# 3R – 470 2015 GW WP 09 / 11 / 2015



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September 11, 2015

Mr. James McDaniel XTO Energy, Inc. 382 County Road 3100 Aztec, New Mexico 87410

#### RE: Subsurface Investigation Results and Remediation Work Plan XTO Energy, Inc. Sullivan Gas Com D #1E API# 30-045-24083 Bloomfield, New Mexico

Dear Mr. McDaniel:

LT Environmental, Inc. (LTE) is pleased to present to XTO Energy, Inc. (XTO) this letter summarizing the results of a subsurface investigation and a remediation work plan to address identified soil and groundwater impacts at the Sullivan GC D #1E (Site). The Site is located south of Sullivan Road in Bloomfield, New Mexico approximately one quarter mile southeast of the San Juan River in Unit F of Section 26 of Township 29 North and Range 11 West (Figure 1). The subsurface investigation consisted of soil and groundwater sampling to delineate hydrocarbon impacts. Based on site conditions, LTE proposes *in situ* remediation consisting of enhanced fluid recovery and an air sparging/soil vapor extraction (AS/SVE) system.

#### SITE BACKGROUND

XTO identified a release at the Site on June 1, 2015. The source was a failed union in a fiberglass pipeline connecting the separator and aboveground storage tank. XTO responded by collecting subsurface soil samples from potholes and with a hand auger in locations depicted on Figure 2. Soil sampling results are presented on Table 1 and on Figure 3. The laboratory analytical results indicated soil was impacted at the source from approximately 4 feet below ground surface (bgs) to the depth that saturated sediments were observed at approximately 18.5 feet bgs. Concentrations of benzene from samples collected under the source ranged from 10 milligrams per kilogram (mg/kg) at 8 feet bgs to 53 mg/kg at 19 feet bgs. Total petroleum hydrocarbons (TPH) were detected in the soil samples as high as 16,300 mg/kg at 19 feet bgs.

Based on the presence of saturated sediments, XTO attempted to collect groundwater samples from BH-1, BH-2, and BH-3. The sidewalls of BH-1 collapsed and no groundwater was sampled at that location. A groundwater sample was collected from BH-2 and BH-3 for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). The concentrations of benzene, toluene, and total xylenes in the sample collected from BH-2 exceeded New Mexico Water Quality Control Commission (NMWQCC) standards as presented in Table 2. The groundwater sample collected from BH-3 contained no detectable concentrations of benzene, toluene, and ethylbenzene. Although total xylenes were detected, the concentration did not exceed NMWQCC standards.

#### SOIL INVESTIGATION

On August 19, 2015, LTE utilized a Geoprobe<sup>®</sup> 6620-DT direct-push drilling rig operated by Earth Worx Environmental Services, LLC to better delineate impacted soil near the source of the release. Soil borings



SB01 through SB09 were advanced to the saturated zone in locations depicted on Figure 2. During the advancement of soil borings, a geologist described soil samples according to the Unified Soil Classification System and evaluated soil for potential signs of environmental impacts by means of visual observations (i.e., inspection for staining/mottling) and olfactory assessment (i.e., odors). LTE conducted field screening for volatile aromatic hydrocarbons using a photoionization detector (PID) with a 10.6 electron-volt lamp on the soil sample collected from the interval immediately beneath the ground surface and every five feet thereafter in addition to any soil that was visibly stained or had a hydrocarbon odor. Field screening was conducted in accordance with the New Mexico Oil Conservation Division's (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases*, dated August 13, 1993. Soil boring logs are included as Attachment A.

Soil samples for laboratory analysis were collected from soil borings SB02, SB07, and SB08 from the unsaturated section of core containing the highest field screening results. Soil samples were not collected from soil borings where volatile organic compounds were not detected above 100 parts per million (ppm) during field screening. To minimize loss of volatile aromatic hydrocarbons, the soil samples were firmly packed into glass soil jars supplied by the laboratory and immediately placed on ice in a cooler. The sample jars were labeled with the date and time of collection, sample identifier, project name, collector's name, and parameters to be analyzed. Samples were shipped on ice to ESC Lab Sciences in Mt. Juliet, Tennessee (ESC) for analysis. Strict chain-of-custody (COC) protocol was followed from sampling through shipment. The date and time sampled, sample identifier, sampler's name, required analyses, and sampler's signatures were included on the COC. Soil samples were analyzed for BTEX and TPH-gasoline range organics (GRO) by United States Environmental Protection Agency (EPA) Method 8021 and TPH-diesel range organics (DRO) by EPA Method 8015.

The number of soil borings advanced by the Geoprobe<sup>®</sup> near the release origin was limited to maintain a safe distance from subsurface pipelines. On August 21, 2015, LTE personnel returned to the Site to utilize a hand auger due to a high concentration of subsurface utilities and equipment in the vicinity of the source area. Soil borings SB10 through SB16 were advanced to the saturated zone or until refusal (large cobbles). Soil samples were collected from SB10, SB11, SB12, SB14, and SB15 and submitted to ESC for analysis of BTEX and TPH.

#### **GROUNDWATER INVESTIGATION**

LTE collected groundwater grab samples from SB03, SB05, and SB06 by advancing Hydropunch<sup>™</sup> tooling with the Geoprobe® and using a peristaltic pump with clean disposable tubing to fill three non-preserved 40 milliliter glass vials with zero headspace to prevent degradation of the samples. The groundwater samples were shipped on ice at 4 degrees Celsius under strict chain-of-custody procedures to the laboratory to be analyzed for BTEX according to EPA Method 8021B within the required holding time.

On September 4, 2015, LTE used a hand auger to install a product recovery well near the origin of the release (PR-1). The well is constructed of schedule 40, 2-inch polyvinyl chloride (PVC) and includes 10 feet of 0.01-inch machine slotted flush-threaded PVC well screen. A clean 10-20 grade silica sand pack was placed from the bottom of the boring to two feet above the top of the screen. Above the gravel pack, 3/8-inch natural bentonite chips were set to the ground surface. A completion diagram is included in Appendix A.

During the week of September 7, 2014, LTE utilized a CME-75 drilling rig equipped with hollow stem augers to install four groundwater monitoring wells in locations depicted on Figure 2. The groundwater



monitoring wells were constructed of 2-inch diameter schedule 40 PVC and included 10 feet of 0.01 inch machine slotted flush-threaded PVC well screen. A clean 10-20 grade silica sand gravel pack was placed from the bottom of the soil boring to two feet above the top of the screen. Two feet of three-eighths inch bentonite chips were set above the gravel pack, followed by a neat cement slurry to the surface, containing a minimum of 5 percent powdered bentonite. The wells were set in a flush-mount casing.

Following installation, the locations of the four monitoring wells and the product recovery well were obtained using a Trimble GeoXT global positioning system. The wells were surveyed for top-of casing elevations to an accuracy of plus or minus 0.01 feet so that groundwater flow direction and gradient could be determined. Total depth of each monitoring well was obtained using a Keck oil/water interface probe. The monitoring wells were developed utilizing a new PVC bailer. LTE purged fluid until at least 10 casing volumes had been removed and turbidity was reduced to the greatest possible extent or until the well bailed dry. All purged water was disposed of at a produced water tank on site.

#### RESULTS

The observed subsurface lithology consisted of a sandy silt to a silty sand that is 13 feet to 17 feet thick underlain by a saturated sand occurring at 13 feet to 17.5 feet. Varying sized cobbles were observed dispersed vertically throughout the subsurface. In MW01, a consolidated silty sand existed under the saturated interval at approximately 22 feet bgs. Although the saturated interval was stained and yielded field screening results suggesting soil and groundwater were impacted, the underlying consolidated layer did not exhibit petroleum hydrocarbon impact. As such, LTE did not advance the borehole further into the subsurface and set the well at 23 feet bgs. Soil boring logs are provided in Attachment A.

