established

NAPL = Non-aqueous phase liquid

**TABLE 2**  
**K-51 Pipeline Release**  
**GROUNDWATER ELEVATIONS**

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-1	4.21.11	ND	11.80	ND	6300.89	6289.09
	6.21.11	ND	12.16	ND		6288.73
	9.22.11	ND	12.92	ND		6287.97
	12.13.11	ND	12.45	ND		6288.44
	3.20.12	ND	12.13	ND		6288.76
	6.19.12	ND	12.76	ND		6288.13
	9.19.12	ND	13.10	ND		6287.79
	12.17.12	ND	12.33	ND		6288.56
	3.15.13	ND	11.88	ND		6289.01
	6.27.13	ND	12.61	ND		6288.28
	10.22.13	ND	11.71	ND		6289.18
	12.12.13	ND	11.35	ND		6289.54
	4.18.14	ND	11.04	ND		6289.85
	11.6.14	ND	11.56	ND		6289.33
MW-2	4.21.11	ND	10.55	ND	6299.82	6289.27
	6.21.11	ND	11.87	ND		6287.95
	9.22.11	ND	11.86	ND		6287.96
	12.13.11	ND	11.38	ND		6288.44
	3.20.12	ND	10.95	ND		6288.87
	6.19.12	ND	11.64	ND		6288.18
	9.19.12	ND	12.10	ND		6287.72
	12.17.12	ND	11.23	ND		6288.59
	3.15.13	ND	10.65	ND		6289.17
	6.27.13	ND	11.44	ND		6288.38
	10.21.13	ND	10.44	ND		6289.38
	12.12.13	ND	10.09	ND		6289.73
	4.17.14	ND	9.73	ND		6290.09
	11.6.14	ND	10.33	ND		6289.49
MW-3	4.21.11	ND	11.30	ND	6300.22	6288.92
	6.21.11	ND	11.64	ND		6288.58
	9.22.11	ND	12.45	ND		6287.77
	12.13.11	ND	11.89	ND		6288.33
	3.20.12	ND	11.60	ND		6288.62
	6.19.12	ND	12.22	ND		6288.00
	9.19.12	ND	12.53	ND		6287.69
	12.17.12	ND	11.75	ND		6288.47
	3.15.13	ND	11.37	ND		6288.85
	6.27.13	ND	12.06	ND		6288.16
	10.21.13	ND	11.12	ND		6289.10
	12.12.13	ND	10.84	ND		6289.38
	4.17.14	ND	10.55	ND		6289.67
	11.6.14	ND	11.02	ND		6289.20

**TABLE 2**  
**K-51 Pipeline Release**  
**GROUNDWATER ELEVATIONS**

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-4	4.21.11	ND	11.90	ND	6300.91	6289.01
	6.21.11	ND	12.18	ND		6288.73
	9.22.11	ND	12.90	ND		6288.01
	12.13.11	ND	12.41	ND		6288.50
	3.20.12	ND	12.45	ND		6288.46
	6.19.12	ND	12.72	ND		6288.19
	9.19.12	ND	13.09	ND		6287.82
	12.17.12	ND	12.33	ND		6288.58
	3.15.13	ND	11.85	ND		6289.06
	6.27.13	ND	12.60	ND		6288.31
	10.22.13	ND	11.74	ND		6289.17
	12.12.13	ND	11.37	ND		6289.54
	4.17.14	ND	11.05	ND		6289.86
	11.6.14	ND	11.58	ND		6289.33
MW-11	4.21.11	ND	11.98	ND	6301.19	6289.21
	6.21.11	ND	12.40	ND		6288.79
	9.22.11	ND	13.07	ND		6288.12
	12.13.11	ND	12.55	ND		6288.64
	3.20.12	ND	12.26	ND		6288.93
	6.19.12	ND	12.93	ND		6288.26
	9.19.12	ND	13.27	ND		6287.92
	12.17.12	ND	12.51	ND		6288.68
	3.15.13	ND	12.05	ND		6289.14
	6.27.13	ND	12.82	ND		6288.37
	10.21.13	ND	11.94	ND		6289.25
	12.12.13	ND	11.61	ND		6289.58
	4.17.14	ND	11.25	ND		6289.94
	11.6.14	ND	11.80	ND		6289.39
MW-12	4.21.11	ND	8.96	ND	6299.08	6290.12
	6.21.11	ND	9.42	ND		6289.66
	9.22.11	ND	10.82	ND		6288.26
	12.13.11	ND	10.13	ND		6288.95
	3.20.12	ND	9.41	ND		6289.67
	6.19.12	ND	10.09	ND		6288.99
	9.19.12	ND	11.03	ND		6288.05
	12.17.12	ND	10.21	ND		6288.87
	3.15.13	ND	9.26	ND		6289.82
	6.27.13	ND	9.99	ND		6289.09
	10.21.13	ND	9.09	ND		6289.99
	12.12.13	ND	8.78	ND		6290.30
	4.17.14	ND	8.44	ND		6290.64
	11.6.14	ND	9.05	ND		6290.03

