

**GW-211**

**Q3 2010**

**Monitoring**

**Report**

**Date:**

**10/5/2010**

GW-211-0



ENTERPRISE PRODUCTS PARTNERS L.P.  
ENTERPRISE PRODUCTS GP, LLC  
(General Partner)

ENTERPRISE PRODUCTS OPERATING LLC

October 5, 2010

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Mr. Jim Griswold, Senior Hydrologist  
Environmental Bureau  
ENMRD/Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, NM 87505

**RE: Groundwater Sampling Report,  
Largo Compressor Station  
Enterprise Field Services, LLC  
OCD Number: GW-211  
Rio Arriba County, New Mexico**



Attn: Leonard Lowe

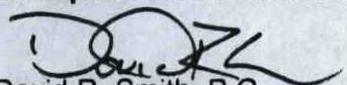
Dear Mr. Griswold,

Enterprise Field Services, LLC (Enterprise) is submitting two (2) copies of the enclosed *Groundwater Sampling Report*, dated September 13, 2010, for our Largo Compressor Station referenced above. This report includes a summary of the June 10, 2010 injection of ORC at the facility, and the results of the July quarterly groundwater sampling event.

Previously submitted reports for this facility include the *Interim Remedial Investigation Report* dated May 15, 2010, and the *Proposed Facility-Wide Soil and Groundwater Investigation and Remedial Activities* report dated June 10, 2010. Enterprise responded to several New Mexico Oil Conservation Division (OCD) comments concerning these reports during June 2010. The enclosed reports include a new survey of monitor well elevations and revised groundwater contours in response to one of the agency comments. Enterprise is evaluating increases in dissolved-phase constituents during this quarterly monitoring event at several well locations. Following the next quarterly sampling event, Enterprise will propose additional remedial actions for these areas if observed concentrations are increasing.

Enterprise is currently scheduling the approved facility-wide delineation investigation, which should be completed by the end of the year. Also, the existing condensate storage tanks at this location cannot be removed from service at this time. Additional delineations and remedial actions will be performed in this area, following removal of the tanks. If you have any questions, or require additional information, please do not hesitate to contact me at (713) 381-2286 or [drsmith@eprod.com](mailto:drsmith@eprod.com).

Sincerely,  
**Enterprise Field Services, LLC**

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

/bjm  
Enclosure

Cc: Brandon Powell, New Mexico Oil Conservation Division, 1000 Rio Brazos Road, Aztec, NM 87410  
w/o enclosure - Rex Meyer, GeoMonitoring Services

P. O. Box 1000 enclosure - Ashley Ager, LT Environmental  
HOUSTON, TX 77210-4324  
713.381.6500

1100 LOUISIANA STREET  
HOUSTON, TX 77002-5227  
[www.epplp.com](http://www.epplp.com)



September 13, 2010

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

**RE: Groundwater Sampling Report  
Largo Compressor Station, GW-211  
Rio Arriba County, New Mexico**



Dear Mr. Smith:

Enterprise Field Services, LLC (Enterprise) is remediating groundwater at the Largo Compressor Station (Site) following a release of 505 barrels (bbls) of natural gas condensate that occurred on January 4, 2008. As part of that remediation, LT Environmental, Inc. (LTE) sampled groundwater monitoring wells on July 13, 2010. The sampling event was conducted to monitor groundwater quality following the recent conversion of five piezometers to 2-inch diameter monitoring wells and the installation of a barrier of oxygen release compound (ORC) downgradient of the source area. New standard sampling procedures were implemented to ensure consistency, and a professional surveyor was at the Site to survey the top-of-casing elevations for all groundwater monitoring wells. The following report describes the methods used to conduct the fieldwork and discusses results obtained during the sampling event.

### Site Description

The Site is located in Section 21 of Township 26 North, Range 12 West in Rio Arriba County, New Mexico. In an area in the northeastern portion of the Site, six aboveground storage tanks and two sumps are set in a below grade area surrounded by an earthen/gravel berm (Figure 1). As documented in two subsurface investigations (*Report of Subsurface Investigation at Largo Compressor Station*, December 2009 and *Interim Remedial Investigation Report*, May 2010), soil and groundwater impacts are limited to the bermed area and slightly outside the bermed area in the downgradient (northwest) direction. Enterprise intends to remove the storage tanks once operations can be rerouted, and soils impacted by hydrocarbons will be excavated at that time. Interim measures are being implemented, including installation of ORC to impede downgradient migration of dissolved phase contaminants and quarterly groundwater sampling from eleven monitoring wells.

### ORC Injection

ORC was injected downgradient of the source area through seven 4-inch boreholes on June 10, 2010. Boreholes were drilled with a hollow stem auger to approximately 20 feet deep in



locations shown on Figure 1. A 65 percent (%) solids slurry of ORC and water was poured directly into the hollow stem at each borehole (approximately 30 pounds of ORC per borehole) to create a plug of ORC covering approximately five vertical feet throughout the smear zone. A 2-foot thick bentonite seal was installed above the ORC slurry and the remainder of the borehole was backfilled with clean soil. Impacted borehole cuttings were collected in a drum and transported to the Envirotech Landfarm near Hilltop, New Mexico for disposal.

### **Surveying**

Eleven groundwater monitoring wells were surveyed by a New Mexico licensed surveyor on July 13, 2010. Wells were surveyed for both location and top of casing elevation. The well locations are shown in Figure 1, and casing elevations are listed in Table 1. Groundwater elevations were calculated in each well by subtracting depth to water from the top of casing elevation. The new survey data are more accurate than elevations presented in previous reports; therefore, historical groundwater elevation data in Table 1 have been modified to reflect the professional survey results.

### **Groundwater Sampling**

LTE collected groundwater samples on July 13, 2010, from ten 2-inch monitoring wells and one 4-inch monitoring well. Prior to sampling, depth to groundwater and total depth of wells were measured to the nearest one-hundredth of a foot using a Keck<sup>®</sup> oil-water interface probe. The interface probe was decontaminated with Alconox<sup>®</sup> soap and rinsed with deionized water after each measurement. Presence of any phase separated hydrocarbon (PSH) was also detected with the interface probe. The volume of water in the wells was calculated, and a minimum of three casing volumes of water was purged (when possible) from each well using a dedicated disposable bailer. As water was removed from the well, pH, electric conductivity, and temperature were monitored. Wells were purged until these properties stabilized, indicating that the purge water was representative of aquifer conditions, or until the well was bailed dry. Stabilization was defined as three consecutive stable readings for each water property ( $\pm 0.4$  units for pH,  $\pm 10\%$  for electric conductivity, and  $\pm 2^\circ$  C for temperature). Wells that bailed dry were allowed to recharge, then sampled. All purge water was disposed of into a sump located on the Site. Data were recorded on the attached *Well Sampling Logs* in Appendix 1.

Once each monitoring well was sufficiently purged, groundwater samples were collected by filling four 40-milliliter (ml) glass vials. The pre-cleaned and pre-preserved (with mercuric chloride) vials were filled and capped with zero headspace to prevent degradation of and loss of volatiles in the sample. Samples were labeled at the time of sample collection with the date and time, sample identifier, project name, sampler's name, and parameters to be analyzed. They were immediately packed on ice. The samples were shipped to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico in a sealed cooler via overnight ground transportation. Proper chain-of-custody (COC) procedures were followed documenting the date and time sampled, sample number, type of sample, sampler's name, preservative used, and analyses required. HEAL analyzed the groundwater samples for benzene, toluene, ethylbenzene,



and xylenes (BTEX) via U.S. Environmental Protection Agency (EPA) Method 8021B and total petroleum hydrocarbons (TPH) via EPA Method 8015B.

Dissolved oxygen (DO) concentrations were measured in each well prior to purging groundwater for sample collection. The probe on a YSI 55 dissolved oxygen meter was rinsed with de-ionized water, lowered into the monitoring well, and submerged. The meter was allowed to stabilize and DO concentration was recorded along with temperature.

## Results

Depth to groundwater measurements for each well are shown in Table 1. These data were used to calculate groundwater elevations, which ranged from 6,094.80 feet in MW-14 to 6,096.06 feet in MW-9. Groundwater elevations in all wells declined about one quarter of a foot since the previous monitoring event on June 25, 2010. A potentiometric surface map is included as Figure 2 and indicates general groundwater flow is to the north/northwest. There is slight mounding of the groundwater table near MW-12, which is likely due to water accumulating in the bermed area.

DO measurements are also shown on Table 1. These data ranged from 0.89 milligrams per liter (mg/L) in MW-6 to 4.85 mg/L in MW-7.