#### Soil Sampling Results

In accordance with the NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993), remediation action levels for soil at the Site were determined to be 10 mg/kg for benzene, 50 mg/kg for BTEX, and 100 mg/kg for TPH because groundwater is less than 50 feet bgs. Soil samples 8' Below Union, 12' Below Union, 18.5' Below Union, 19' Below Union, SB07@16-18', SB08@16-17', and SB11@4' exceeded the NMOCD action levels for BTEX and TPH. Soil samples 8' Below Union, 19' Below Union, SB07@16-18', and SB08@16-17' also exceeded the action level for benzene. The soil analytical results are summarized in Table 1 and illustrated on Figure 3. Soil analytical reports are included as Attachment B.

#### **Groundwater Sampling Results**

Groundwater samples collected from BH-2, SB03, and SB06 exceeded the NMWQCC standards for BTEX, although BH-2 did not exceed the standard for ethylbenzene. The groundwater analytical results are summarized in Table 2 and illustrated on Figure 4. Groundwater analytical reports are included as Attachment B. Groundwater analytical results for MW02 through MW04 will be provided when final results are available.

Depth to groundwater data are summarized in Table 3. Groundwater flow direction was determined to be to the north-northwest as depicted on Figure 4. Free product was detected in PR-1 and MW01 at a thickness of 0.45 feet and 0.27 feet respectively. LTE installed sorbent product recovery socks in PR-1 and MW01 until additional work can be completed.



#### DISCUSSION

Analytical laboratory results, field screening results, and field observations of staining and odor indicated petroleum hydrocarbon impact to soil is localized around the release origin. Petroleum hydrocarbon impact to soil was encountered at the shallowest depth of 1.5 feet bgs near the release origin and at SB11 and extended to saturated sediments at 17.5 feet to 18 feet bgs. Depth to impacted soil increases away from the release origin and source material appears to be approximately 35 feet by 40 feet in extent as illustrated on Figure 5. Soil impacted below 15 feet bgs is restricted to the smear zone ranging from approximately 17 feet bgs to 22 feet bgs. As documented in MW01, soil below 22 feet bgs does not appear to be impacted and may be restricting vertical migration to a deeper interval.

Groundwater sampling results and soil staining observed in saturated sediments suggest free product exists near the release location and approximately 30 feet away from the release location. A dissolved phase groundwater plume extends in the downgradient direction to the location of SB06, but is delineated by clean groundwater sampled from SB05. Downgradient monitoring wells MW03 and MW04 do not appear to contain groundwater exceeding NMWQCC standards based on visual observations.

Distribution of the soil impact was likely controlled by the subsurface lithology of loose silty sand and cobbles with limited silty sand that promoted vertical migration. Once the release reached groundwater, horizontal migration resulted in distribution of free product around the source. Dissolved-phase impact migrated downgradient and extends approximately 100 feet to the northwest.

#### PROPOSED REMEDIATION PLAN

The depth of the impact and current surface use suggests an *in-situ* remedy is most practical and appropriate for the Site. Based on lithology and soil sampling results identified during initial soil sampling by XTO and subsequent sampling efforts accomplished by LTE, interim enhanced free product recovery followed by operation of an air sparging/soil vapor extraction (AS/SVE) mechanical system to treat the impact near the source is proposed. These methods will also promote aerobic biodegradation processes in areas extending beyond the area of direct influence of the proposed remediation wells and restrict potential downgradient migration of free product.

#### **Delineation**

LTE will collect groundwater samples from the newly installed monitoring wells immediately. Prior to sampling groundwater monitoring wells, depth to groundwater and total depth of each monitoring well will be measured with a Keck oil/water interface probe. The volume of water in each monitoring well will be calculated, and a minimum of three well casing volumes of water will be purged from each well using a new disposable PVC bailer. Once each monitoring well is purged, groundwater samples will be collected by filling laboratory-supplied bottles, stored on ice, and delivered to a laboratory for analysis of BTEX under strict COC procedures.

Currently, the free product plume is not fully defined. LTE proposes to advance three or more boreholes at the Site in the general locations depicted on Figure 6 and convert the boreholes to product recovery wells depending on the presence or absence of product in the completed wells. LTE may step out from the proposed locations and advance additional boreholes based on the results of field observations. Additional upgradient delineation is restricted by the presence of the steep hillside on the southeastern boundary of the well pad.



#### **Product Recovery**

XTO will recover and change the product recovery socks in PR-1 and MW01 weekly until a remediation plan is approved by the NMOCD and implementation begins. The weekly visits will include measuring product thickness and recording the volume of product recovered.

To minimize free product present in the source area, product recovery will be implemented in the recovery wells using a vacuum extraction method applied by a mobile vehicle. The expected volume of recovered fluids is relatively limited based on the saturated interval expected to be affected (18 feet to 23 feet bgs). A stinger will be lowered into the wells and extracted air and fluid will be accumulated in a liquid/air separation tank. The expected duration of each extraction event will be up to 2 hours. The fluid elevations will be measured before and after each event and depending on the observations following two initial extraction events spaced one week apart, one of the following will be implemented as needed:

- Additional events using the mobile vacuum extraction unit;
- Additional events using a bailer to manually remove product;
- Installation of product recovery socks in the wells; and/or
- Product skimming by installation of a mechanical automated skimmer pump and a storage tank.

XTO will document product thickness and track the total volume of product removed throughout the enhanced fluid recovery phase. Product recovery efforts will cease and transition to AS/SVE system described below when less than approximately 1-inch in measured thickness of product is achieved in the product recovery wells. At this measurable level, any additional movement of liquid petroleum impact is expected to be minimal and AS/SVE has typically proven to be effective in mitigating remaining impact.

#### Soil Vapor Extraction

Because sampling indicates soil is impacted at the source area in the vadose zone and saturated zone, SVE at the source area is recommended. SVE is an industry standard, cost-effective technology for *in-situ* remediation of petroleum hydrocarbons, especially in sandy soils. The observed impacted soil at the Site consists of silty sand with minor amounts of clayey sand. The impact has resulted from a release of natural gas condensate which is comprised mostly of light, readily volatilized petroleum hydrocarbon compounds. SVE will promote volatilization of the hydrocarbon impact distributed within the vadose zone and any remaining liquid free product that has accumulated on top of the groundwater. The SVE system will be designed to optimize extraction in areas where the impact has been observed in the unsaturated soil intervals. The SVE is estimated to provide an influence of approximately 30 feet from the well, and based on this estimate, three SVE wells will be installed as depicted on Figure 7 along with using location PR-1. The SVE wells will be constructed with 2-inch PVC casing and have 0.02-slot PVC screened across the impacted interval.

A blower capable of optimizing vapor recovery from several wells will be selected. An extraction blower capable of operating at approximately 80 cubic feet per minute (cfm) and an applied vacuum of 30 inches of water column will be installed. Operations and maintenance (O&M) of the system will be conducted weekly for the first 2 months, then be reduced based on system performance. O&M will consist of adjusting the SVE air flow distribution and field screening recovered hydrocarbon vapors.