**TABLE 2**  
**K-51 Pipeline Release**  
**GROUNDWATER ELEVATIONS**

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-13	4.21.11	ND	9.07	ND	6298.27	6289.20
	6.21.11	ND	9.51	ND		6288.76
	9.22.11	ND	10.15	ND		6288.12
	12.13.11	ND	9.59	ND		6288.68
	3.20.12	ND	9.35	ND		6288.92
	6.19.12	ND	10.09	ND		6288.18
	9.19.12	ND	10.29	ND		6287.98
	12.17.12	ND	9.47	ND		6288.80
	3.15.13	ND	9.11	ND		6289.16
	6.27.13	ND	9.94	ND		6288.33
	10.21.13	ND	8.91	ND		6289.36
	12.12.13	ND	8.57	ND		6289.70
	4.17.14	ND	8.39	ND		6289.88
	11.6.14	ND	8.83	ND		6289.44
MW-14	4.21.11	ND	12.54	ND	6301.20	6288.66
	6.21.11	ND	12.88	ND		6288.32
	9.22.11	ND	13.53	ND		6287.67
	12.13.11	ND	13.11	ND		6288.09
	3.20.12	ND	12.80	ND		6288.40
	6.19.12	ND	13.42	ND		6287.78
	9.19.12	ND	13.70	ND		6287.50
	12.17.12	ND	12.93	ND		6288.27
	3.15.13	ND	12.55	ND		6288.65
	6.27.13	ND	13.26	ND		6287.94
	10.22.13	ND	12.39	ND		6288.81
	12.12.13	ND	12.06	ND		6289.14
	4.18.14	ND	11.79	ND		6289.41
	11.6.14	ND	12.23	ND		6288.97
MW-16	4.21.11	ND	12.06	ND	6299.89	6287.83
	6.21.11	ND	12.26	ND		6287.63
	9.22.11	ND	12.57	ND		6287.32
	12.13.11	ND	12.28	ND		6287.61
	3.20.12	ND	12.24	ND		6287.65
	6.19.12	ND	12.71	ND		6287.18
	9.19.12	ND	12.80	ND		6287.09
	12.17.12	ND	11.90	ND		6287.99
	3.15.13	ND	11.80	ND		6288.09
	6.27.13	ND	12.37	ND		6287.52
	10.21.13	ND	11.32	ND		6288.57
	12.12.13	ND	10.92	ND		6288.97
	4.17.14	ND	10.76	ND		6289.13
	11.6.14	ND	10.99	ND		6288.90

**TABLE 2**  
**K-51 Pipeline Release**  
**GROUNDWATER ELEVATIONS**

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-17	4.21.11	ND	9.90	ND	6298.57	6288.67
	6.21.11	ND	9.56	ND		6289.01
	9.22.11	ND	10.83	ND		6287.74
	12.13.11	ND	10.31	ND		6288.26
	3.20.12	ND	10.12	ND		6288.45
	6.19.12	ND	10.81	ND		6287.76
	9.19.12	ND	10.95	ND		6287.62
	12.17.12	ND	10.13	ND		6288.44
	3.15.13	ND	9.85	ND		6288.72
	6.27.13	ND	10.62	ND		6287.95
	10.21.13	ND	9.61	ND		6288.96
	12.12.13	ND	9.28	ND		6289.29
	4.17.14	ND	9.13	ND		6289.44
	11.6.14	ND	9.47	ND		6289.10
MW-18	3.20.12	ND	16.60	ND	6304.77	6288.17
	6.19.12	ND	17.42	ND		6287.35
	9.19.12	ND	17.45	ND		6287.32
	12.17.12	ND	16.73	ND		6288.04
	3.15.13	ND	NG	ND		NG
	6.27.13	ND	16.86	ND		6287.91
	10.22.13	ND	NG	ND		NG
	12.12.13	ND	NG	ND		NG
	4.17.14	ND	15.48	ND		6289.29
	11.6.14	DRY	DRY	DRY		DRY
MW-19	3.20.12	ND	15.69	ND	6303.80	6288.11
	6.19.12	16.25	16.32	0.07		6287.52
	9.19.12	16.47	16.49	0.02		6287.32
	12.17.12	ND	15.91	ND		6287.89
	3.15.13	ND	15.38	ND		6288.42
	6.27.13	ND	16.19	ND		6287.61
	10.22.13	ND	15.13	ND		6288.67
	12.12.13	ND	14.78	ND		6289.02
	4.18.14	ND	14.68	ND		6289.12
	11.6.14	ND	14.99	ND		6288.81
MW-20	3.20.12	ND	25.82	ND	6312.59	6286.77
	6.19.12	ND	26.30	ND		6286.29
	9.19.12	ND	26.31	ND		6286.28
	12.17.12	ND	25.42	ND		6287.17
	3.15.13	ND	25.38	ND		6287.21
	6.27.13	ND	26.11	ND		6286.48
	10.22.13	ND	24.98	ND		6287.61
	12.12.13	ND	24.57	ND		6288.02
	4.17.14	ND	24.66	ND		6287.93
	11.6.14	ND	24.81	ND		6287.78

BTOC - below top of casing

AMSL - above mean sea level

TOC - top of casing

\* - corrected for presence of phase-separated hydrocarbon using a site-specific density correction factor of 0.63

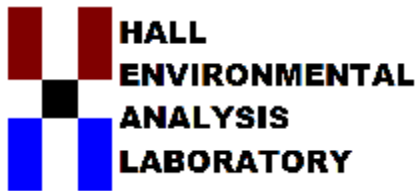
ND - Not Detected

NG - Not Gauged

## APPENDIX C

### Laboratory Data Sheets & Chain of Custody Documentation

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

November 18, 2014

Kyle Summers  
Southwest Geoscience  
606 S. Rio Grande Unit A  
Aztec, NM 87410  
TEL: (903) 821-5603  
FAX (214) 350-2914

RE: K-51

OrderNo.: 1404917

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 8 sample(s) on 4/22/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued April 28, 2014.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-16

**Project:** K-51

**Collection Date:** 4/17/2014 11:00:00 AM

**Lab ID:** 1404917-001

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 7:31:55 PM	12827
Surr: DNOP	102	62.7-145		%REC	1	4/23/2014 7:31:55 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/22/2014 5:05:02 PM	R18156
Surr: BFB	85.4	80.4-118		%REC	1	4/22/2014 5:05:02 PM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	1.4	1.0		µg/L	1	4/22/2014 5:05:02 PM	R18156
Toluene	ND	1.0		µg/L	1	4/22/2014 5:05:02 PM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/22/2014 5:05:02 PM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/22/2014 5:05:02 PM	R18156
Surr: 4-Bromofluorobenzene	98.4	82.9-139		%REC	1	4/22/2014 5:05:02 PM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**Date Reported: **11/18/2014****CLIENT:** Southwest Geoscience**Client Sample ID:** MW-17**Project:** K-51**Collection Date:** 4/17/2014 11:55:00 AM**Lab ID:** 1404917-002**Matrix:** AQUEOUS**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 7:53:57 PM	12827
Surr: DNOP	80.2	62.7-145		%REC	1	4/23/2014 7:53:57 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/22/2014 6:35:25 PM	R18156
Surr: BFB	86.3	80.4-118		%REC	1	4/22/2014 6:35:25 PM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/22/2014 6:35:25 PM	R18156
Toluene	ND	1.0		µg/L	1	4/22/2014 6:35:25 PM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/22/2014 6:35:25 PM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/22/2014 6:35:25 PM	R18156
Surr: 4-Bromofluorobenzene	100	82.9-139		%REC	1	4/22/2014 6:35:25 PM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-13