Laboratory analytical results are listed in Table 2 and presented on Figure 2. The complete analytical laboratory report from HEAL is attached to this letter in Appendix 2. Monitoring wells MW-3R, MW-7, MW-11, MW-12, MW-15, and MW-16 contained benzene concentrations above New Mexico Water Quality Control Commission (NMWQCC) standards. Additionally, MW-12 contained concentrations of total xylenes in excess of NMWQCC standards. None of the other wells contained BTEX in excess of the NMWQCC standards.

Historical groundwater sampling results for monitoring wells are presented in Table 2 for comparison. The April 5, 2010 results represent the initial samples collected from MW-3R, MW-11, MW-12, MW-13, MW-14, MW-15, and MW-16. MW-3R, MW-11, MW-12, MW-13, and MW-14 were installed recently to replace piezometers that had been in use for over one year. MW-15 and MW-16 were installed to better delineate groundwater impacts. Review of Table 2 shows a general increase in BTEX concentrations in these wells since their installation in April 2010.

## Conclusions

MW-11 and MW-12 are located within the bermed area at the original source. MW-3R, MW-7, and MW-15 are located downgradient of source, indicating that migration of dissolved phase contaminants has probably occurred. It appears that the core of the groundwater plume may have migrated from the source area to the area near MW-7, since levels of benzene are higher in MW-7 compared to MW-11 and MW-12.



The decreased BTEX concentrations observed in April and May, 2010 are likely a result of flushing when wells were installed and were immediately developed and purged. BTEX concentrations in MW-3R, MW-11, MW-12, MW-15, and MW-16 during this sampling event are more comparable to results obtained from piezometers in place at those locations between April 2008 and March 2010.

The most extensive dataset comes from MW-7, which has been monitored for over one year. BTEX concentrations in MW-7 are similar to those recorded during the same time last year (August 2009). Changes in groundwater elevations measured in MW-7 appear to be inversely related to BTEX concentrations, suggesting increases in BTEX levels may be associated with water level fluctuations.

DO concentrations generally increased in wells located downgradient of ORC injection points. However, it is not yet apparent if sufficient oxygen is being delivered to enhance the rate of biological degradation. DO measurements do not always reflect oxygen consumption, and further analysis of DO and BTEX concentrations in wells are required to measure effectiveness of the ORC. Because clay exists in the subsurface, it may take time for the ORC to progress downgradient.

### **Recommendations**

In consideration of results presented in this report, LTE recommends the following actions for the Site:

- Continue quarterly groundwater sampling to monitor groundwater quality and migration of dissolved phase contaminants;
- Continue monthly monitoring of water levels and DO concentrations to detect migration of contaminants and to investigate effectiveness of ORC: and
- If downgradient migration continues before removal of source material is feasible, consider additional ORC injection.

LTE appreciates the opportunity to perform these services for Enterprise. Should you have any questions or require additional information, please contact me at 970-385-1096 or via email at [aager@ltenv.com](mailto:aager@ltenv.com).

Sincerely,  
LT ENVIRONMENTAL, INC.

Ashley L. Ager  
Senior Geologist/Office Manager



CC: Rex Meyer, GeoMonitoring Services

Attachments (6)