#### Air Sparging

In addition to the SVE technology, LTE proposes to install six AS wells near the known source area to address impacted groundwater in this area and in the areas where residual free product may be present. The AS system will be designed to volatilize entrained product beneath the saturated interval and strip dissolved hydrocarbons dissolved in the groundwater. The influence from a single AS well is estimated to extend 10 feet from the sparging locations. With this estimate, four AS wells are planned for the source area and two downgradient wells are proposed (Figure 7). The initial row of AS wells will be designed to address the source area, and the second row will be designed to treat downgradient groundwater impact. Biological enhanced degradation and other natural attenuation processes will be relied on to address other areas of impacted groundwater. The well locations will be adjusted as needed to avoid subsurface utilities, surface structures, and to minimize the effect on traffic patterns.

The AS wells will be constructed with 1-inch PVC casing and have one foot of 0.010-slot PVC screen with the top of the screen placed approximately 5.5 feet below the groundwater elevation (immediately on top of a consolidated interval observed at approximately 23 feet bgs). During construction of the AS wells, a soil sample will be collected and if the consolidated interval is not observed, the top of the sparging screen will be set to an optimum depth of 8 feet below the groundwater elevation. A 10-20 silica sand gravel pack will be placed around the screen to 6-inches above the screened interval. Three feet of bentonite pellets will be installed above the screened interval and the well will be completed with neat cement grout to near the ground surface. Concrete will be placed at the surface well completion.

An AS blower capable of providing approximately 30 cfm at 15 pounds per square inch (psi) will be installed and the wells will be connected to the blower via surface or subsurface piping depending on traffic requirements.

Oxygenating the subsurface soil and groundwater through the AS/SVE system operation will promote biodegradation of impacted groundwater beyond the direct influence of the AS well and help address potential migration of free-phase and dissolved phase impact. The effectiveness of the AS and SVE will be evaluated through groundwater monitoring efforts.

#### **Groundwater Monitoring**

Groundwater monitoring for BTEX will be conducted quarterly during AS/SVE operation. Once BTEX concentrations have been reduced by the remediation system, XTO will turn off the systems and continue quarterly sampling with the goal of observing eight consecutive quarters with analytical results in compliance with NMWQCC standards.

#### **Reporting**

Groundwater monitoring results will be submitted in annual reports to the NMOCD. Reports will additionally include product recovery volumes; AS/SVE data including applied pressure, flow and vacuum with air emission estimates; groundwater elevations; and analytical results. Data will be presented on relevant figures including site location, potentiometric surface maps, product thickness and groundwater analytical results. The initial annual report will include soil borings and monitoring well completion logs and a cross section depicting the subsurface observations.



McDaniel, J. Page 7

LTE appreciates the opportunity to provide this remediation work plan to XTO. If you have any questions or comments regarding this work plan, do not hesitate to contact me at (970) 385-1096 or via email at <a href="mailto:aager@ltenv.com">aager@ltenv.com</a>.

Sincerely, LT ENVIRONMENTAL, INC.

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Asniey L. Àger Senior Geologist/Office Manager

Attachments:

- hments:
- Figure 1 Site Location Map
- Figure 2 Site Map
- Figure 3 Soil Analytical Results
- Figure 4 Groundwater Analytical Results
- Figure 5 Estimated Depth to Soil Impact
- Figure 6 Enhance Fluid Recovery Plan
- Figure 7 Remediation System Plan

Table 1 – Soil Analytical Results Table 2 – Groundwater Analytical Results Table 3 – Groundwater Elevations

Attachment A – Soil Boring Logs Attachment B – Laboratory Analytical Reports

Christopher E. Shephard, P.E. Chief Engineer

FIGURES





P:\XTO Energy\GIS\MXD\012915025\_SULLIVAN\_GC\_D\_#1E\012915025\_FIG01\_SL.mxd



P:\XTO Energy\GIS\MXD\012915025\_SULLIVAN\_GC\_D\_#1E\012915025\_FIG02\_SITE.mxd



P:\XTO Energy\GIS\MXD\012915025\_SULLIVAN\_GC\_D\_#1E\012915025\_FIG03\_SOIL\_ANALY\_USE.mxd



P:\XTO Energy\GIS\MXD\012915025\_SULLIVAN\_GC\_D\_#1E\012915025\_FIG04\_GWE.mxd



P:\XTO Energy\GIS\MXD\012915025\_SULLIVAN\_GC\_D\_#1E\012915025\_FIG05\_SOIL\_IMPACT.mxd



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TABLES



#### TABLE 1

#### SOIL ANALYTICAL RESULTS SULLIVAN GAS COM D #1E XTO ENERGY, INC.

Sample ID	Sample Name	Sample Date	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	TPH (mg/kg)
FARRF-060815-1020	8' Below Union	6/8/2015	984	10	67	14	210	301	6,300	3,500	9,800
FARRF-060815-1038	12' Below Union	6/8/2015	1,581	8.0	58	14	200	280	5,400	3,500	8,900
FARRF-060815-1105	4' @ 17' West	6/8/2015	248	< 0.0027	< 0.027	< 0.0027	0.0087	0.0087	<4.4	< 0.55	<4.4
FARRF-060815-1210	4' @ 18' North	6/8/2015	364	< 0.0029	< 0.029	< 0.0029	0.014	0.014	14	< 0.58	14
FARRF-060815-0130	4' @ 20.5' North	6/8/2015	66.5	< 0.0030	< 0.030	< 0.0030	< 0.0089	< 0.030	8.6	< 0.59	8.6
FARRF-060815-0215	12' @ 20.5' North	6/8/2015	161	< 0.0028	< 0.028	< 0.0028	< 0.0083	< 0.028	<4.4	< 0.56	<4.4
FARRF-060815-0300	8' @ 22' South	6/8/2015	41	< 0.0027	< 0.027	< 0.0027	< 0.0082	< 0.027	<4.4	< 0.54	<4.4
FARRF-060815-0435	11.5' @ 27' East	6/8/2015	172	< 0.0027	< 0.027	< 0.0027	< 0.0080	< 0.027	7.8	< 0.53	7.8
FARRF-060815-0535	12' @ 26.5' NE	6/8/2015	130	< 0.0027	< 0.027	< 0.0027	< 0.0082	< 0.027	6.6	< 0.54	6.6
FARRF-060815-0930	18.5' Below Union	6/8/2015	1,278	< 0.28	3	11	200	214	<4.5	3,600	3,600
FARRF-060815-0947	19' Below Union	6/8/2015	NM	53	420	68	860	1,401	3,300	13,000	16,300
FARMW-081915-0930	SB02@16-18'	8/19/15	82.1	< 0.00287	< 0.0287	< 0.00287	< 0.00861	< 0.0287	<4.59	< 0.574	<4.59
FARMW-081915-1500	SB07@16-18'	8/19/15	1,913	16.2	102	22.5	301	441.7	2,780	5,520	8,300
FARMW-081915-1540	SB08@16-17'	8/19/15	2,175	13.4	105	27.6	351	497	3,550	6,770	10,320
FARMW-082115-1035 SB10@2'		8/21/15	74.3	< 0.00309	< 0.0309	< 0.00309	< 0.00928	< 0.0309	<4.95	< 0.619	<4.95
FARMW-082115-1100 SB11@4'		8/21/15	2,754	1.49	53	24.2	278	356.69	2,720	4,750	7,470
FARMW-082115-1145	8/21/15	91.2	< 0.00270	< 0.0270	< 0.00270	0.0119	0.0119	5.47	< 0.541	5.47	
FARMW-082115-1425	8/21/15	41.5	< 0.00285	< 0.0285	< 0.00285	< 0.00855	< 0.0285	6.90	< 0.570	6.90	
FARMW-082115-1624	8/21/15	209	< 0.00297	< 0.0297	< 0.00297	0.0186	0.0186	<4.75	< 0.593	<4.75	
NMO	OCD Standard	NE	10	NE	NE	NE	50	NE	NE	100	