**Project:** K-51

**Collection Date:** 4/17/2014 1:10:00 PM

**Lab ID:** 1404917-003

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 8:16:00 PM	12827
Surr: DNOP	76.2	62.7-145		%REC	1	4/23/2014 8:16:00 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/22/2014 7:05:34 PM	R18156
Surr: BFB	88.0	80.4-118		%REC	1	4/22/2014 7:05:34 PM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/22/2014 7:05:34 PM	R18156
Toluene	ND	1.0		µg/L	1	4/22/2014 7:05:34 PM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/22/2014 7:05:34 PM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/22/2014 7:05:34 PM	R18156
Surr: 4-Bromofluorobenzene	101	82.9-139		%REC	1	4/22/2014 7:05:34 PM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 3 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-12

**Project:** K-51

**Collection Date:** 4/17/2014 1:55:00 PM

**Lab ID:** 1404917-004

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 8:38:01 PM	12827
Surr: DNOP	75.5	62.7-145		%REC	1	4/23/2014 8:38:01 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/22/2014 7:35:55 PM	R18156
Surr: BFB	88.7	80.4-118		%REC	1	4/22/2014 7:35:55 PM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/22/2014 7:35:55 PM	R18156
Toluene	ND	1.0		µg/L	1	4/22/2014 7:35:55 PM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/22/2014 7:35:55 PM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/22/2014 7:35:55 PM	R18156
Surr: 4-Bromofluorobenzene	102	82.9-139		%REC	1	4/22/2014 7:35:55 PM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 4 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-11

**Project:** K-51

**Collection Date:** 4/17/2014 2:45:00 PM

**Lab ID:** 1404917-005

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 8:59:56 PM	12827
Surr: DNOP	73.6	62.7-145		%REC	1	4/23/2014 8:59:56 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/22/2014 11:07:12 PM	R18156
Surr: BFB	85.6	80.4-118		%REC	1	4/22/2014 11:07:12 PM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/22/2014 11:07:12 PM	R18156
Toluene	ND	1.0		µg/L	1	4/22/2014 11:07:12 PM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/22/2014 11:07:12 PM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/22/2014 11:07:12 PM	R18156
Surr: 4-Bromofluorobenzene	97.9	82.9-139		%REC	1	4/22/2014 11:07:12 PM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-4

**Project:** K-51

**Collection Date:** 4/17/2014 3:45:00 PM

**Lab ID:** 1404917-006

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 9:43:51 PM	12827
Surr: DNOP	82.1	62.7-145		%REC	1	4/23/2014 9:43:51 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	0.78	0.050		mg/L	1	4/22/2014 11:37:25 PM	R18156
Surr: BFB	204	80.4-118	S	%REC	1	4/22/2014 11:37:25 PM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/22/2014 11:37:25 PM	R18156
Toluene	ND	1.0		µg/L	1	4/22/2014 11:37:25 PM	R18156
Ethylbenzene	76	1.0		µg/L	1	4/22/2014 11:37:25 PM	R18156
Xylenes, Total	14	2.0		µg/L	1	4/22/2014 11:37:25 PM	R18156
Surr: 4-Bromofluorobenzene	180	82.9-139	S	%REC	1	4/22/2014 11:37:25 PM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 6 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-2

**Project:** K-51

**Collection Date:** 4/17/2014 4:40:00 PM

**Lab ID:** 1404917-007

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/24/2014 2:42:55 PM	12827
Surr: DNOP	119	62.7-145		%REC	1	4/24/2014 2:42:55 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/23/2014 12:07:39 AM	R18156
Surr: BFB	86.6	80.4-118		%REC	1	4/23/2014 12:07:39 AM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/23/2014 12:07:39 AM	R18156
Toluene	ND	1.0		µg/L	1	4/23/2014 12:07:39 AM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/23/2014 12:07:39 AM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/23/2014 12:07:39 AM	R18156
Surr: 4-Bromofluorobenzene	101	82.9-139		%REC	1	4/23/2014 12:07:39 AM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404917**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-3

**Project:** K-51

**Collection Date:** 4/17/2014 6:00:00 PM

**Lab ID:** 1404917-008

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/24/2014 3:05:00 PM	12827
Surr: DNOP	119	62.7-145		%REC	1	4/24/2014 3:05:00 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/23/2014 12:37:49 AM	R18156
Surr: BFB	85.5	80.4-118		%REC	1	4/23/2014 12:37:49 AM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/23/2014 12:37:49 AM	R18156
Toluene	ND	1.0		µg/L	1	4/23/2014 12:37:49 AM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/23/2014 12:37:49 AM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/23/2014 12:37:49 AM	R18156
Surr: 4-Bromofluorobenzene	96.8	82.9-139		%REC	1	4/23/2014 12:37:49 AM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 8 of 11
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404917

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	MB-12827		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW		Batch ID: 12827		RunNo: 18177					
Prep Date:	4/22/2014		Analysis Date: 4/24/2014		SeqNo: 524763		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Surr: DNOP	1.2		1.000		118	62.7	145			

Sample ID	LCS-12827		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSW		Batch ID: 12827		RunNo: 18177					
Prep Date:	4/22/2014		Analysis Date: 4/24/2014		SeqNo: 524791		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.0	1.0	5.000	0	121	78.6	146			
Surr: DNOP	0.60		0.5000		120	62.7	145			

Sample ID	LCSD-12827		SampType: LCSD		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSS02		Batch ID: 12827		RunNo: 18177					
Prep Date:	4/22/2014		Analysis Date: 4/24/2014		SeqNo: 524860		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.7	1.0	5.000	0	93.5	78.6	146	25.4	26.5	
Surr: DNOP	0.45		0.5000		90.5	62.7	145	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404917

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	R18156	RunNo:	18156					
Prep Date:		Analysis Date:	4/22/2014	SeqNo:	523939	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	17		20.00		86.4	80.4	118			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	R18156	RunNo:	18156					
Prep Date:		Analysis Date:	4/22/2014	SeqNo:	523940	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.52	0.050	0.5000	0	105	80	120			
Surr: BFB	18		20.00		88.9	80.4	118			