Figure 1 – Site Map

Figure 2 – Groundwater Potentiometric Surface and Laboratory Results Map

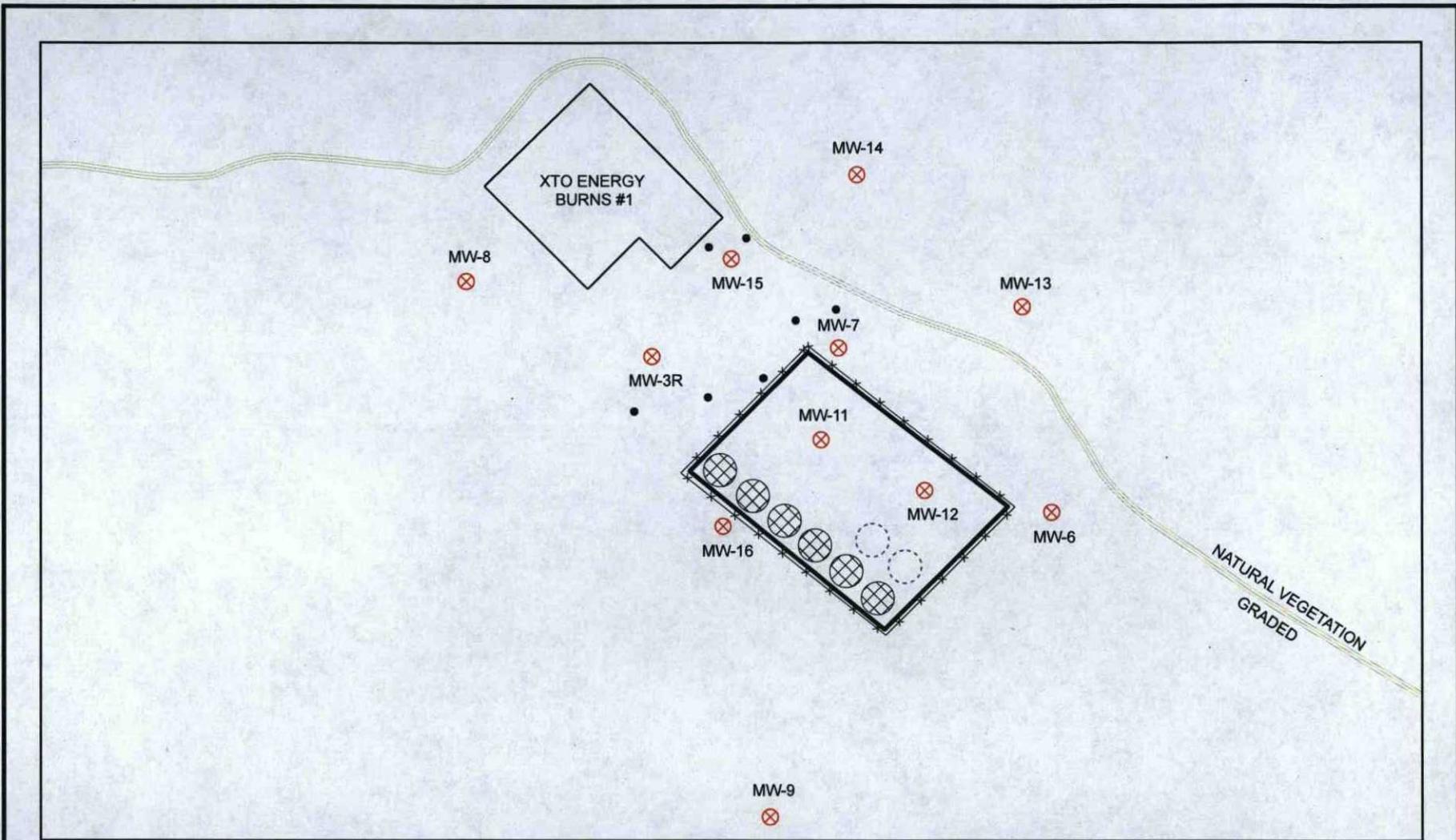
Table 1 – Groundwater Elevation Data

Table 2 – Groundwater Analytical Results

Appendix 1 – Well Sampling Logs

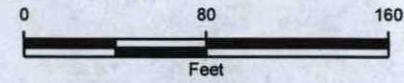
Appendix 2 – Laboratory Report

**FIGURES**



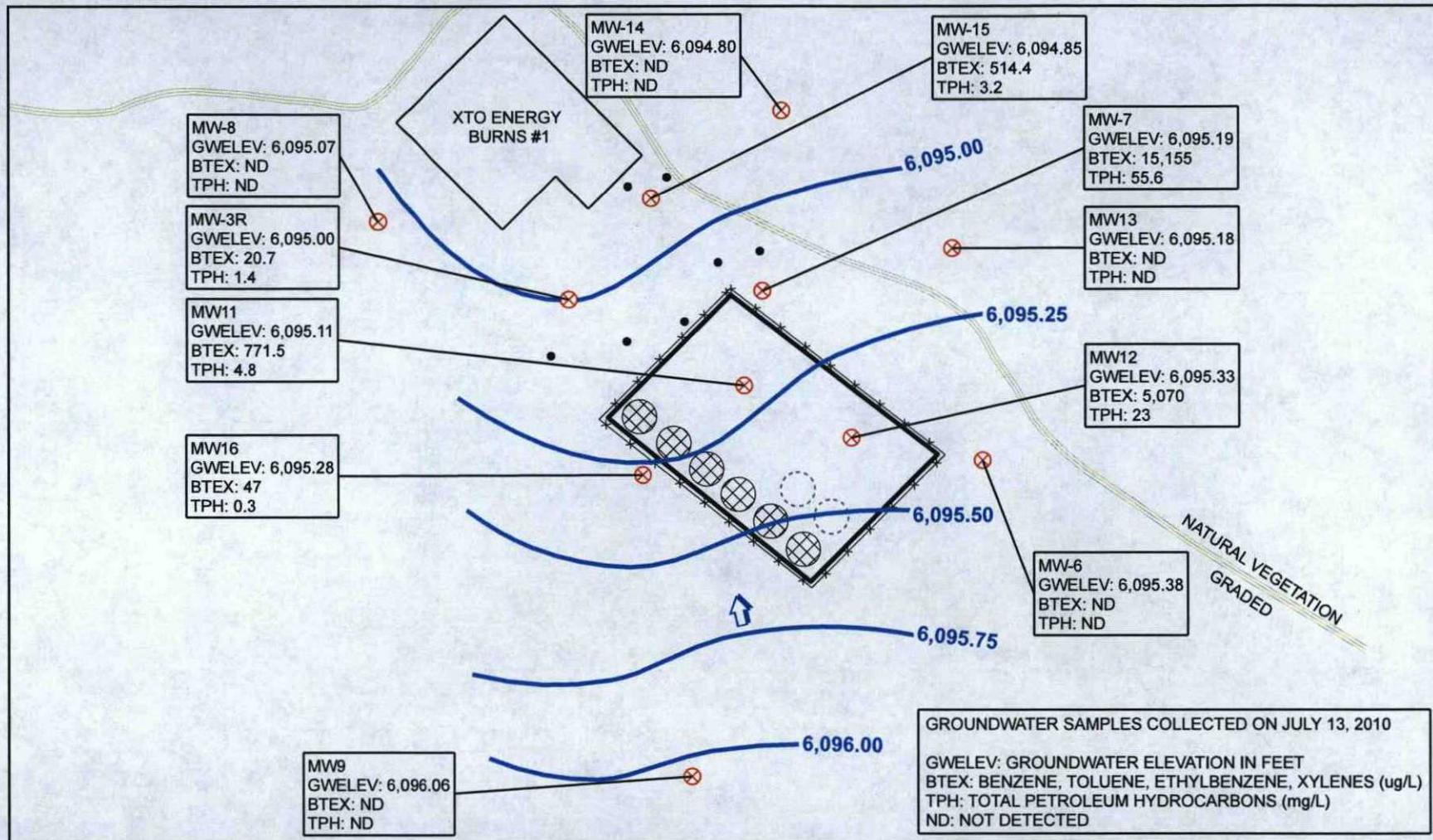
**LEGEND**

- ⊗ MONITORING WELL
- ORC INJECTION POINTS (OXYGEN RELEASE COMPOUND)
- ▨ ABOVEGROUND STORAGE TANK
- ⋯ SUMP
- ▭ BERM
- ⊗⊗⊗ FENCE



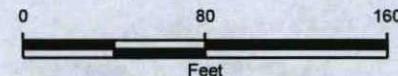
**FIGURE 1**  
**SITE MAP**  
**LARGO COMPRESSOR STATION**  
**RIO ARRIBA COUNTY, NEW MEXICO**  
**ENTERPRISE FIELD SERVICES, LLC**





**LEGEND**

- ⊗ MONITORING WELL
- ORC INJECTION POINTS (OXYGEN RELEASE COMPOUND)
- ↑ ESTIMATED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR  
CONTOUR INTERVAL = .25 FEET
- ▣ ABOVE GROUND STORAGE TANK
- ▤ SUMP
- ▭ BERM
- ▭ FENCE



**FIGURE 2**  
**GROUNDWATER POTENTIOMETRIC SURFACE**  
**AND LABORATORY RESULTS MAP**  
**LARGO COMPRESSOR STATION**  
**RIO ARRIBA COUNTY, NEW MEXICO**  
**ENTERPRISE FIELD SERVICES, LLC**



**TABLES**

**TABLE 1  
GROUNDWATER ELEVATION DATA  
LARGO COMPRESSOR STATION  
ENTERPRISE FIELD SERVICES, LLC**

Well Number	Top of Casing Elevation * (feet amsl)	Date Sampled	Depth to Water (feet BTOC)	Depth to Product (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet amsl)	Dissolved Oxygen (mg/L)
MW-3R	6117.47	4/5/2010	21.83	-	-	6095.64	
MW-3R		5/27/2010	21.82	-	-	6095.65	
MW-3R		6/25/2010	22.22	-	-	6095.25	0.68
MW-3R		7/13/2010	22.47	-	-	6095.00	3.25
MW-6	6115.47	8/10/2009	20.28	-	-	6095.19	
MW-6		11/24/2009	20.17	-	-	6095.30	
MW-6		2/25/2010	19.54	-	-	6095.93	
MW-6		4/5/2010	19.11	-	-	6096.36	
MW-6		5/27/2010	19.28	-	-	6096.19	
MW-6		6/25/2010	19.87	-	-	6095.60	1.15
MW-6		7/13/2010	20.09	-	-	6095.38	1.32
MW-7	6116.65	8/10/2009	21.52	-	-	6095.13	
MW-7		11/24/2009	21.73	-	-	6094.92	
MW-7		2/25/2010	21.42	-	-	6095.23	
MW-7		4/5/2010	20.96	-	-	6095.69	
MW-7		5/27/2010	20.96	-	-	6095.69	
MW-7		6/25/2010	21.32	-	-	6095.33	0.97
MW-7		7/13/2010	21.46	-	-	6095.19	5.85
MW-8	6118.28	8/10/2009	23.17	-	-	6095.11	
MW-8		11/24/2009	23.43	-	-	6094.85	
MW-8		2/25/2010	23.25	-	-	6095.03	
MW-8		4/5/2010	22.97	-	-	6095.31	
MW-8		5/27/2010	22.85	-	-	6095.43	
MW-8		6/25/2010	23.01	-	-	6095.27	0.59
MW-8		7/13/2010	23.21	-	-	6095.07	1.76
MW-9	6117.83	8/10/2009	21.95	-	-	6095.88	
MW-9		11/24/2009	21.98	-	-	6095.85	
MW-9		2/25/2010	21.51	-	-	6096.32	
MW-9		4/5/2010	21.00	-	-	6096.83	
MW-9		5/27/2010	21.10	-	-	6096.73	
MW-9		6/25/2010	21.56	-	-	6096.27	1.10
MW-9		7/13/2010	21.77	-	-	6096.06	1.01
MW-11	6116.65	4/5/2010	20.57	-	-	6096.08	
MW-11		5/27/2010	20.75	-	-	6095.90	
MW-11		6/25/2010	21.33	-	-	6095.32	1.00
MW-11		7/13/2010	21.54	-	-	6095.11	1.32
MW-12	6111.24	4/5/2010	14.88	-	-	6096.36	
MW-12		5/27/2010	15.11	-	-	6096.13	
MW-12		6/25/2010	15.67	-	-	6095.57	1.22
MW-12		7/13/2010	15.91	-	-	6095.33	1.09
MW-13	6115.46	4/5/2010	19.26	-	-	6096.20	
MW-13		5/27/2010	19.47	-	-	6095.99	
MW-13		6/25/2010	20.07	-	-	6095.39	1.09
MW-13		7/13/2010	20.28	-	-	6095.18	2.15
MW-14	6115.99	4/5/2010	20.09	-	-	6095.90	
MW-14		5/27/2010	20.28	-	-	6095.71	
MW-14		6/25/2010	20.94	-	-	6095.05	0.83



**LARGO COMPRESSOR STATION  
ENTERPRISE FIELD SERVICES, LLC**

Well Number	Top of Casing Elevation * (feet amsl)	Date Sampled	Depth to Water (feet BTOC)	Depth to Product (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet amsl)	Dissolved Oxygen (mg/L)
MW-14		7/13/2010	21.19	-	-	6094.80	1.53
MW-15	6116.49	4/5/2010	20.66	-	-	6095.83	
MW-15		5/27/2010	20.82	-	-	6095.67	
MW-15		6/25/2010	21.43	-	-	6095.06	0.73
MW-15		7/13/2010	21.64	-	-	6094.85	4.28
MW-16	6117.57	4/5/2010	21.51	-	-	6096.06	
MW-16		5/27/2010	21.59	-	-	6095.98	
MW-16		6/25/2010	22.10	-	-	6095.47	1.04
MW-16		7/13/2010	22.29	-	-	6095.28	1.11