#### Notes:

' - feet below ground surface

< indicates result is less than the stated laboratory method detection limit

**Bold** - indicates values exceeding NMOCD standards

BTEX - benzene, toluene, ethylbenzene, and total xylenes

DRO - diesel range organics

GRO - gasoline range organics

mg/kg - milligrams per kilogram

NE- not established

NM- not measured

NMOCD - New Mexico Oil Conservation Division

ppm - parts per million

TPH - total petroleum hydrocarbons (sum of DRO and GRO)



#### TABLE 2

#### GROUNDWATER ANALYTICAL RESULTS SULLIVAN GAS COM D #1E XTO ENERGY, INC.

Sample ID	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
BH-2	6/16/2015	760	3,000	620	7,400
BH-3	6/16/2015	<5.0	<5.0	<5.0	<10
SB03	8/19/2015	4,430	17,100	1,100	11,300
SB05	8/19/2015	2.60	6.85	1.93	22.5
SB06	8/19/2015	4,400	40,000	1,950	18,100
NMWQCC S	tandard	10	750	750	620

#### Notes:

< indicates result is less than the stated laboratory method detection limit NMWQCC - New Mexico Water Quality Control Commission  $\mu g/l$  - micrograms per liter



#### TABLE 3

#### GROUNDWATER ELEVATIONS SULLIVAN GAS COM D #1E XTO ENERGY, INC.

Well ID	Date	Top of Casing Elevation (feet AMSL)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
PR-1	9/9/2015	5466.00	19.24	19.69	0.45	5,446.67
MW01	9/10/2015	5468.74	21.55	21.82	0.27	5,447.14
MW02	9/10/2015	5465.57	NP	18.85	NP	5,446.72
MW03	9/10/2015	5466.11	NP	19.45	NP	5,446.66
MW04	9/10/2015	5465.50	NP	18.94	NP	5,446.56

Notes:

A product density factor of 0.8 is used to account for the presence of free product in PR-1 and MW01.

AMSL - Above Mean Sea Level

BTOC - Below Top of Casing

NP - No Product



#### ATTACHMENT A

SOIL BORING LOGS







Compliance <sub>«</sub> Engineering <sub>«</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

### BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: MW-01

		- ·	Real P					Boring/Well	Number: MW-01	Project: Sullivan C	C D#1E	
	a lange	and the second	and the	A ac				Date:	9/9/2015	Project Number: 01291		
	115	1.	1. Martin		W. F. St.			Logged By:		Drilled By:		
Elevation:			Detector:	600				Drilling Meth	David Stainback	Kyv Sampling Method:	ek	
Gravel Pac	<i></i>			Min	iRae 200	0			Hollow Stem Auger	Split S Grout:	poon	
10/2	20 Silica	a Sand							Bentonite	NA		
Casing Typ	e: PVC							Diameter: 2	Length: 2" 13'	Hole Diameter: 4.25"	Depth to I N	
Screen Typ				Slot:	)10			Diameter:	Length: 2" 10'	Total Depth: 23'	Depth to V 21	Water:
5 0		(u			10				. 10	23	21	
ation	ture tent	udd)	ing	ole #	Depth	Sample	very	kock pe	I'(1 1 /D	1	We	ell
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	(ft. bgs.)	Run	Recovery	Soil/Rock Type	Lithology/Rem	arks	Compl	etion
Pe R	~ ~	Va	51	$\mathbf{x}$			Я	S				
					0				Cuttings not recorded unti	l visual impact	N	A
	Dry	0.0	No		2	-			observed, attempt to sampl			
	Dry	0.0	No		4	$\left  \right $			cobbles were enco	untered	+	
	Diy	0.0	INU							-		
	Dry	0.0	No		6					-	+	
	Dry	0.0	No		8	-				-	+	
	Dry	0.0	No		10	-				-		
	Dry	0.0	No		12	-				_		
	Dry	0.0	No		14	-				_	t I	
	Dry	0.0	No		16	-				-		
	Damp Damp	1,815.0	Yes Yes		18	-		SM	Grey 10 yr 5/1, staining, 60%	% medium grain,	Ł	
	Wet Wet		Yes Yes		20	_		<b>DIVI</b>	40% fine grain san	d, odor	+	
	Wet		Yes		20 _					-		Ζ
	Wet	1,620.0	Yes	MW-	22			CT 7	Light grey to tan, 10 yr 8/2,		I I	
	Dry Dry	0.1	No	01 @23'	24			SM	dry, no odor, no	stain	╞	
					26	-				-	Ŧ	
						-				-	+	
					28					-	╞	
					-		<u> </u>				<u>†                                    </u>	