Sample ID	1404917-002AMS	SampType:	MS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	MW-17	Batch ID:	R18156	RunNo:	18156					
Prep Date:		Analysis Date:	4/22/2014	SeqNo:	523956	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0	107	79	121			
Surr: BFB	19		20.00		93.8	80.4	118			

Sample ID	1404917-002AMSD	SampType:	MSD	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	MW-17	Batch ID:	R18156	RunNo:	18156					
Prep Date:		Analysis Date:	4/22/2014	SeqNo:	523958	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	100	79	121	6.69	20	
Surr: BFB	18		20.00		90.7	80.4	118	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404917

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	<b>5ML RB</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>PBW</b>		Batch ID:	<b>R18156</b>		RunNo:	<b>18156</b>			
Prep Date:			Analysis Date:	<b>4/22/2014</b>		SeqNo:	<b>523997</b>	Units:	<b>µg/L</b>	
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	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		101	82.9	139			

Sample ID	<b>100NG BTEX LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>LCSW</b>		Batch ID:	<b>R18156</b>		RunNo:	<b>18156</b>			
Prep Date:			Analysis Date:	<b>4/22/2014</b>		SeqNo:	<b>524000</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	80	120			
Toluene	21	1.0	20.00	0	103	80	120			
Ethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	63	2.0	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	82.9	139			

Sample ID	<b>1404917-001AMS</b>		SampType:	<b>MS</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>MW-16</b>		Batch ID:	<b>R18156</b>		RunNo:	<b>18156</b>			
Prep Date:			Analysis Date:	<b>4/22/2014</b>		SeqNo:	<b>524008</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	1.366	109	71	129			
Toluene	22	1.0	20.00	0	109	68.4	135			
Ethylbenzene	22	1.0	20.00	0	108	69.4	135			
Xylenes, Total	66	2.0	60.00	0	110	72.4	135			
Surr: 4-Bromofluorobenzene	21		20.00		103	82.9	139			

Sample ID	<b>1404917-001AMSD</b>		SampType:	<b>MSD</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>MW-16</b>		Batch ID:	<b>R18156</b>		RunNo:	<b>18156</b>			
Prep Date:			Analysis Date:	<b>4/22/2014</b>		SeqNo:	<b>524009</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	1.366	105	71	129	3.39	20	
Toluene	21	1.0	20.00	0	106	68.4	135	2.75	20	
Ethylbenzene	21	1.0	20.00	0	105	69.4	135	3.17	20	
Xylenes, Total	64	2.0	60.00	0	107	72.4	135	3.45	20	
Surr: 4-Bromofluorobenzene	21		20.00		103	82.9	139	0	0	

### Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

## Sample Log-In Check List

Client Name: Southwest Geoscience

Work Order Number: 1404917

RcptNo: 1

Received by/date:

C.S.

04/22/14

Logged By: Ashley Gallegos

4/22/2014 10:00:00 AM

*AG*

Completed By: Ashley Gallegos

4/22/2014 11:11:01 AM

*AG*

Reviewed By:

*AG* / C.S.

04/22/14

### Chain of Custody

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

### Log In

4. Was an attempt made to cool the samples? Yes ✓ No NA  
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ✓ No NA  
6. Sample(s) in proper container(s)? Yes ✓ No  
7. Sufficient sample volume for indicated test(s)? Yes ✓ No  
8. Are samples (except VOA and ONG) properly preserved? Yes ✓ No  
9. Was preservative added to bottles? Yes No ✓ NA  
10. VOA vials have zero headspace? Yes ✓ No No VOA Vials  
11. Were any sample containers received broken? Yes No ✓  
12. Does paperwork match bottle labels?  
(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	2.9	Good	Not Present			

# CHAIN OF CUSTODY RECORD

<b>Southwest GEOSCIENCE</b> Environmental & Hydrogeologic Consultants				Laboratory: <u>HALL ABO</u> Address: _____ Contact: <u>FREEMAN</u> Phone: _____ PO/SO #: _____				ANALYSIS REQUESTED <u>TPH SOLS DRUGS</u>				Lab use only Due Date: _____ Temp. of coolers when received (C°): <u>2.90</u> 1 2 3 4 5 Page <u>1</u> of <u>1</u>																	
Project Manager <u>Kyle Summers</u> Sampler's Name <u>AARON BRYANT</u>				Project Name <u>K-51</u> No/Type of Containers _____				Sampler's Signature <u>[Signature]</u>				Lab Sample ID (Lab Use Only) <u>1404917-001</u> <u>-002</u> <u>-003</u> <u>-004</u> <u>-005</u> <u>-006</u> <u>-007</u> <u>-008</u>																	
Proj. No.	Matrix	Date	Time	Identifying Marks of Sample(s)	Depth	Depth	Depth	VOA	A/G	250 ml	P/O																		
04106003	W	4-17-14	1100	X MW-16				5				X	X																
	W		1155	X MW-17				5				X	X																
	W		1310	X MW-13				5				X	X																
	W		1355	X MW-12				5				X	X																
	W		1445	X MW-11				5				X	X																
	W		1545	X MW-4				5				X	X																
	W		1640	X MW-2				5				X	X																
	W		1800	X MW-3				5				X	X																
<u>NES</u> <u>A13</u>																													
Turn around time <input checked="" type="checkbox"/> Normal <input type="checkbox"/> 25% Rush <input type="checkbox"/> 50% Rush <input type="checkbox"/> 100% Rush																													
Relinquished by (Signature) <u>[Signature]</u>				Date: <u>4/18/14</u> Time: <u>0815</u>				Received by (Signature) <u>[Signature]</u>				Date: <u>4/18/14</u> Time: <u>0815</u>																	
Relinquished by (Signature) <u>[Signature]</u>				Date: <u>4/18/14</u> Time: <u>1120</u>				Received by (Signature) <u>[Signature]</u>				Date: <u>4/18/14</u> Time: <u>1120</u>																	
Relinquished by (Signature) <u>[Signature]</u>				Date: <u>4/21/14</u> Time: <u>1740</u>				Received by (Signature) <u>[Signature]</u>				Date: <u>4/22/14</u> Time: <u>1000</u>																	
Relinquished by (Signature) <u>[Signature]</u>				Date: _____ Time: _____				Received by (Signature) _____				Date: _____ Time: _____																	
Matrix Container <u>WW - Wastewater</u> <u>VOA - 40 ml vial</u>														W - Water A/G - Amber / Or Glass 1 Liter				S - Soil SD - Solid 250 ml - Glass wide mouth				L - Liquid A - Air Bag P/O - Plastic or other				C - Charcoal tube SL - sludge O - Oil			