**Notes:**

\* Top of Casing Elevation is based on a professional survey conducted on 7/13/2010. The professional survey was retro-actively applied to historical data to re-calculate previously calculated elevation data.

amsl - above mean sea level

BTOC - below top of casing

mg/L - milligrams per liter



**TABLE 2**  
**GROUNDWATER ANALYTICAL RESULTS**  
**LARGO COMPRESSOR STATION**  
**ENTERPRISE FIELD SERVICES, LLC**

Well Number	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	DRO (mg/L)	MRO (mg/L)	GRO (mg/L)	TPH (mg/L)
MW-3R*	4/5/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-3R	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-3R	7/13/2010	13	<1.0	1.3	6.4	20.7	<1.0	<5.0	1.4	1.4
MW-6	8/10/2009	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-6	11/24/2009	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-6	2/25/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-6	4/5/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-6	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-6	7/13/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-7	8/10/2009	15,000	<100	380	310	15,690	NA	NA	NA	NA
MW-7	11/24/2009	13,000	<100	150	<200	13,150	NA	NA	NA	NA
MW-7	2/25/2010	3,000	<10	40	31	3,071	NA	NA	NA	NA
MW-7	4/5/2010	940	<10	<10	<20	940	1.3	<5.0	4.2	5.5
MW-7	5/27/2010	700	<10	11	<20	711	NA	NA	NA	NA
MW-7	7/13/2010	15,000	<10	130	25	15,155	4.6	<15	51	55.6
MW-8	8/10/2009	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-8	11/24/2009	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-8	2/25/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-8	4/5/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-8	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-8	7/13/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-9	8/10/2009	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-9	11/24/2009	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-9	2/25/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-9	4/5/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-9	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-9	7/13/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-11	4/5/2010	<1.0	1.7	<1.0	3.3	5.00	<1.0	<5.0	0.22	0.22
MW-11	5/27/2010	4.4	<1.0	<1.0	<2.0	4.4	NA	NA	NA	NA
MW-11	7/13/2010	700	4.5	11	56	771.5	1.2	<5.0	3.6	4.8
MW-12	4/5/2010	1,300	1,600	110	2,200	5,210	1.2	<5.0	20	21.2
MW-12	5/27/2010	3,300	1,800	180	3,200	8,480	NA	NA	NA	NA
MW-12	7/13/2010	2,900	330	140	1,700	5,070	1.0	<5.0	22	23
MW-13	4/5/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-13	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-13	7/13/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-14	4/5/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-14	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-14	7/13/2010	<1.0	<1.0	<1.0	<2.0	ND	<1.0	<5.0	<0.050	ND
MW-15	4/5/2010	1.1	<1.0	<1.0	<2.0	1.1	<1.0	<5.0	<0.050	ND
MW-15	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA



**TABLE 2**  
**GROUNDWATER ANALYTICAL RESULTS**  
**LARGO COMPRESSOR STATION**  
**ENTERPRISE FIELD SERVICES, LLC**

Well Number	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	DRO (mg/L)	MRO (mg/L)	GRO (mg/L)	TPH (mg/L)
MW-15	7/13/2010	<b>490</b>	2.2	7.2	15	514.4	<1.0	<5.0	3.2	3.2
MW-16	4/5/2010	3.8	1.5	1.4	11	17.7	<1.0	<5.0	0.36	0.36
MW-16	5/27/2010	<1.0	<1.0	<1.0	<2.0	ND	NA	NA	NA	NA
MW-16	7/13/2010	<b>47</b>	<1.0	<1.0	<2.0	47	<1.0	<5.0	0.3	0.3
<b>NMWQCC Standard</b>		<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>					

**Notes:**

ug/L - micrograms per liter

mg/L - miligrams per liter

BTEX - benzene, toluene, ethylbenzene, and total xylenes

DRO - diesel range organics

MRO - motor oil range organics

GRO - gasoline range organics

TPH - total petroleum hydrocarbons

ND - Not Detected

NA - Not Analyzed

NMWQCC - New Mexico Water Quality Control Commission

EPA - Environmental Protection Agency

Bold font indicates value exceeds NMWQCC Standard

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8021

Total Petroleum Hydrocarbons analyzed by EPA Method 8015



**APPENDIX 1**

**WELL SAMPLING LOGS**



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-8</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>9:48</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>23.21</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>28.05</u> ft	Product Thickness: <u>None</u> ft
	Water Column Height: <u>4.84</u> ft	

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
4.84 x .16	0.7744 x 128	99.12 x 3	297.3 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
9:48	7.69	14.51	16.1				32	lt. brown cloudy
	7.67	15.23	14.7				64	Same as above
	7.69	15.56	13.9				96	Same as above
	7.68	15.84	13.6				128	Same as above
	7.67	15.97	14.0				153	Same as above
	7.61	15.87	15.5				185	Same as above
	7.65	15.94	14.0				215	Same as above
	7.64	15.82	15.6				239	bailing down
	7.66	15.83	14.8				271	recovering better
	7.65	16.12	14				303	lt. brown cloudy
	7.64	15.88	15.1				331	Same as above
	7.64	16.19	13.9				363	Same as above
	7.65	16.11	13.7				395	increasing siltiness
	7.66	16.05	13.7				427	No change
	7.68	16.17	13.7				455	No change
	7.69	16.07	13.8				483	No change
	7.68	16.08	13.7				511	No change
Final:10:20	7.68	16.08	13.7				511	

COMMENTS: Preserved w/ HgCl2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-8 Sample Time: 10:20

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-3R</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>10:29</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>22.47</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>31.35</u> ft	Product Thickness: <u>None</u> ft
Water Column Height: <u>8.88</u> ft		

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
8.88 x .16	1.42 x 128	181.8 x 3	545.5 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
10:29	7.54	17.1	16.5				32	slightly cloudy
	7.59	17.84	14.8				64	no change
	7.59	17.85	14.3				96	no change
	7.59	17.78	14.3				128	no change
	7.62	17.75	14.3				160	no change
	7.61	17.73	14.2				192	no change
	7.61	17.68	14.3				208	increasing silt, bailing down
	7.66	17.64	14.5				224	no change
	7.66	17.47	14.6				236	no change
	7.67	17.37	14.8				248	no change
10:48	7.66	17.30	14.7				260	no change; bailed dry, off site
15:24	7.57	15.77	16.0				32	slightly cloudy
	7.53	16.38	14.5				32	no change
	7.55	16.70	14.3				32	no change
	7.46	16.95	14.5				32	no change
	7.52	17.19	14.6				32	no change
	7.53	17.27	14.5				32	no change
Final:15:32	7.56	17.39	14.6				484	

COMMENTS: 1048: off site, leave well to recover, will return later today. 1524: return to MW-3R to finish purging and collect sample. Preserved with HgCl<sub>2</sub>

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-3R Sample Time: 15:32

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-15</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>10:53</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>21.64</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>31.51</u> ft	Product Thickness: <u>None</u> ft
Water Column Height: <u>9.87</u> ft		

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
9.87 x .16	1.58 x 128	202.13x 3	606.4 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
10:53	7.41	13.56	16.5				32	slight odor, brown cloudy
	7.43	13.73	15.1				32	slight odor, brown cloudy
	7.44	13.71	14.6				32	odor increasing
	7.45	13.64	14.3				32	odor increasing
	7.45	13.42	14.4				32	odor strong
	7.45	13.24	14.4				32	still slight brown silt
	7.45	13.02	14.3				32	same as above
	7.44	12.80	14.3				32	same as above
	7.44	12.65	14.3				32	same as above
	7.43	12.56	14.3				32	odor, moderate silt
	7.43	12.33	14.3				32	same as above
	7.43	12.18	14.4				32	same as above
	7.44	12.03	14.3				32	increasing odor
	7.44	11.86	14.4				64	decreasing silty
	7.46	11.56	14.4				64	same as above
	7.43	11.23	14.4				32	same as above
	7.45	11.17	14.4				32	same as above
	7.44	11.04	14.3				32	same as above
	7.44	10.92	14.3				32	same as above
	7.42	10.89	14.3				32	same as above
Final:11:16	7.42	10.89	14.3				672	

pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

COMMENTS: Odor smelled more like paint thinner than fuel. Samples preserved with HgCl2.