Compliance <sub>#</sub> Engineering <sub>#</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM         Boring/Well Number:       Converting         Boring/Well Number:       MW-02         Date:       Project Number:         9/9/2015       012915025         Logged By:       David Stainback         Boring/Well Number:       012915025         Logged By:       David Stainback         Boring Type:       Driling Method:         IO/20 Silica Sand       Seal         Casing Type:       Diameter:         PVC       0.010         Diameter:       Lenght:         Total Depth       Depth to Liquid:         NA       2"         Screen Type:       Slot:         PVC       0.010         Dameter:       Lenght:         Total Depth       Depth to Mater:         Y       0.010         PVC       0.010         Dameter:       Lenght:         Total Depth       Depth to Mater:         Y       0.0         NA       Diameter:         Longht:       Bentonite         NA       NA         Diry       0.0         No       2         Diry       0.0 <th></th> <th></th> <th></th> <th></th> <th>A Good and a good</th> <th></th> <th>1 0</th> <th></th> <th>BORIN</th> <th>C LOC/MONITORING W</th> <th>FIL COMPLET</th> <th>ION DIAGRAM</th>					A Good and a good		1 0		BORIN	C LOC/MONITORING W	FIL COMPLET	ION DIAGRAM				
Date:     9/9/2015     Project Number:       012915025       Loged By:     David Stainback     Kyvek       Barling Method:     Sampling Method:       Gravel Pack:     10/20 Silica Sand     Scal:       10/20 Silica Sand     Scal:     Grout:       NA     Casing Type     Diameter:     Length:       PVC     Slot:     Diameter:     Length:       PVC     0.010     2"     13'       Screen Type:     VC     0.010     2"       PVC     0.010     2"     10'       Screen Type:     Slot:     Diameter:     Length:       PVC     0.010     2"     10'       Vieturity is space     Diameter:     Length:     Depth to Vator:       PVC     0.010     2"     10'     23'       Vieturity is space     NA     NA     Completion       Vieturity is space     Vieturity is space     Vieturity is space     Vieturity is space       Project Number:     0     Vieturity is space     Vieturity is space     Vieturity is space       Pure vector     0     Vieturity is space     Vieturity is space     Vieturity is space       Pury 0.0     No     4     Vieturity is space     Vieturity is space       Pury 0.0																
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		that an		and a	1						Sullivan	GC D#1E				
Logged By:     David Stainback     Drilled By:       Elevation:     Detector:     MiniRae 2000     Drilling Method:     Sampling Method:       Gravel Pack:     10/20 Silica Sand     Seal:     Bentonite     NA       Casing Type:     PVC     Diameter:     Length:     Hole Dameter:     Depth to Liquid:       Screen Type:     Slot:     Diameter:     Length:     Total Depth:     Depth to Liquid:       NA     Screen Type:     0.010     2"     10'     23'     19'       VC     0.010     2"     10'     23'     19'       uo put gigt and g			A CITY	Parend in	de la	- AL			Date:	9/9/2015		15025				
Elevation:     Detector:     MiniRae 2000     Drilling Method: Hollow Stem Auger     Sampling Method: Sumpling Method:       Gravel Pack: 10/20 Silica Sand     Sand     Seal:     Grow: Bentonite     Grow: NA       Casing Type: PVC $VC$ Diameter: 2"     Length: 2"     Hole Diameter: 4.25"     Depth to Liquid: NA       Sereen Type: PVC $VC$ 0.010 $2"$ Length: 2"     Total Depth: 23'     Depth to Liquid: 4.25"       uit up out price: Dameter: PVC $0.010$ $2"$ $0.010$ $2"$ $0.010$ uit up out price: Dameter: PVC $0.010$ $2"$ $0.010$ $0$ $0$ uit up out price: Dameter: PVC $0.010$ $2"$ $0.010$ $0$ $0$ uit up out price: Dameter: PVC $0.010$ $0$ $0$ $0$ $0$ uit up out price: PVC $0.010$ $0$ $0$ $0$ $0$ uit up out price: PVC $0.0$ $0$ $0$ $0$ $0$ $0$ uit up out price: PVC $0.0$ $0$ $0$ $0$ $0$ $0$ uit up out price: PVC $0.0$ $0$ $0$ $0$ $0$ $0$ uit up out price: PVC $0.0$ $0.0$ $0$ $0$ $0$	The second second		2. 1	- Antonia	A Strong				Logged By:		Drilled By:					
MiniRae 2000Hollow Stem AugerSplit SpoonGravel Pack: 10/20 Silica SandSeal: BentoniteGrout: NAPVCDiameter: 2"Length: 2"Depth to Liquid: NACosing Type: PVCDiameter: 0.010Length: 2"Depth to Liquid: NANADiameter: 2"Length: 2"Depth to Liquid: NANADiameter: 2"Length: 2"Depth to Liquid: NANADiameter: 2"Length: 2"Depth to Liquid: NANACounter: 2"Length: 2"Depth to Liquid: NANAONAONAONAONAOOONAONAOOOOOOOCuttings not recorded untilvisual impact observed at 16ftOryOOOOryOOry <th <="" colspan="4" td=""><td>Elevation:</td><td>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>n and a state of the</td><td>Detector:</td><td></td><td></td><td></td><td></td><td>Drilling Me</td><td></td><td></td><td>vek</td></th>	<td>Elevation:</td> <td>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td> <td>n and a state of the</td> <td>Detector:</td> <td></td> <td></td> <td></td> <td></td> <td>Drilling Me</td> <td></td> <td></td> <td>vek</td>				Elevation:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	n and a state of the	Detector:					Drilling Me			vek
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Elevation.			Detector:	Min	iRae 200	0		Dinning MC			Spoon				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Sand						Seal:	Bentonite						
Screen Type:     Slot:     Diameter:     Length:     Total Depth:     Depth:     Depth to Water:       10'     2''     10'     23'     19'       10'     10'     23'     19'       10'     10'     23'     19'       10'     10'     23'     19'       10'     10'     23'     19'       10'     10'     23'     19'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'       10'     10'     10'     10'		e:								Length:	Hole Diameter:					
PVC0.0102"10'23'19'with the second	Screen Tun				Slot:											
Dry         0.0         No         2         Cuttings not recorded untilvisual impact observed at 16ft         NA           Dry         0.0         No         4         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed at 16ft         Image: Cuttings not recorded untilvisual impact observed untimpact observ	Screen Typ					010										
Dry         0.0         No         2         Cuttings not recorded untilvisual impact observed at 16ft           Dry         0.0         No         4         -	Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	(ft. bgs.)		Recovery	Soil/Rock Type	Lithology/Re	marks	Completion				
Dry       0.0       No       2						0	μ			Cuttings not assended as	4:1:	NA				
Dry       0.0       No       4       1         Dry       0.0       No       6       1         Dry       0.0       No       8       1         Dry       0.0       No       10       1         Dry       0.0       No       12       1         Dry       0.0       No       14       1		Dry	0.0	No		2	$\mathbf{H}$					+				
Dry       0.0       No       6       10         Dry       0.0       No       8       10         Dry       0.0       No       10       10         Dry       0.0       No       12       10         Dry       0.0       No       14       10		_	0.0	No		-										
Dry     0.0     No     8     10       Dry     0.0     No     10     10       Dry     0.0     No     12       Dry     0.0     No     14		-														
Dry     0.0     No     10     10       Dry     0.0     No     12     11       Dry     0.0     No     14     11		Dry	0.0	No		6 _			-			+ $ $ $ $				
Dry         0.0         No         12         12           Dry         0.0         No         14         14         14		Dry	0.0	No		8	Π									
Dry 0.0 No 14		Dry	0.0	No		10			-							
		Dry	0.0	No		12			-							
		Dry	0.0	No		14			-							
Dry 0.0 No 16 1		Dry	0.0	No		16						+				
Dry 0.0 No 18 SM Grayish brown, 10 yr 5/6, silty fine-medium grain sand, dry, no stain/odor		Dry	0.0	No		19			SM		•					
Dry     0.0     No     18     grain sand, dry, no stain/odor       Wet     1,434.0     Yes     Yes     Very dark grey 10 yr 3/1, medium good red		-				10										
Wet     1,434.0     Yes     20     SM     silty sand, wet, stain and odor and clay lense at 18-18.5 bgs (above water table)						20			SM	silty sand, wet, stain and o	dor and clay lense					
Wet     1,139.0     Yes     Very dark grey 10 yr 3/1, medium grain silty		Wet	1.139.0	Yes		-				<b>.</b> .	· · · · · · · · · · · · · · · · · · ·					
Wet   1,139.0   Yes   22   Image: SM   sand, wet, with stain and odor		Wet	1,139.0	Yes		22			SM	sand, wet, with stain and oc	lor					
Wet 1,139.0 Yes TD @ 23'		Wet	1,139.0	Yes		24	-l			TD @ 23	5'					
							∦		1			+				
						26	t					1 II				
						<u> </u>	+I					+				
						28			1			+				
						-	<u>TI </u>					<u>†                                    </u>				

								Ľ	Compliance LT Environm 2243 Main Av Durango, CO	/e #3	emediation
	W/	al market					ALC: NO	BORING	G LOG/MONITORING W	ELL COMPLET	ON DIAGRAM
						Seale And	Sec. 1	Boring/Wel	Number: MW-03	Project: Sullivan	CC D#1E
	in a little state	AL MA		U		M. M. C.	-	Date:		Project Number:	
								Logged By:	9/9/2015	01291 Drilled By:	5025
	B & & & & & & & & & & & & & & & & & & &	n				na start and	4 <sup>2</sup>		David Stainback	Ky	vek
Elevation:			Detector:	Min	iRae 200	0		Drilling Me	Hollow Stem Auger	Sampling Method: Split S	Spoon
Gravel Pace	<sup>k:</sup> 0 Silica	Sand						Seal:	Bentonite	Grout: NA	
Casing Typ	be:	ound						Diameter:	Length:	Hole Diameter:	Depth to Liquid:
Screen Typ	PVC			Slot:				Diameter:	Length:	4.25" Total Depth:	NA Depth to Water:
	PVC			0.0	)10	1			2" 10'	23'	19'
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Rer	narks	Well Completion
					0				Silty Sand Dark hrown 75	VD 2/4 950/cilt	
	Dry	0.0	No		2			-	Silty Sand- Dark brown 7.5 15% fine grained sand, lo	ose, non-plastic,	
	Dry	0.0	No		4			-	non-cohesiv	/e.	
	Dry	0.0	No		6						
	Dry	0.0	No		8			-			
	Dry	0.0	No		10			-			+
	Dry	0.0	No		12			-			
	Dry	0.0	No		14			-			+
	Dry	0.0	No		16				Brown silt, with fine graine	d sand 10 yr $A/A$	+
	Dry	0.0	No		18			ML	dry, no stain or	odor	
	Moist	0.0	No						Brown silt, with fine graine	· · · · · · · · · · · · · · · · · · ·	⊢
	Wet	73.2	Yes		20			ML-SM	grain silty sand, dark grey	, wet with stains	
	Wet	96.4	No		-				and odor Dark grey silty sand, 2.5 yr	4/1, odor and	+
	Wet	12.3	No		22			SM	stain, wet, stain and odor, tr grey silty sand with no stain	-	
	Wet	12.3	No		24				TD @ 23	1	
					24			1			±
					26			4			+
					28	tl		4			±
						$\left  \right $					+