\$97 / Sample

Temp. CS 04/22/14



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

November 18, 2014

Kyle Summers

Southwest Geoscience  
606 S. Rio Grande Unit A  
Aztec, NM 87410  
TEL: (903) 821-5603  
FAX (214) 350-2914

RE: K-51

OrderNo.: 1404918

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 4 sample(s) on 4/22/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued May 1, 2014.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404918**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-1

**Project:** K-51

**Collection Date:** 4/18/2014 10:55:00 AM

**Lab ID:** 1404918-001

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	1.1	1.0		mg/L	1	4/24/2014 3:27:09 PM	12827
Surr: DNOP	117	62.7-145		%REC	1	4/24/2014 3:27:09 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	0.38	0.050		mg/L	1	4/23/2014 1:07:56 AM	R18156
Surr: BFB	103	80.4-118		%REC	1	4/23/2014 1:07:56 AM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	23	1.0		µg/L	1	4/23/2014 1:07:56 AM	R18156
Toluene	ND	1.0		µg/L	1	4/23/2014 1:07:56 AM	R18156
Ethylbenzene	28	1.0		µg/L	1	4/23/2014 1:07:56 AM	R18156
Xylenes, Total	86	2.0		µg/L	1	4/23/2014 1:07:56 AM	R18156
Surr: 4-Bromofluorobenzene	116	82.9-139		%REC	1	4/23/2014 1:07:56 AM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404918**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-14

**Project:** K-51

**Collection Date:** 4/18/2014 12:00:00 PM

**Lab ID:** 1404918-002

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/23/2014 11:11:29 PM	12827
Surr: DNOP	106	62.7-145		%REC	1	4/23/2014 11:11:29 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/23/2014 1:37:58 AM	R18156
Surr: BFB	86.4	80.4-118		%REC	1	4/23/2014 1:37:58 AM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/23/2014 1:37:58 AM	R18156
Toluene	ND	1.0		µg/L	1	4/23/2014 1:37:58 AM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/23/2014 1:37:58 AM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/23/2014 1:37:58 AM	R18156
Surr: 4-Bromofluorobenzene	99.7	82.9-139		%REC	1	4/23/2014 1:37:58 AM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 8
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404918**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-19

**Project:** K-51

**Collection Date:** 4/18/2014 1:00:00 PM

**Lab ID:** 1404918-003

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	10	1.0		mg/L	1	4/23/2014 11:33:23 PM	12827
Surr: DNOP	89.4	62.7-145		%REC	1	4/23/2014 11:33:23 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	2.2	0.050		mg/L	1	4/23/2014 2:08:14 AM	R18156
Surr: BFB	336	80.4-118	S	%REC	1	4/23/2014 2:08:14 AM	R18156
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	230	5.0		µg/L	5	4/23/2014 3:16:18 PM	R18173
Toluene	ND	1.0		µg/L	1	4/23/2014 2:08:14 AM	R18156
Ethylbenzene	41	1.0		µg/L	1	4/23/2014 2:08:14 AM	R18156
Xylenes, Total	53	2.0		µg/L	1	4/23/2014 2:08:14 AM	R18156
Surr: 4-Bromofluorobenzene	137	82.9-139		%REC	1	4/23/2014 2:08:14 AM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1404918**

Date Reported: **11/18/2014**

**CLIENT:** Southwest Geoscience

**Client Sample ID:** MW-20

**Project:** K-51

**Collection Date:** 4/18/2014 1:25:00 PM

**Lab ID:** 1404918-004

**Matrix:** AQUEOUS

**Received Date:** 4/22/2014 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/24/2014 3:49:15 PM	12827
Surr: DNOP	121	62.7-145		%REC	1	4/24/2014 3:49:15 PM	12827
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/25/2014 7:31:19 PM	R18223
Surr: BFB	87.2	80.4-118		%REC	1	4/25/2014 7:31:19 PM	R18223
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	4/23/2014 3:08:33 AM	R18156
Toluene	ND	1.0		µg/L	1	4/23/2014 3:08:33 AM	R18156
Ethylbenzene	ND	1.0		µg/L	1	4/23/2014 3:08:33 AM	R18156
Xylenes, Total	ND	2.0		µg/L	1	4/23/2014 3:08:33 AM	R18156
Surr: 4-Bromofluorobenzene	99.7	82.9-139		%REC	1	4/23/2014 3:08:33 AM	R18156

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 4 of 8
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404918

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	MB-12827		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW		Batch ID: 12827		RunNo: 18177					
Prep Date:	4/22/2014		Analysis Date: 4/24/2014		SeqNo: 524763		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Surr: DNOP	1.2		1.000		118	62.7	145			

Sample ID	LCS-12827		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSW		Batch ID: 12827		RunNo: 18177					
Prep Date:	4/22/2014		Analysis Date: 4/24/2014		SeqNo: 524791		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.0	1.0	5.000	0	121	78.6	146			
Surr: DNOP	0.60		0.5000		120	62.7	145			

Sample ID	LCSD-12827		SampType: LCSD		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSS02		Batch ID: 12827		RunNo: 18177					
Prep Date:	4/22/2014		Analysis Date: 4/24/2014		SeqNo: 524860		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.7	1.0	5.000	0	93.5	78.6	146	25.4	26.5	
Surr: DNOP	0.45		0.5000		90.5	62.7	145	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404918

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	R18156	RunNo:	18156					
Prep Date:		Analysis Date:	4/22/2014	SeqNo:	523939	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	17		20.00		86.4	80.4	118			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	R18156	RunNo:	18156					
Prep Date:		Analysis Date:	4/22/2014	SeqNo:	523940	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.52	0.050	0.5000	0	105	80	120			
Surr: BFB	18		20.00		88.9	80.4	118			