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site Sump

Sample ID: MW-15 Sample Time: 11:16

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Largo CS Location: Largo Compressor Strn Well No: MW-14  
 Client: Enterprise FS Date: 7/13/2010 Time: 11:24  
 Project Manager: Ashley Ager Sampler's Name: Devin Hencmann

Measuring Point: TOC Depth to Water: 21.19 ft Depth to Product: None ft  
 Well Diameter: 2" Total Depth: 30.87 ft Product Thickness: None ft  
 Water Column Height: 9.68 ft

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
9.68 x .16	1.548 x 128	198.2 x 3	594 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
11:24	7.42	17.16	16.2				32	no odor, clear
	7.44	17.40	14.5				32	same as above
	7.46	17.54	14.2				32	increasingly cloudy
	7.44	17.51	14.7				32	brown silty
	7.46	17.51	14.0				32	same as above
	7.44	17.43	13.9				32	same as above
	7.46	17.38	13.9				32	same as above
	7.45	17.28	14.0				32	same as above
	7.45	17.03	13.9				32	same as above
	7.44	16.50	13.9				32	same as above
	7.47	15.88	14				32	slightly clearer
	7.46	15.13	14.1				32	same as above
	7.48	14.53	14				32	same as above
	7.46	13.76	14.1				64	same as above
	7.48	12.91	14.1				64	same as above
	7.5	12.51	14				64	same as above
	7.5	12.12	14.1				32	same as above
Final:	7.5	12.12	14.1				640	

COMMENTS: Preserved w/ HgCl2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-14 Sample Time: 11:45

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Largo CS Location: Largo Compressor Stn Well No: MW-13  
 Client: Enterprise FS Date: 7/13/2010 Time: 11:55  
 Project Manager: Ashley Ager Sampler's Name: Devin Hencmann

Measuring Point: TOC Depth to Water: 20.28 ft Depth to Product: None ft  
 Well Diameter: 2" Total Depth: 29.54 ft Product Thickness: None ft  
 Water Column Height: 9.26 ft

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
9.26 x .16	1.48 x 128	189.4 x 3	568 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
11:55	7.64	6.56	15.6					no odor clear
	7.68	6.69	14.2					increasing cloudiness
	7.68	6.68	13.9					brown silty
	7.68	6.69	13.7					Same as above
	7.67	6.69	13.8					Same as above
	7.68	6.68	13.7					Same as above
	7.67	6.63	13.8					Same as above
	7.65	6.60	13.7					Same as above
	7.65	6.60	13.8					Same as above
	7.65	6.58	13.7					Same as above
	7.64	6.52	13.8					Same as above
	7.67	6.53	13.9					Same as above
	7.66	6.53	13.9					Same as above
	7.66	6.53	13.8					Same as above
	7.65	6.50	13.9					Same as above
Final:12:21	7.65	6.50	13.8					

COMMENTS: Preserved with HgCl2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-13 Sample Time: 12:21

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-6</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>12:29</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>20.09</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>27.55</u> ft	Product Thickness: <u>None</u> ft
Water Column Height: <u>7.46</u> ft		

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
7.46 x .16	1.193 x 128	152.8 x 3	458.3 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
12:29	7.52	9.6	16.2				32	slightly cloudy
	7.52	9.65	15.0				64	light brown, no odor
	7.55	9.78	14.1				96	No change
	7.54	9.77	13.9				128	No change
	7.55	9.74	13.9				160	No change
	7.54	9.65	13.9				192	slight increase in siltiness
	7.53	9.48	13.9				224	No change
	7.52	9.24	13.9				256	No change
	7.52	9.03	14				288	No change
	7.52	8.69	14				320	No change
	7.51	8.78	14				352	No change
	7.52	8.50	14.1				384	No change
	7.5	8.13	14.1				448	No change
	7.53	8.12	14.1				480	No change
	7.53	8.12	14.3				512	No change
Final:12:50	7.53	8.12	14.3				512	

COMMENTS: Preserved with HgCl2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-6 Sample Time: 12:50

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-9</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>13:00</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>21.77</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>31.49</u> ft	Product Thickness: <u>None</u> ft
	Water Column Height: <u>9.72</u> ft	

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
9.72 x .16	1.55 x 128	199.06 x 3	597.2 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
13:02	7.52	9.36	17.2				32	No odor, slightly lt. brn silty
	7.51	9.52	15.2				64	same as above
	7.51	9.68	14.5				96	same as above
	7.20	9.69	14.3				128	same as above
	7.45	9.71	14.3				160	same as above
	7.46	9.74	14.4				192	same as above
	7.48	9.74	14.3				224	same as above
	7.48	9.75	14.3				256	same as above
	7.50	9.80	14.2				288	same as above
	7.49	9.77	14.3				320	slight increase in siltiness
	7.49	9.78	14.3				352	same as above
	7.48	9.81	14.3				416	same as above
	7.50	9.80	14.3				480	same as above
	7.49	9.84	14.4				544	same as above
	7.51	9.94	14.2				608	same as above
	7.48	9.91	14.2				640	same as above
	7.51	9.91	14.3				672	same as above
Final:	7.51	9.91	14.3				672	

COMMENTS: Preserved w/ HgCl2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-9 Sample Time: 13:18

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-16</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>13:32</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>22.29</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>31.06</u> ft	Product Thickness: <u>None</u> ft
	Water Column Height: <u>8.77</u> ft	

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
8.77 x .16	1.403 x 128	179.6 x 3	538.8 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
13:36	7.32	12.37	17.0				32	Very slightly grey-tan, cloudy
	7.35	12.52	14.9				64	Very slightly grey-tan, cloudy
	7.33	12.51	14.3				96	increasing tan & cloudiness
	7.37	12.57	14.0				128	same as above
	7.36	12.60	14.1				160	same as above
	7.37	12.67	14.0				192	same as above
	7.39	12.66	14.0				224	same as above
	7.39	12.64	14.1				256	same as above
	7.38	12.63	14.3				288	same as above
	7.41	12.69	14.1				320	same as above
	7.4	12.66	14.1				384	same as above
	7.44	12.64	14.2				448	same as above
	7.41	12.54	14.5				512	same as above
	7.44	12.55	14.6				576	same as above
	7.41	12.46	14.7				608	same as above
	7.42	12.42	14.7				636	same as above
Final	7.42	12.42	14.7				672	

COMMENTS: Preserved w/ HgCl2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-16 Sample Time: 13:53

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-7</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>14:01</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>21.46</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>27.76</u> ft	Product Thickness: <u>None</u> ft
	Water Column Height: <u>6.3</u> ft	

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
6.3 x .16	1.008 x 128	129.02 x 3	387 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
14:08	7.84	23.3	16.8				32	strong fuel odor, grey tint
	7.86	24.2	15.1				64	strong fuel odor, grey tint
	7.87	24.4	14.5				96	strong fuel odor, grey tint
	7.87	24.3	14.2				128	strong fuel odor, grey tint
	7.88	24.4	14.2				160	strong fuel odor, grey tint
	7.88	24.3	14.2				192	strong fuel odor, grey tint
	7.89	24.5	14.3				224	darker grey, still strong fuel odor
	7.91	24.7	14.2				256	darker grey, still strong fuel odor
	7.93	24.9	14.2				288	darker grey, still strong fuel odor
	7.94	25.0	14.2				320	darker grey, still strong fuel odor
	7.95	25.1	14.2				352	darker grey, still strong fuel odor
	7.95	25.2	14.1				384	darker grey, still strong fuel odor
	7.95	25.1	14.1				416	darker grey, still strong fuel odor
Final	7.95	25.1	14.1				416	

COMMENTS: Preserved w/ HgCL2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-7 Sample Time: 14:15

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Largo CS Location: Largo Compressor Stn Well No: MW-11  
 Client: Enterprise FS Date: 7/13/2010 Time: 14:25  
 Project Manager: Ashley Ager Sampler's Name: Devin Hencmann

Measuring Point: TOC Depth to Water: 21.54 ft Depth to Product: None ft  
 Well Diameter: 2" Total Depth: 30.35 ft Product Thickness: None ft  
 Water Column Height: 8.81 ft

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_

Bottom Valve Bailor  Double Check Valve Bailor

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
ounces/ft x ft of water	Ounces	Ounces	Volume to be removed
8.81 x .16	1.41 x 128	180.48 x 3	541.4 oz

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
14:30	7.41	12.23	16.5				32	Strong fuel odor, grey tint
	7.42	12.52	15.5				64	Strong fuel odor, grey tint
	7.43	12.51	14.5				96	Strong fuel odor, grey tint
	7.43	12.33	14.4				128	Strong fuel odor, grey tint
	7.44	12.04	14.0				160	Strong fuel odor, grey tint
	7.43	11.66	14.0				192	Strong fuel odor, grey tint
	7.44	11.22	13.9				224	Strong fuel odor, grey tint
	7.41	10.78	13.8				256	Strong fuel odor, grey tint
	7.42	10.42	13.9				288	Strong fuel odor, grey tint
	7.42	10.07	13.9				320	Strong fuel odor, grey tint
	7.41	9.68	14				384	Strong fuel odor, grey tint
	7.41	9.46	14				448	Strong fuel odor, grey tint
	7.4	9.31	14				512	Strong fuel odor, grey tint
	7.4	9.19	14				576	Strong fuel odor, grey tint
	7.4	9.19	14				608	Strong fuel odor, grey tint
	7.49	9.15	13.9				640	Strong fuel odor, grey tint
	7.39	9.13	14				672	Strong fuel odor, grey tint
Final:12:21	7.39	9.13	14				672	