Elevation:

Gravel Pack:

Casing Type:

Screen Type:

Penetration Resistance

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			and the second	•	120		14-16 - 1-16		<b>J J J J J J</b>		
	*		The second secon			and a state		BORING	G LOG/MONITORING W	ELL COMPLETI	ON DIAGRAM
			A The second			and and a state of the		Boring/Wel		Project:	C D#1E
1.5	a last	ALC MAL	1. 1. A.	L		N. M. C.	-	Date:	MW-04	Sullivan G	C D#IE
	1100		TI VILLE			Edit ( Senty,			9/9/2015	01291	5025
	a a a a a a				·····································	and an and a		Logged By:	David Stainback	Drilled By: Kyv	ek
levation:			Detector:					Drilling Me	thod:	Sampling Method:	
ravel Pacl	1			Min	iRae 200	0		0.1	Hollow Stem Auger	Split S	poon
	silica Silica	Sand						Seal:	Bentonite	Grout: NA	
asing Typ	e:							Diameter:	Length:	Hole Diameter:	Depth to Liquid:
creen Typ	PVC e:			Slot:				Diameter:	2" 13' Length:	4.25" Total Depth:	NA Depth to Water:
	PVC			0.0	010				2" 10'	23'	17'
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Rer	narks	Well Completion
					0						
	Dry	0.0	No		2	+			Cuttings not recorded un observed, attempt to samp	-	+
	21)	0.0	110						cobbles were ence		
	Dry	0.0	No		4						$\begin{bmatrix} 1 \\ 1 \end{bmatrix}$
	Dry	0.0	No		6						
	Dry	0.0	No		8						
	Dry	0.0	No		10						
	Dry	0.0	No		12						
	Dry	0.0	No		14						-
	D	0.0	NI.		16	+					-
	Dry Moist	0.0 0.0	No No		16				Very silty sand, light brown	n 10 vr 5/3 moist	
	Dry	0.0	No		18			SM	60% fine grain sand, 40%	•	
	Wet	9.2	No		-				odor Light brown silty sand 10 y	r 5/3, wet, grading	
	Wet	6.2	No		20			SM	from fine to medium sand odor	l, no stain, slight	
	Wet		No						Light brown silty sand 10 y	r 5/2 wet no	
	Wet		No		22			SM	stain/odor, medium grain sa		
	Wet		No		_			<b>N111</b>	TD @ 23	1	
					24	Γ				-	
					26	+					+
					20					-	t





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#### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

		And And	S TANK				DIAGNAM
				Boring/Well	l Number: PR01	Project: Sullivan GO	C <b>D</b> #1E
and the second second	No L			Date:		Project Number:	
				Logged By:	9/4/2015	012915 Drilled By:	023
	Detect	A STREET BERT	No. State		Alex Crooks	LT Enviror	nmental
Elevation: 5,470'	Detector:	None		Drilling Met	thod: Hand Auger	Sampling Method: No samples	Taken
Gravel Pack:	•			Seal:		Grout:	
10/20 Silica Sand Casing Type:				Diameter:	Bentonite Length:	NA Hole Diameter:	Depth to Liquid:
PVC Screen Type:	Slot:				2" 10'	2" Total Depth:	NA Depth to Water:
Screen Type: PVC		.01			Length: 2" 10'	Total Depth: 20'	$\sim 17.0'$
Penetration Resistance Moisture Content Vapor (ppm)	Staining Sample #	Depth (ft. bgs.) Samp Run		Soil/Rock Type	Lithology/Rei		Well Completion
Dry	None	0	Τ		Silty Sand- Dark brown 7.5 15% fine grained sand, loos		
		2 +			cohesive		
Dry	Yes				Gray 7.5YR 5/1 stainin	ng, slight odor	T I I I
		4 +				ŀ	+
Moist	Yes	6			Very Dark Gray 10YR 3/1 s	taining, strong odor	t III
		8 +				[.	+
		I T				ł	
		10		SM		Ļ	+
		12					+
Moist	Yes	I T			Gray 10YR 5/1 sta	ining, odor	
		14					
		16					
Wet		18 -					- 1
		20					
		22 -			TD @ 20	,	+ l
		I T				-	ţ l
		24				-	⊦
		26				-	t
		28				_	t
		30 -					<u>t</u>





SB01

Compliance <sub>«</sub> Engineering <sub>«</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

Sullivan GC D#1E

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project:

	100 C	Contraction of the	A Strategier	A CAR				Date:	8/19/2015	Project Number: 012915	025
	114				CANAL STR	A State		Logged By:	Michael A. Wicker	Drilled By: Earth Works - L	
Elevation:			Detector:	ъ <i>с</i> .	'D 000	0		Drilling Me	thod:	Sampling Method:	
Gravel Pa	5,470' ck:			Min	niRae 200	0		Seal:	Direct-Push	Grout:	ous
Casing Ty	NA							Diameter:	Bentonite Length:	NA Hole Diameter:	Depth to Liquid:
	NA							١	NA NA	3"	NA
Screen Ty	pe: NA			Slot: N	A			Diameter:	Length: NA NA	Total Depth: 20'	Depth to Water: ~18.0'
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re		Well Completion
					0				an a	,	NA
					1	<u>+</u> ]			<b>Silty San</b> Dark brown 7.5YR 3/4, 8		<u>+</u>
	V	9 <b>2</b> 7							grained sand, loose, very dr	y, non-plastic, non-	F I
	Very Dry	82.7			2 _				cohesive, gray 7.5YR 6/ staining/ sligh		+
					3				staining/ siign	-	
					4 -						-
									Brown 7.5YF		
	_				5				no staining/o	odor _	-
	Very Dry	16.7			6	ţ.				-	
					7 -						
								SM		-	+
					8 _				Gray 7.5YR 5/1 stainin	ng slight odor	-
	1				9	Į					‡
├───	Very Dry	100			10	$\left  \right $					+
	1				_	ļ I				-	Į I
├───	-				11 _					-	+
	1				12	ti i				_	t
├───	_				13	+					+
	Very Dry	57.3				ti i				-	ţ
	-				14	H				-	+
					15	<u>+ </u>					+