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	R18173	RunNo:	18173					
Prep Date:		Analysis Date:	4/23/2014	SeqNo:	524582	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	18		20.00		87.5	80.4	118			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	R18173	RunNo:	18173					
Prep Date:		Analysis Date:	4/23/2014	SeqNo:	524583	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	18		20.00		91.3	80.4	118			

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	R18223	RunNo:	18223					
Prep Date:		Analysis Date:	4/25/2014	SeqNo:	526137	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	17		20.00		85.8	80.4	118			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	R18223	RunNo:	18223					
Prep Date:		Analysis Date:	4/25/2014	SeqNo:	526138	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0	105	80	120			
Surr: BFB	18		20.00		91.8	80.4	118			

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404918

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	5ML RB	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles						
Client ID:	PBW	Batch ID: R18156		RunNo: 18156						
Prep Date:		Analysis Date: 4/22/2014		SeqNo: 523997		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	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		101	82.9	139			

Sample ID	100NG BTEX LCS		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSW		Batch ID: R18156		RunNo: 18156					
Prep Date:			Analysis Date: 4/22/2014		SeqNo: 524000		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	80	120			
Toluene	21	1.0	20.00	0	103	80	120			
Ethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	63	2.0	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	82.9	139			

Sample ID	5ML RB		SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	PBW		Batch ID:	R18173		RunNo:	18173				
Prep Date:			Analysis Date:	4/23/2014		SeqNo:	524603	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	1.0									
Surr: 4-Bromofluorobenzene	20		20.00		99.5	82.9	139				

Sample ID	100NG BTEX LCS		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSW		Batch ID: R18173		RunNo: 18173					
Prep Date:			Analysis Date: 4/23/2014		SeqNo: 524609		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	82.9	139			

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBW		Batch ID: R18223		RunNo: 18223					
Prep Date:			Analysis Date: 4/25/2014		SeqNo: 526174		Units: %REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	19		20.00		94.3	82.9	139			

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404918

18-Nov-14

Client: Southwest Geoscience

Project: K-51

Sample ID	100NG BTEX LCS	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSW	Batch ID:	R18223	RunNo:	18223					
Prep Date:		Analysis Date:	4/25/2014	SeqNo:	526175	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	20		20.00		102	82.9	139			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

## Sample Log-In Check List

Client Name: Southwest Geoscience

Work Order Number: 1404918

RcptNo: 1

Received by/date:

C.S.

04/22/14

Logged By:

Ashley Gallegos

4/22/2014 10:00:00 AM

*AG*

Completed By:

Ashley Gallegos

4/22/2014 11:49:08 AM

*AG*

Reviewed By:

*AG* / CS

04/22/14

### Chain of Custody

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

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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	2.9	Good	Yes			

# CHAIN OF CUSTODY RECORD

## Southwest GEOSCIENCE

Environmental & Hydrogeologic Consultants

Office Location AZTEC, NM

Project Manager Kyle Summers

Sampler's Name Aaron Bryant

Laboratory: HALL

Address: ABO

Contact: FREEMAN

Phone: \_\_\_\_\_

PO/ISO #: 04106003

Sampler's Signature Aaron Bryant

ANALYSIS REQUESTED

BTEX 8021  
THY 8015 DEY/GRD

Lab use only  
Due Date: \_\_\_\_\_

Temp. of coolers when received (C°): 2.9°

1 2 3 4 5

Page 1 of 1

Matrix	Date	Time	Identifying Marks of Sample(s)				No/Type of Containers				Lab Sample ID (Lab Use Only)		
			C	G	I	A	Dep	Dep	VOA	A/G		250	P/O
W	4-18-14	1055	X										1404918-001
W		1200	X										-002
W		1300	X										-003
W		1325	X										-004
<div style="display: flex; justify-content: space-around;"> <span>NFS</span> <span>AB</span> </div>													

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature) Aaron Bryant Date: 4-18-14 Time: 1543 Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished by (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished by (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished by (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Matrix Container: WW - Wastewater VOA - 40 ml vial

W - Water A/G - Amber / Or Glass 1 Liter

S - Soil SD - Solid

L - Liquid 250 ml - Glass wide mouth

A - Air Bag

C - Charcoal tube

P/O - Plastic or other

SL - sludge

O - Oil

NOTES: 897/sample





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

November 12, 2014

Kyle Summers  
APEX TITAN  
606 S. Rio Grande Unit A  
Aztec, NM 87410  
TEL: (903) 821-5603  
FAX

RE: K-51

OrderNo.: 1411333

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 12 sample(s) on 11/8/2014 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Analytical Report

Lab Order: 1411333

Date Reported: 11/12/2014

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** APEX TITAN  
**Project:** K-51

**Lab Order:** 1411333

**Lab ID:** 1411333-001

**Collection Date:** 11/6/2014 9:35:00 AM

**Client Sample ID:** MW-16

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	1.2	1.0		µg/L	1	11/11/2014 2:09:55 AM	R22435
Toluene	ND	1.0		µg/L	1	11/11/2014 2:09:55 AM	R22435
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 2:09:55 AM	R22435
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 2:09:55 AM	R22435
Surr: 4-Bromofluorobenzene	107	66.6-167		%REC	1	11/11/2014 2:09:55 AM	R22435

**Lab ID:** 1411333-002

**Collection Date:** 11/6/2014 10:20:00 AM

**Client Sample ID:** MW-17

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 2:37:19 AM	R22435
Toluene	ND	1.0		µg/L	1	11/11/2014 2:37:19 AM	R22435
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 2:37:19 AM	R22435
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 2:37:19 AM	R22435
Surr: 4-Bromofluorobenzene	110	66.6-167		%REC	1	11/11/2014 2:37:19 AM	R22435

**Lab ID:** 1411333-003

**Collection Date:** 11/6/2014 11:00:00 AM

**Client Sample ID:** MW-13

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 3:04:39 AM	R22435
Toluene	ND	1.0		µg/L	1	11/11/2014 3:04:39 AM	R22435
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 3:04:39 AM	R22435
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 3:04:39 AM	R22435
Surr: 4-Bromofluorobenzene	107	66.6-167		%REC	1	11/11/2014 3:04:39 AM	R22435

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# Analytical Report

Lab Order: 1411333

Date Reported: 11/12/2014

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** APEX TITAN  
**Project:** K-51