COMMENTS: Preserved w/ HgCL2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-11 Sample Time: 14:50

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No



## WELL DEVELOPMENT AND SAMPLING LOG

Project Name: <u>Largo CS</u>	Location: <u>Largo Compressor Stn</u>	Well No: <u>MW-12</u>
Client: <u>Enterprise FS</u>	Date: <u>7/13/2010</u>	Time: <u>14:56</u>
Project Manager: <u>Ashley Ager</u>	Sampler's Name: <u>Devin Hencmann</u>	

Measuring Point: <u>TOC</u>	Depth to Water: <u>15.91</u> ft	Depth to Product: <u>None</u> ft
Well Diameter: <u>2"</u>	Total Depth: <u>22.36</u> ft	Product Thickness: <u>None</u> ft
	Water Column Height: <u>6.45</u> ft	

Sampling Method:  Submersible Pump  Centrifugal Pump  Peristaltic Pump  Other \_\_\_\_\_  
 Bottom Valve Bailer  Double Check Valve Bailer

Criteria:  3 to 5 Casing Volumes of Water Removal  Stabilization of Indicator Parameters  Other \_\_\_\_\_

Water Volume in Well			
gallons/ft x ft of water	Gallons	Gallons	Volume to be removed
6.45 x .6524	4.21	4.21 x 3	12.62 gal

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
15:00	7.38	5.14	16.5				1	strong fuel odor, slight sheen, dark grey, fuel smells degraded
	7.43	5.77	15.0				1.75	strong fuel odor, slight sheen, dark grey, fuel smells degraded
	7.45	7.78	14.3				2.75	strong fuel odor, slight sheen, dark grey, fuel smells degraded
	7.49	9.35	13.7				3.5	strong fuel odor, slight sheen, dark grey, fuel smells degraded
	7.48	9.51	13.9				4	strong fuel odor, slight sheen, dark grey, fuel smells degraded
	7.51	9.65	13.8				4.5	Bailing Dry
	7.50	9.72	13.9				5	Bailing Dry
Final	7.5	9.72	13.9				5	

COMMENTS: Preserved w/ HgCL2

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: On site sump

Sample ID: MW-12 Sample Time: 15:10

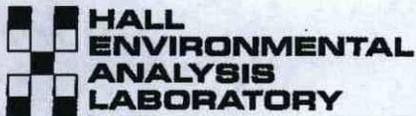
Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other TPH

Trip Blank: Yes

Duplicate Sample: No

**APPENDIX 2**

**LABORATORY ANALYTICAL REPORT**



COVER LETTER

Thursday, July 22, 2010

Ashley Ager  
LTE  
2243 Main Ave Suite 3  
Durango, CO 81301  
TEL: (970) 946-1093  
FAX

RE: Largo CS

Order No.: 1007454

Dear Ashley Ager:

Hall Environmental Analysis Laboratory, Inc. received 12 sample(s) on 7/14/2010 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. Below is a list of our accreditations. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites.

Reporting limits are determined by EPA methodology.

Please do not hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

*Andy Freeman*  
Fox Andy Freeman, Laboratory Manager

NM Lab # NM9425 NM0901  
AZ license # AZ0682  
ORELAP Lab # NM100001  
Texas Lab# T104704424-08-TX



**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-01

Client Sample ID: MW-8  
 Collection Date: 7/13/2010 10:20:00 AM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 5:31:51 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 5:31:51 PM
Surr: DNOP	124	86.9-151		%REC	1	7/15/2010 5:31:51 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/15/2010 8:54:35 PM
Surr: BFB	109	65.7-118		%REC	1	7/15/2010 8:54:35 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/15/2010 8:54:35 PM
Benzene	ND	1.0		µg/L	1	7/15/2010 8:54:35 PM
Toluene	ND	1.0		µg/L	1	7/15/2010 8:54:35 PM
Ethylbenzene	ND	1.0		µg/L	1	7/15/2010 8:54:35 PM
Xylenes, Total	ND	2.0		µg/L	1	7/15/2010 8:54:35 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 8:54:35 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 8:54:35 PM
Surr: 4-Bromofluorobenzene	120	65.9-130		%REC	1	7/15/2010 8:54:35 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-02

Client Sample ID: MW-15  
 Collection Date: 7/13/2010 11:16:00 AM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 6:06:13 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 6:06:13 PM
Surr: DNOP	128	86.9-151		%REC	1	7/15/2010 6:06:13 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	3.2	0.050		mg/L	1	7/15/2010 9:24:50 PM
Surr: BFB	649	65.7-118	S	%REC	1	7/15/2010 9:24:50 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/15/2010 9:24:50 PM
Benzene	490	20		µg/L	20	7/16/2010 3:45:57 PM
Toluene	2.2	1.0		µg/L	1	7/15/2010 9:24:50 PM
Ethylbenzene	7.2	1.0		µg/L	1	7/15/2010 9:24:50 PM
Xylenes, Total	15	2.0		µg/L	1	7/15/2010 9:24:50 PM
1,2,4-Trimethylbenzene	4.3	1.0		µg/L	1	7/15/2010 9:24:50 PM
1,3,5-Trimethylbenzene	5.2	1.0		µg/L	1	7/15/2010 9:24:50 PM
Surr: 4-Bromofluorobenzene	175	65.9-130	S	%REC	1	7/15/2010 9:24:50 PM

Qualifiers:

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-03

Client Sample ID: MW-14  
 Collection Date: 7/13/2010 11:45:00 AM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 6:40:20 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 6:40:20 PM
Surr: DNOP	134	86.9-151		%REC	1	7/15/2010 6:40:20 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/16/2010 3:15:46 PM
Surr: BFB	101	65.7-118		%REC	1	7/16/2010 3:15:46 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/16/2010 3:15:46 PM
Benzene	ND	1.0		µg/L	1	7/16/2010 3:15:46 PM
Toluene	ND	1.0		µg/L	1	7/16/2010 3:15:46 PM
Ethylbenzene	ND	1.0		µg/L	1	7/16/2010 3:15:46 PM
Xylenes, Total	ND	2.0		µg/L	1	7/16/2010 3:15:46 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/16/2010 3:15:46 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/16/2010 3:15:46 PM
Surr: 4-Bromofluorobenzene	107	65.9-130		%REC	1	7/16/2010 3:15:46 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-04

Client Sample ID: MW-13  
 Collection Date: 7/13/2010 12:21:00 PM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 7:14:27 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 7:14:27 PM
Surr: DNOP	129	86.9-151		%REC	1	7/15/2010 7:14:27 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/15/2010 10:25:13 PM
Surr: BFB	92.9	65.7-118		%REC	1	7/15/2010 10:25:13 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/15/2010 10:25:13 PM
Benzene	ND	1.0		µg/L	1	7/15/2010 10:25:13 PM
Toluene	ND	1.0		µg/L	1	7/15/2010 10:25:13 PM
Ethylbenzene	ND	1.0		µg/L	1	7/15/2010 10:25:13 PM
Xylenes, Total	ND	2.0		µg/L	1	7/15/2010 10:25:13 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 10:25:13 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 10:25:13 PM
Surr: 4-Bromofluorobenzene	99.8	65.9-130		%REC	1	7/15/2010 10:25:13 PM

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level  
 E Estimated value  
 J Analyte detected below quantitation limits  
 NC Non-Chlorinated  
 PQL Practical Quantitation Limit

B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 MCL Maximum Contaminant Level  
 ND Not Detected at the Reporting Limit  
 S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

**CLIENT:** LTE  
**Lab Order:** 1007454  
**Project:** Largo CS  
**Lab ID:** 1007454-05

**Client Sample ID:** MW-6  
**Collection Date:** 7/13/2010 12:50:00 PM  
**Date Received:** 7/14/2010  
**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 7:48:34 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 7:48:34 PM
Surr: DNOP	126	86.9-151		%REC	1	7/15/2010 7:48:34 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/15/2010 10:55:28 PM
Surr: BFB	88.0	65.7-118		%REC	1	7/15/2010 10:55:28 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/15/2010 10:55:28 PM
Benzene	ND	1.0		µg/L	1	7/15/2010 10:55:28 PM
Toluene	ND	1.0		µg/L	1	7/15/2010 10:55:28 PM
Ethylbenzene	ND	1.0		µg/L	1	7/15/2010 10:55:28 PM
Xylenes, Total	ND	2.0		µg/L	1	7/15/2010 10:55:28 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 10:55:28 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 10:55:28 PM
Surr: 4-Bromofluorobenzene	94.3	65.9-130		%REC	1	7/15/2010 10:55:28 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-06