Second latter     Engineering - Remediation       Image: Project - Out     Summe Could - Out       Project - OutSigned     OutSigned       Date     Completion       Outgring - Out     Outgring - Outgrin										Boring/Well #	SB01	
State         Constraint         Inc.         Project #         Office # <th< th=""><th><b>_</b>-9</th><th></th><th>Compl</th><th>iance "</th><th>Engine</th><th>erina "</th><th>Remedia</th><th>atio</th><th>n</th><th></th><th></th><th></th></th<>	<b>_</b> -9		Compl	iance "	Engine	erina "	Remedia	atio	n			
Under         Date         Stronger           Undergreen         10 <th></th> <th>Z</th> <th>LTEn</th> <th>vironn</th> <th>nental.</th> <th>Inc.</th> <th></th> <th></th> <th></th> <th></th> <th>012915025</th> <th></th>		Z	LTEn	vironn	nental.	Inc.					012915025	
Ver br.       77.7       16       3974       16       3974         Wet       3,974       18       3974       19       3974       3					,						8/19/2015	
Vere by       77.7       16       17         18       19       5M         18       19       19         18       20       20         21       22       23         24       25       26         27       28       29         30       31       32         32       33       34         32       33       34         35       36       4	Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	(ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho		
Very Bry       77.7       17       18       SM         Wet       3.974       19       SM       SM         Wet       3.974       0900       20       20         21       20       21       21       33.01         22       23       24       25       30.01         24       25       26       27       28       29         30       31       32       33       34       35         32       33       34       35       36       4				<u> </u>		15						
Wet       3.974       Is       SM         Barbon       18       SM         Gray 10/VR 5/1 and black 10/WR 2/1 staining, 70% medium grained sand, 20% fines; wet, non-plastic, cohesive, staining/dot         21       21         22       23         24       25         26       27         28       29         30       31         32       33         34       35         35       36							-					-
Wet       3,974       Image: Constraint of the state of the		Very Dry	77.7				-		SM		-	-
Wet       3,974       18-20' 0900       20       70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor         1       22       23       1       100 @ 20'         23       24       25       26       1         24       25       26       1       1         26       27       28       1       1         29       30       31       1       1         32       33       34       35       36						10	Ļ					-
0900       20       sand, 10% fines, wet, non-plastic, cohesive, staining/odor         1       21       1         1       22       1         23       24       1         24       25       26         26       27       1         28       29       1         30       31       1         32       33       1         33       34       1         35       36       1		Wat	2 074			19						-
1       21       1		wei	3,974			20				sand, 10% fines,	wet, non-plastic, cohesive,	
						21					-	$\frac{1}{2}$
						22					TD @ 20'	
						23	+  +-				-	
						24					-	
						25	$\left  \right $					+
						26	F					F
											-	
						_	+-  +				-	+
							1-1 1-1				-	+
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Compliance M Engineering M Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

#### BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: **SB02** Sullivan GC D#1E Date: Project Number: 8/19/2015 012915025 Logged By: Drilled By: Michael A. Wicker Earth Works - Louis Trujillo Sampling Method: Elevation: Detector Drilling Method: 5,470' MiniRae 2000 Direct-Push Continuous Gravel Pack: Seal: Grout: Bentonite NA NA Depth to Liquid: Diameter: Length: Hole Diameter: Casing Type: NA 3" NA NA NA Slot: Depth to Water: Screen Type: Diameter Length: Total Depth: ~18.0' NA NA NA NA 24' Vapor (ppm) Penetration Resistance Soil/Rock Type Moisture Content Staining Sample # Depth Recovery Sample Well Lithology/Remarks (ft. Run Completion bgs.) NA 0 Silty Sand 1 Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-Very Dry 1.3 2 cohesive, gray 7.5YR 6/1 to black 2.5/1 SM staining/ slight odor 3 4 Fat Clay w/ Sand 5 Strong brown 7.5 4/6, soft, high plasticity, cohesive Very Dry 1.5 6 CH 7 8 Silty Sand 9 Brown 7.5YR 5/3, 80% silt, 20% fine grained sand, loose, very dry, non-plastic, non-Very Dry 0.9 10 cohesive, no staining/slight odor 11 SM 12 13 Very Dry 1.2 14 15

									Boring/Well #	SB02	
	7	Compli	anco	Fnain	orina	Remedia	atio	n	Project:	Sullivan GC D#1E	
		l T Env	vironn	nental,	Inc	Nemeure			Project #	012915025	
				ieritai,					Date	8/19/2015	
Penetration Resistance Moisture	Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		ology/Remarks	Well Completion
					15						
	Vet	82.1		SB02 @ 16-18' 0930	15         16         17         18         19         20         21         22         23         24         25         26         27         28         29         30         31         32         33         34         35			SM	Gray 10YR 5/1 an 70% medium grain sand, 10% fines, v sta	Silty Sand d black 10YR 2/1 staining, ned sand, 20% fine grained wet, non-plastic, cohesive, aining/odor TD @ 20'	
					36 37						T + +





Compliance " Engineering " Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

# BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: BB03 Project: SB03 Sullivan GC D#1E Date: Project Number:

	CITUS COM	a Ala		A Contraction		Date:	8/19/2015		Project Number: 012915	025
1997	A		100	S. 6		Logged By:			Drilled By:	
Elevation:	Detector:					Drilling Me	Michael A. Wick	er	Earth Works - L Sampling Method:	ouis Trujillo
5,470'	2000001.	MiniR	Rae 200	0		Drinnig with	Direct-Push		Continu	ous
Gravel Pack:						Seal:	Bentonite		Grout:	
NA Casing Type:						Diameter:	Length:		NA Hole Diameter:	Depth to Liquid:
NA						Ν	NA	NA	3"	NA
Screen Type: NA		Slot: NA				Diameter:	Length:	NA	Total Depth: 20'	Depth to Water: $\sim 18.5'$
		INA						INA	20	10.5
Penetration Resistance Moisture Content Vapor (ppm)	Staining	mpl	(It. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lit	hology/Ren	narks	Well Completion
			0					Silty Sand	1	NA
			1	-			White 7.5YR 8/	-	15% fine grained	†
				-					y, non-plastic, non-	F I
Very Dry 31.2	2		2 _	4					slight odor _	⊢
			3	-						t l
				_					-	
			4 _							-
			5	-			Very dark gray	7.5YR 3/1,	staining, no odor	-
			Ĭ						-	
Very Dry 12.7	7		6						-	-
			7	-						-
			'			SM			-	
			8			5141				⊢ ∣
			9	-			Brown 7.5Y	r R 5/4, no s	staining/odor	+ l
			´ -						-	<u>⊦</u>
Very Dry 13.7	7		10						-	L
			11	-						+ l
			· · · -						-	+
			12						_	L I
			12	-						⊦ I
Very Dry 11.7	,		13 _	-					-	⊢
			14						·	
			15	-						↓
			15				1			I