**Lab Order:** 1411333

**Lab ID:** 1411333-004

**Collection Date:** 11/6/2014 11:40:00 AM

**Client Sample ID:** MW-2

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 3:32:01 AM	R22435
Toluene	ND	1.0		µg/L	1	11/11/2014 3:32:01 AM	R22435
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 3:32:01 AM	R22435
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 3:32:01 AM	R22435
Surr: 4-Bromofluorobenzene	105	66.6-167		%REC	1	11/11/2014 3:32:01 AM	R22435

**Lab ID:** 1411333-005

**Collection Date:** 11/6/2014 12:30:00 PM

**Client Sample ID:** MW-12

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 3:59:15 AM	R22435
Toluene	ND	1.0		µg/L	1	11/11/2014 3:59:15 AM	R22435
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 3:59:15 AM	R22435
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 3:59:15 AM	R22435
Surr: 4-Bromofluorobenzene	104	66.6-167		%REC	1	11/11/2014 3:59:15 AM	R22435

**Lab ID:** 1411333-006

**Collection Date:** 11/6/2014 12:20:00 PM

**Client Sample ID:** MW-20

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 4:26:20 AM	R22435
Toluene	ND	1.0		µg/L	1	11/11/2014 4:26:20 AM	R22435
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 4:26:20 AM	R22435
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 4:26:20 AM	R22435
Surr: 4-Bromofluorobenzene	105	66.6-167		%REC	1	11/11/2014 4:26:20 AM	R22435

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# Analytical Report

Lab Order: 1411333

Date Reported: 11/12/2014

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN  
Project: K-51

Lab Order: 1411333

Lab ID: 1411333-007

Collection Date: 11/6/2014 1:25:00 PM

Client Sample ID: MW-11

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 12:48:53 PM	R22479
Toluene	ND	1.0		µg/L	1	11/11/2014 12:48:53 PM	R22479
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 12:48:53 PM	R22479
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 12:48:53 PM	R22479
Surr: 4-Bromofluorobenzene	109	66.6-167		%REC	1	11/11/2014 12:48:53 PM	R22479

Lab ID: 1411333-008

Collection Date: 11/6/2014 2:15:00 PM

Client Sample ID: MW-4

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 2:10:53 PM	R22479
Toluene	ND	1.0		µg/L	1	11/11/2014 2:10:53 PM	R22479
Ethylbenzene	11	1.0		µg/L	1	11/11/2014 2:10:53 PM	R22479
Xylenes, Total	2.9	2.0		µg/L	1	11/11/2014 2:10:53 PM	R22479
Surr: 4-Bromofluorobenzene	129	66.6-167		%REC	1	11/11/2014 2:10:53 PM	R22479

Lab ID: 1411333-009

Collection Date: 11/6/2014 2:55:00 PM

Client Sample ID: MW-3

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 2:38:02 PM	R22479
Toluene	ND	1.0		µg/L	1	11/11/2014 2:38:02 PM	R22479
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 2:38:02 PM	R22479
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 2:38:02 PM	R22479
Surr: 4-Bromofluorobenzene	107	66.6-167		%REC	1	11/11/2014 2:38:02 PM	R22479

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

**Analytical Report**

Lab Order: 1411333

Date Reported: 11/12/2014

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** APEX TITAN  
**Project:** K-51**Lab Order:** 1411333**Lab ID:** 1411333-010**Collection Date:** 11/6/2014 3:30:00 PM**Client Sample ID:** MW-14**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	11/11/2014 3:05:12 PM	R22479
Toluene	ND	1.0		µg/L	1	11/11/2014 3:05:12 PM	R22479
Ethylbenzene	ND	1.0		µg/L	1	11/11/2014 3:05:12 PM	R22479
Xylenes, Total	ND	2.0		µg/L	1	11/11/2014 3:05:12 PM	R22479
Surr: 4-Bromofluorobenzene	107	66.6-167		%REC	1	11/11/2014 3:05:12 PM	R22479

**Lab ID:** 1411333-011**Collection Date:** 11/6/2014 4:05:00 PM**Client Sample ID:** MW-1**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	32	1.0		µg/L	1	11/11/2014 3:32:26 PM	R22479
Toluene	ND	1.0		µg/L	1	11/11/2014 3:32:26 PM	R22479
Ethylbenzene	27	1.0		µg/L	1	11/11/2014 3:32:26 PM	R22479
Xylenes, Total	61	2.0		µg/L	1	11/11/2014 3:32:26 PM	R22479
Surr: 4-Bromofluorobenzene	116	66.6-167		%REC	1	11/11/2014 3:32:26 PM	R22479

**Lab ID:** 1411333-012**Collection Date:** 11/6/2014 4:40:00 PM**Client Sample ID:** MW-19**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	260	5.0		µg/L	5	11/11/2014 12:21:32 PM	R22479
Toluene	ND	1.0		µg/L	1	11/11/2014 11:27:36 AM	R22479
Ethylbenzene	75	1.0		µg/L	1	11/11/2014 11:27:36 AM	R22479
Xylenes, Total	42	2.0		µg/L	1	11/11/2014 11:27:36 AM	R22479
Surr: 4-Bromofluorobenzene	160	66.6-167		%REC	1	11/11/2014 11:27:36 AM	R22479

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1411333

12-Nov-14

Client: APEX TITAN

Project: K-51

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBW	Batch ID:	R22439	RunNo:	22439					
Prep Date:		Analysis Date:	11/10/2014	SeqNo:	661851	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	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		107	66.6	167			

Sample ID	100NG BTEX LCS	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSW	Batch ID:	R22439	RunNo:	22439					
Prep Date:		Analysis Date:	11/10/2014	SeqNo:	661852	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	80	120			
Toluene	22	1.0	20.00	0	108	80	120			
Ethylbenzene	22	1.0	20.00	0	111	80	120			
Xylenes, Total	67	2.0	60.00	0	112	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		109	66.6	167			

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBW	Batch ID:	R22479	RunNo:	22479					
Prep Date:		Analysis Date:	11/11/2014	SeqNo:	662614	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	2.0								
Surr: 4-Bromofluorobenzene	22		20.00		111	66.6	167			