Client Sample ID: MW-9  
 Collection Date: 7/13/2010 1:18:00 PM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 8:56:48 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 8:56:48 PM
Surr: DNOP	127	86.9-151		%REC	1	7/15/2010 8:56:48 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/15/2010 11:25:45 PM
Surr: BFB	95.2	65.7-118		%REC	1	7/15/2010 11:25:45 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/15/2010 11:25:45 PM
Benzene	ND	1.0		µg/L	1	7/15/2010 11:25:45 PM
Toluene	ND	1.0		µg/L	1	7/15/2010 11:25:45 PM
Ethylbenzene	ND	1.0		µg/L	1	7/15/2010 11:25:45 PM
Xylenes, Total	ND	2.0		µg/L	1	7/15/2010 11:25:45 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 11:25:45 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 11:25:45 PM
Surr: 4-Bromofluorobenzene	103	65.9-130		%REC	1	7/15/2010 11:25:45 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

**CLIENT:** LTE  
**Lab Order:** 1007454  
**Project:** Largo CS  
**Lab ID:** 1007454-07

**Client Sample ID:** MW-16  
**Collection Date:** 7/13/2010 1:53:00 PM  
**Date Received:** 7/14/2010  
**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 9:30:55 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 9:30:55 PM
Surr: DNOP	129	86.9-151		%REC	1	7/15/2010 9:30:55 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	0.30	0.050		mg/L	1	7/15/2010 11:56:03 PM
Surr: BFB	106	65.7-118		%REC	1	7/15/2010 11:56:03 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/15/2010 11:56:03 PM
Benzene	47	1.0		µg/L	1	7/15/2010 11:56:03 PM
Toluene	ND	1.0		µg/L	1	7/15/2010 11:56:03 PM
Ethylbenzene	ND	1.0		µg/L	1	7/15/2010 11:56:03 PM
Xylenes, Total	ND	2.0		µg/L	1	7/15/2010 11:56:03 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 11:56:03 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/15/2010 11:56:03 PM
Surr: 4-Bromofluorobenzene	109	65.9-130		%REC	1	7/15/2010 11:56:03 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-08

Client Sample ID: MW-7  
 Collection Date: 7/13/2010 2:15:00 PM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	4.6	3.0		mg/L	1	7/15/2010 10:05:02 PM
Motor Oil Range Organics (MRO)	ND	15		mg/L	1	7/15/2010 10:05:02 PM
Surr: DNOP	130	86.9-151		%REC	1	7/15/2010 10:05:02 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	51	5.0		mg/L	100	7/16/2010 4:16:25 PM
Surr: BFB	108	65.7-118		%REC	100	7/16/2010 4:16:25 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	25		µg/L	10	7/16/2010 12:26:22 AM
Benzene	15000	200		µg/L	200	7/20/2010 12:46:11 AM
Toluene	ND	10		µg/L	10	7/16/2010 12:26:22 AM
Ethylbenzene	130	10		µg/L	10	7/16/2010 12:26:22 AM
Xylenes, Total	25	20		µg/L	10	7/16/2010 12:26:22 AM
1,2,4-Trimethylbenzene	ND	10		µg/L	10	7/16/2010 12:26:22 AM
1,3,5-Trimethylbenzene	ND	10		µg/L	10	7/16/2010 12:26:22 AM
Surr: 4-Bromofluorobenzene	121	65.9-130		%REC	200	7/20/2010 12:46:11 AM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-09

Client Sample ID: MW-11  
 Collection Date: 7/13/2010 2:50:00 PM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	1.2	1.0		mg/L	1	7/15/2010 10:39:10 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 10:39:10 PM
Surr: DNOP	127	86.9-151		%REC	1	7/15/2010 10:39:10 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	3.6	0.050		mg/L	1	7/16/2010 12:56:43 AM
Surr: BFB	349	65.7-118	S	%REC	1	7/16/2010 12:56:43 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/16/2010 12:56:43 AM
Benzene	700	50		µg/L	50	7/16/2010 4:46:45 PM
Toluene	4.5	1.0		µg/L	1	7/16/2010 12:56:43 AM
Ethylbenzene	11	1.0		µg/L	1	7/16/2010 12:56:43 AM
Xylenes, Total	56	2.0		µg/L	1	7/16/2010 12:56:43 AM
1,2,4-Trimethylbenzene	3.6	1.0		µg/L	1	7/16/2010 12:56:43 AM
1,3,5-Trimethylbenzene	2.8	1.0		µg/L	1	7/16/2010 12:56:43 AM
Surr: 4-Bromofluorobenzene	146	65.9-130	S	%REC	1	7/16/2010 12:56:43 AM

Qualifiers:

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

**CLIENT:** LTE  
**Lab Order:** 1007454  
**Project:** Largo CS  
**Lab ID:** 1007454-10

**Client Sample ID:** MW-12  
**Collection Date:** 7/13/2010 3:10:00 PM  
**Date Received:** 7/14/2010  
**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: <b>JB</b>
Diesel Range Organics (DRO)	1.0	1.0		mg/L	1	7/15/2010 11:13:17 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 11:13:17 PM
Surr: DNOP	129	86.9-151		%REC	1	7/15/2010 11:13:17 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	22	2.5		mg/L	50	7/16/2010 5:16:58 PM
Surr: BFB	105	65.7-118		%REC	50	7/16/2010 5:16:58 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	130		µg/L	50	7/16/2010 5:16:58 PM
Benzene	2900	50		µg/L	50	7/16/2010 5:16:58 PM
Toluene	330	50		µg/L	50	7/16/2010 5:16:58 PM
Ethylbenzene	140	50		µg/L	50	7/16/2010 5:16:58 PM
Xylenes, Total	1700	100		µg/L	50	7/16/2010 5:16:58 PM
1,2,4-Trimethylbenzene	130	50		µg/L	50	7/16/2010 5:16:58 PM
1,3,5-Trimethylbenzene	97	50		µg/L	50	7/16/2010 5:16:58 PM
Surr: 4-Bromofluorobenzene	118	65.9-130		%REC	50	7/16/2010 5:16:58 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-11

Client Sample ID: MW-3R  
 Collection Date: 7/13/2010 3:32:00 PM  
 Date Received: 7/14/2010  
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JB
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	7/15/2010 11:47:24 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/15/2010 11:47:24 PM
Surr: DNOP	129	86.9-151		%REC	1	7/15/2010 11:47:24 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	1.4	0.050		mg/L	1	7/16/2010 1:57:11 AM
Surr: BFB	646	65.7-118	S	%REC	1	7/16/2010 1:57:11 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/16/2010 1:57:11 AM
Benzene	13	1.0		µg/L	1	7/16/2010 1:57:11 AM
Toluene	ND	1.0		µg/L	1	7/16/2010 1:57:11 AM
Ethylbenzene	1.3	1.0		µg/L	1	7/16/2010 1:57:11 AM
Xylenes, Total	6.4	2.0		µg/L	1	7/16/2010 1:57:11 AM
1,2,4-Trimethylbenzene	5.8	1.0		µg/L	1	7/16/2010 1:57:11 AM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/16/2010 1:57:11 AM
Surr: 4-Bromofluorobenzene	152	65.9-130	S	%REC	1	7/16/2010 1:57:11 AM

Qualifiers:

\* Value exceeds Maximum Contaminant Level  
 E Estimated value  
 J Analyte detected below quantitation limits  
 NC Non-Chlorinated  
 PQL Practical Quantitation Limit

B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 MCL Maximum Contaminant Level  
 ND Not Detected at the Reporting Limit  
 S Spike recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

Date: 22-Jul-10

CLIENT: LTE  
 Lab Order: 1007454  
 Project: Largo CS  
 Lab ID: 1007454-12

Client Sample ID: Trip Blank  
 Collection Date:  
 Date Received: 7/14/2010  
 Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: BDH
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	7/16/2010 2:27:20 AM
Surr: BFB	103	65.7-118		%REC	1	7/16/2010 2:27:20 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BDH
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	7/16/2010 2:27:20 AM
Benzene	ND	1.0		µg/L	1	7/16/2010 2:27:20 AM
Toluene	ND	1.0		µg/L	1	7/16/2010 2:27:20 AM
Ethylbenzene	ND	1.0		µg/L	1	7/16/2010 2:27:20 AM
Xylenes, Total	ND	2.0		µg/L	1	7/16/2010 2:27:20 AM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/16/2010 2:27:20 AM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/16/2010 2:27:20 AM
Surr: 4-Bromofluorobenzene	103	65.9-130		%REC	1	7/16/2010 2:27:20 AM

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level  
 E Estimated value  
 J Analyte detected below quantitation limits  
 NC Non-Chlorinated  
 PQL Practical Quantitation Limit

B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 MCL Maximum Contaminant Level  
 ND Not Detected at the Reporting Limit  
 S Spike recovery outside accepted recovery limits

## QA/QC SUMMARY REPORT

Client: LTE  
Project: Largo CS

Work Order: 1007454

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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**Method: EPA Method 8015B: Diesel Range**

Sample ID: MB-23034		MBLK									
Diesel Range Organics (DRO)	ND	mg/L	1.0								
Motor Oil Range Organics (MRO)	ND	mg/L	5.0								
Sample ID: LCS-23034		LCS									
Diesel Range Organics (DRO)	5.382	mg/L	1.0	5	0	108	74	157			
Sample ID: LCSD-23034		LCSD									
Diesel Range Organics (DRO)	6.416	mg/L	1.0	5	0	128	74	157	17.5	23	

**Method: EPA Method 8015B: Gasoline Range**

Sample ID: 5ML RB		MBLK									
Gasoline Range Organics (GRO)	ND	mg/L	0.050								
Sample ID: 5ML RB		MBLK									
Gasoline Range Organics (GRO)	ND	mg/L	0.050								
Sample ID: 2.5UG GRO LCS		LCS									
Gasoline Range Organics (GRO)	0.5286	mg/L	0.050	0.5	0	106	82.3	122			
Sample ID: 2.5UG GRO LCS		LCS									
Gasoline Range Organics (GRO)	0.5456	mg/L	0.050	0.5	0	109	82.3	122			
Sample ID: 1007454-04A MS		MS									
Gasoline Range Organics (GRO)	0.5258	mg/L	0.050	0.5	0	105	80	115			

**Qualifiers:**

- |  |  |
|--|--|
| E Estimated value                            | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits | NC Non-Chlorinated                                   |
| ND Not Detected at the Reporting Limit       | R RPD outside accepted recovery limits               |

QA/QC SUMMARY REPORT

Client: LTE  
Project: Largo CS

Work Order: 1007454

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Method: EPA Method 8021B: Volatiles

Sample ID: 5mL rb1 **MBLK** Batch ID: R39847 Analysis Date: 7/15/2010 9:47:42 AM

Methyl tert-butyl ether (MTBE)	ND	µg/L	2.5								
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
1,2,4-Trimethylbenzene	ND	µg/L	1.0								
1,3,5-Trimethylbenzene	ND	µg/L	1.0								

Sample ID: 5ML RB **MBLK** Batch ID: R39881 Analysis Date: 7/16/2010 1:14:24 PM

Methyl tert-butyl ether (MTBE)	ND	µg/L	2.5								
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
1,2,4-Trimethylbenzene	ND	µg/L	1.0								
1,3,5-Trimethylbenzene	ND	µg/L	1.0								

Sample ID: 100NG BTEX LCS **LCS** Batch ID: R39847 Analysis Date: 7/15/2010 12:19:26 PM

Methyl tert-butyl ether (MTBE)	21.31	µg/L	2.5	20	0	107	82.5	129			
Benzene	19.32	µg/L	1.0	20	0	96.6	87.9	121			
Toluene	19.37	µg/L	1.0	20	0	98.9	83	124			
Ethylbenzene	19.08	µg/L	1.0	20	0	95.4	81.7	122			
Xylenes, Total	57.55	µg/L	2.0	60	0	95.9	85.6	121			
1,2,4-Trimethylbenzene	19.58	µg/L	1.0	20	0.216	96.8	85.7	112			
1,3,5-Trimethylbenzene	20.30	µg/L	1.0	20	0.12	101	90.5	120			

Sample ID: 100NG BTEX LCS **LCS** Batch ID: R39881 Analysis Date: 7/16/2010 12:44:06 PM

Methyl tert-butyl ether (MTBE)	21.26	µg/L	2.5	20	0	106	82.5	129			
Benzene	19.76	µg/L	1.0	20	0.154	98.0	87.9	121			
Toluene	20.88	µg/L	1.0	20	0	104	83	124			
Ethylbenzene	20.55	µg/L	1.0	20	0.176	102	81.7	122			
Xylenes, Total	61.79	µg/L	2.0	60	0	103	85.6	121			
1,2,4-Trimethylbenzene	18.89	µg/L	1.0	20	0.396	92.5	85.7	112			
1,3,5-Trimethylbenzene	20.43	µg/L	1.0	20	0.284	101	90.5	120			

Sample ID: 100NG BTEX LCSD **LCSD** Batch ID: R39881 Analysis Date: 7/16/2010 8:19:04 PM

Methyl tert-butyl ether (MTBE)	21.37	µg/L	2.5	20	0	107	82.5	129	0.488	13.3	
Benzene	18.56	µg/L	1.0	20	0.154	92.0	87.9	121	6.26	14.6	
Toluene	20.84	µg/L	1.0	20	0	104	83	124	0.192	18	
Ethylbenzene	19.37	µg/L	1.0	20	0.176	96.0	81.7	122	5.93	15.8	
Xylenes, Total	60.63	µg/L	2.0	60	0	101	85.6	121	1.89	15.9	
1,2,4-Trimethylbenzene	19.30	µg/L	1.0	20	0.396	94.5	85.7	112	2.12	3.71	
1,3,5-Trimethylbenzene	20.32	µg/L	1.0	20	0.284	100	90.5	120	0.560	4.17	

Qualifiers:

- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- H Holding times for preparation or analysis exceeded
- NC Non-Chlorinated
- R RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name LTE

Date Received:

7/14/2010

Work Order Number 1007454

Received by: ARS

Checklist completed by:

Signature

*[Handwritten Signature]*

7/14/10  
Date

Sample ID labels checked by:

*[Handwritten Initials]*  
Initials

Matrix:

Carrier name: Greyhound

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present  Not Shipped
- Custody seals intact on sample bottles? Yes  No  N/A
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Water - VOA vials have zero headspace? No VOA vials submitted  Yes  No
- Water - Preservation labels on bottle and cap match? Yes  No  N/A
- Water - pH acceptable upon receipt? Yes  No  N/A

Number of preserved bottles checked for pH:

<2 >12 unless noted below.

Container/Temp Blank temperature?

5.5°

<6° C Acceptable

If given sufficient time to cool.

COMMENTS:

Client contacted \_\_\_\_\_ Date contacted: \_\_\_\_\_ Person contacted \_\_\_\_\_

Contacted by: \_\_\_\_\_ Regarding: \_\_\_\_\_

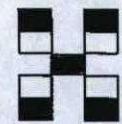
Comments: \_\_\_\_\_

Corrective Action \_\_\_\_\_

# Chain-of-Custody Record

Client: LT Environmental  
 Attn: Ashley Ager  
 Mailing Address: 2243 N. Main #3  
Durango, CO 81301  
 Phone #: (970) 385-1096  
 (email) or Fax#: AAGER@LTENV.COM  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation  
 NELAP  Other \_\_\_\_\_  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  
 Standard  Rush \_\_\_\_\_  
 Project Name:  
LARGO CS  
 Project #:  
GMS 1002  
 Project Manager:  
Ashley Ager  
 Sampler: J. Linn / D. Hencman  
 On Ice:  Yes  No  
 Sample Temperature: 55



## HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

### Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
7-13-10	1020	GW	MW-8	4 VOAS	HgCl <sub>2</sub>	1007454	X	X										
	1116		MW-15			2	X	X										
	1145		MW-14			3	X	X										
	1221		MW-13			4	X	X										
	1250		MW-6			5	X	X										
	1318		MW-9			6	X	X										
	1353		MW-16			7	X	X										
	1415		MW-7			8	X	X										
	1450		MW-11			9	X	X										
	1510		MW-12			10	X	X										
	1532		MW-3R			11	X	X										
↓	1700	↓	TRIP BLANK			12	X	X										

Date: 7/13/10 Time: 2030 Relinquished by: [Signature]  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_ Relinquished by: \_\_\_\_\_  
 Received by: [Signature] Date: 9:00 Time: 7/14/10  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Remarks: Shipped via BUS to HEAL

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