Sample ID	100NG BTEX LCS	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSW	Batch ID:	R22479	RunNo:	22479					
Prep Date:		Analysis Date:	11/11/2014	SeqNo:	662615	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	80	120			
Toluene	22	1.0	20.00	0	110	80	120			
Ethylbenzene	22	1.0	20.00	0	111	80	120			
Xylenes, Total	67	2.0	60.00	0	112	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		109	66.6	167			

### Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1411333

12-Nov-14

Client: APEX TITAN

Project: K-51

Sample ID	1411333-007AMS	SampType:	MS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	MW-11	Batch ID:	R22479	RunNo:	22479					
Prep Date:		Analysis Date:	11/11/2014	SeqNo:	662633	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0.2660	96.5	80	120			
Toluene	20	1.0	20.00	0	101	80	120			
Ethylbenzene	21	1.0	20.00	0.1840	104	79.7	126			
Xylenes, Total	65	2.0	60.00	0	108	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		109	66.6	167			

Sample ID	1411333-007AMSD	SampType:	MSD	TestCode: EPA Method 8021B: Volatiles						
Client ID:	MW-11	Batch ID:	R22479	RunNo: 22479						
Prep Date:		Analysis Date:	11/11/2014	SeqNo: 662635		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0.2660	94.8	80	120	1.75	20	
Toluene	20	1.0	20.00	0	98.8	80	120	2.55	20	
Ethylbenzene	20	1.0	20.00	0.1840	101	79.7	126	3.09	20	
Xylenes, Total	63	2.0	60.00	0	105	80	120	2.78	20	
Surr: 4-Bromofluorobenzene	22		20.00		108	66.6	167	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

## Sample Log-In Check List

Client Name: **APEX AZTEC**

Work Order Number: **1411333**

RcptNo: 1

Received by/date:

AF

11/08/14

Logged By: **Lindsay Mangin**

11/8/2014 10:20:00 AM

*Lindsay Mangin*

Completed By: **Lindsay Mangin**

11/10/2014 8:45:29 AM

*Lindsay Mangin*

Reviewed By:

CS

11/10/14

### Chain of Custody

1. Custody seals intact on sample bottles?

Yes ☐

No ☐

Not Present ☒

2. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

3. How was the sample delivered?

Courier

### Log In

4. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

5. Were all samples received at a temperature of >0° C to 6.0°C

Yes ☒

No ☐

NA ☐

6. Sample(s) in proper container(s)?

Yes ☒

No ☐

7. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

8. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

9. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

10. VOA vials have zero headspace?

Yes ☒

No ☐

No VOA Vials ☐

11. Were any sample containers received broken?

Yes ☐

No ☒

# of preserved  
bottles checked  
for pH:

12. Does paperwork match bottle labels?

(Note discrepancies on chain of custody)

Yes ☒

No ☐

(<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	3.1	Good	Yes			



# CHAIN OF CUSTODY RECORD

 <b>APEX</b> Office Location <u>AZTEC, NM</u>		Laboratory: <u>HALL</u> Address: <u>ABQ</u> Contact: <u>FREEMAN</u> Phone: _____		ANALYSIS REQUESTED  <u>BTEX 8021</u>		Lab use only Due Date: _____							
		Temp. of coolers when received (C°): <u>3.1</u>		Page <u>1</u> of <u>2</u>									
Project Manager <u>KYLE SUMMERS</u> Sampler's Name <u>AARON BRYANT</u>		PO/ISO #: _____ Sampler's Signature <u>[Signature]</u>		Lab Sample ID (Lab Use Only)									
Project No. <u>7030410G003</u> Project Name <u>K-51</u>		No/Type of Containers _____											
Matrix	Date	Time	G C O M P	G a b	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 ft	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
W	11-6-14	0935	X		MW-16			3					1411333-001
		1020			MW-17								-002
		1100			MW-13								-003
		1140			MW-2								-004
		1230			MW-12								-005
		1220			MW-20								-006
		1325			MW-11								-007
		1415			MW-4								-008
		1455			MW-3								-009
		1530			MW-14								-010

Turn around time	Normal	25% Rush	50% Rush	100% Rush	Notes
Relinquished by (Signature)	<u>[Signature]</u>	Date: <u>11-7-14</u>	Time: <u>0605</u>	Received by: (Signature)	Date: <u>11/7/14</u> Time: <u>0825</u>
Relinquished by (Signature)	<u>[Signature]</u>	Date: <u>11/14/14</u>	Time: <u>757</u>	Received by: (Signature)	Date: <u>11/14/14</u> Time: <u>757</u>
Relinquished by (Signature)	<u>[Signature]</u>	Date: <u>11/14/14</u>	Time: <u>1740</u>	Received by: (Signature)	Date: <u>11/18/14</u> Time: <u>1620</u>
Relinquished by (Signature)	<u>[Signature]</u>	Date: _____	Time: _____	Received by: (Signature)	Date: _____ Time: _____

# CHAIN OF CUSTODY RECORD



**APEX**

Office Location

Artesia, NM

Laboratory:

Address:

Contact:

Phone:

PO/ISO #:

Sampler's Signature

Project Manager Kyle Summers

Sampler's Name Aaron Bryant

Project Name

70304105003 K-51

No/Type of Containers

Matrix	Date	Time	C	G	Identifying Marks of Sample(s)	Start	End	Depth	VOA	AG	250	Glass Jar	P/O
W	11-6-14	1605	X		mw-1				3				
W	11-6-14	1640	X		mw-19				3				

Lab Sample ID (Lab Use Only)

1411335-011  
-012

ANALYSIS REQUESTED

BTEX 8021

Lab use only  
Due Date:

Temp. of coolers  
when received (C°): 3

1 2 3 4 5

Page 2 of 2

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)

Date:

Time:

Received by (Signature)

Date:

Time:

NOTES:

Relinquished by (Signature)

Date:

Time:

Received by (Signature)

Date:

Time:

Relinquished by (Signature)

Date:

Time:

Received by (Signature)

Date:

Time:

Relinquished by (Signature)

Date:

Time:

Received by (Signature)

Date:

Time:

Matrix  
Container

WW - Wastewater  
VOA - 40 ml vial

W - Water  
A/G - Amber / Or Glass 1 Liter

SD - Solid  
250 ml - Glass wide mouth

A - Air Bag

C - Charcoal tube  
P/O - Plastic or other

SL - sludge

O - Oil