State of Complexing - Remediation       Project     Salue of CDUIC       Project     Salue of CDUIC <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th colspan="3">Boring/Well # SB03</th>								Boring/Well # SB03				
Executionmental, Inc.         Project #         01293035           Date         8145015           Date         8145015 <t< th=""><th>ľ</th><th><math>\mathbf{D}</math></th><th>Compli</th><th>iance "</th><th>Engine</th><th>ering "</th><th>Remedia</th><th>n</th><th colspan="2"></th><th></th></t<>	ľ	$\mathbf{D}$	Compli	iance "	Engine	ering "	Remedia	n				
Date         But (1)         Date         \$192015           understand         Unders		2	LTEn	vironn	nental.	Inc.				Project #	Project # 012915025	
Vey by       14.1       15       *Soil sample unattainable due to insufficient soil recovery         Wet       3.587       18       SM         SB03       19       SM         SUB03       19       SM         SUB04       1030       20         21       22       Submit SM         22       23       Submit SM         24       25       Submit SM         25       26       TD @ 20'         30       31       Submit SM         31       32       33         34       35       36					,					Date	8/19/2015	
vey by       14,1       16       17       18       SM         Wet       3,587       0       0       19       20       SM         Use by       14,1       0       0       19       0       SM         Use by       14,1       0       0       19       0       SM         Use by       14,1       0       0       0       SM       Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor         21       22       23       24       25       26       10 <t< th=""><th>Penetration Resistance Moisture</th><th>Content</th><th>Vapor (ppm)</th><th>Staining</th><th>Sample #</th><th>(ft. bgs.)</th><th>Sample Run</th><th>Recovery</th><th>Soil/Rock Type</th><th>Litho</th><th></th></t<>	Penetration Resistance Moisture	Content	Vapor (ppm)	Staining	Sample #	(ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho		
Vey by       14.1       17       18       SM         Wet       3,587       19       19       19         1030       20       20       20       20         21       22       23       21       21         22       23       24       25       26         24       25       26       27       28         29       30       31       32       33         31       32       33       34       35         33       34       35       36       10       10						15	II					
very by       14.1       17       18       SM         Wet       3,587       19       19       SM         1030       20       1030       20       1030         21       22       23       1010       1010         22       23       24       1010       1010         24       25       26       1010       1010         25       26       27       28       1010       1010         301       31       32       33       1010       1010       1010         31       32       33       34       10100       1010       1010						16	-			*Soil sample unat	tainable due to insufficient	-
SB03 (@) (1030         19 (1030)         Sitty Sand Gray 10YR 5/1 and black 10YR 2/1 staining, 70% mcWin grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/cdor           21         22         23         24           23         24         25         26           24         25         26         27           28         29         30         31           31         32         33         34           35         36         36         4	Ver	ry Dry	14.1						SM			+  -
1030       20       sand, 10% fines, wet, non-plastic, colesive, staining/odor         1030       21       100         1020       21       100         1020       21       100         1020       21       100         1020       21       100         1020       21       100         1020       21       100         1020       23       100         1021       24       100         1022       24       100         1024       25       100         1025       26       100         1026       100       100         1027       28       100         1030       100       100         1030       100       100         1030       100       100         1030       100       100         1031       100       100         1032       100       100         1033       100       100         1033       100       100         1033       100       100         1034       100       100         1035       100       100					a		-			Gray 10YR 5/1 an	d black 10YR 2/1 staining,	-
1       21       1	<u> </u> ``	Wet	3,587			20				70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive,		+
											-	
						_						
						24	+  +				-	
										-		
							+  +				-	+
										-		
											-	
											-	
							+				-	+
											-	
											-	+
							H +1				-	+
						37					-	+





SB04

Compliance <sub>#</sub> Engineering <sub>#</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

#### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Project:

Sullivan GC D#1E

Elevation: Detec		0	Lo	ate: ogged By: rilling Metl	8/19/2015 Michael A. Wicker hod: Direct-Push	Project Number: 012915 Drilled By: Earth Works - I Sampling Method: Continu	5025 Louis Trujillo			
5,470' Gravel Pack: NA	MiniRae 200	0	Se	eal:	Bentonite	Grout: NA	lous			
Casing Type: NA					Length: A NA	Hole Diameter: 3"	Depth to Liquid: NA Depth to Water:			
Screen Type: NA	Slot: NA		Di	iameter: N	Length: A NA	Total Depth: 24'	Depth to Water: ~18.5'			
Penetration Resistance Moisture Content Vapor (ppm)	<sup>00</sup> <sup>##</sup> Depth dub <sup>(ft.</sup> bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Rer	narks	Well Completion			
	0						NA			
	1	╞┥					+			
	2						‡			
	3						<u>+</u>			
	4						+			
	5						+			
	6				+					
	7					1	+			
	8				Cuttings observed until im visual screen		ł			
	9						+			
	10						+			
	11	FI I				-				
	12					+				
	13	FI I					Ŧ			
	14	<b>†</b>					Ŧ			
	15	<b>†</b>					<u>†</u>			

Boring/Well # SB04											
-		Compl	iance <sub>™</sub>	Engine	erina "	Remedia	atio	n	Project: Sullivan GC D#1E		
<i> </i> <b>     </b>		LTÉn	vironn	nental,	Inc.				Project #	012915025	
				,					Date	8/19/2015	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	Lithology/Remarks	
					15						
		10.5			16	-					+
	Very Dry	12.7			17	-			Brown 7.5YR 5/4,	Silty Sand , 85% silt, 15% fine grained -	+
					18	+				plastic, non-cohesive, very o staining/odor	+
					19					Silty Sand	<b>†</b>
	Wet	2,247			20	-		SM	70% medium grai	nd black 10YR 2/1 staining, ned sand, 20% fine grained	+
					21	-				wet, non-plastic, cohesive, aining/odor	+
	Wet	2,948			22	+					+
					23						
					24 25				TD @ 24'		+
					25 <u>-</u> 26	-					+
					27	-				-	
					28	-				-	- -
					29	-				-	+
					30	+  +					+
					31						† †
					32						‡ ↓
					33					-	+
					34 35	+				+	
					35 <u>-</u> 36	+				+	
					37						+





SB05

Compliance <sub>#</sub> Engineering <sub>#</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

#### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Project:

Sullivan GC D#1E

Elevation: 5,470' Gravel Pack: NA Casing Type: NA	Detector:		iRae 200	0			Michael A. Wicker thod: Direct-Push Bentonite Length: JA NA	Project Number: 01291 Drilled By: Earth Works - Sampling Method: Contin Grout: NA Hole Diameter: 3"	Louis Trujillo uous Depth to Liquid: NA
Screen Type: NA		Slot: N.	A			Diameter:	Length: NA NA	Total Depth: 24'	Depth to Water: $\sim 17.5'$
Penetration Resistance Moisture Content	Vapor (ppm) Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		//Remarks	Well Completion
			0						NA
			$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				Cuttings observed unt visual so		- + - + - + - + - + - + - + - + - + - +

Boring/Well # SB06											
<b>_</b> -9		Compli	iance "	Engine	erina "	Remedia	atio	n	Project: Sullivan GC D#1E		
	,Z	LTEn	vironm	iental,	Inc.				Project #	roject # 012915025	
	1			,					Date	8/19/2015	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	Well Completion	
					15						
					16	-			c.		-
	Very Dry	32.7			17	-			Brown 7.5YR 4/3	Silty Sand , 100% silt, loose, very dry, cohesive, no staining/odor	+
					18	-			Gray 10YR 5/1 an	ad black 10YR 2/1 staining, ned sand, 20% fine grained	+
	Wet	1,955			19			SM	sand, 10% fines,	wet, non-plastic, cohesive,aining/odor	
					20			3111	Ŭ		↓   ↓
	Wat	2 024			21	-				-	+
	Wet	2,934			22 23					-	+
					24	-				-	+
					25	-				-	
					26	-				-	
					27	-				-	+
					28						
					29	-				-	-
					30 31	+				-	+   +
					31 <u>-</u> 32	+				+	
					32 <u>-</u> 33 -	+					
					34						
					35						
					36					+   +	
					37	-					<u>+</u>




SB06

Compliance <sub>#</sub> Engineering <sub>#</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

#### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Project:

Sullivan GC D#1E

Elevation: 5,470' Gravel Pack: NA Casing Type: NA	Detector: MiniRae 20	00		Date: Logged By: Drilling Met Geal: Diameter: N	8/19/2015 Michael A. Wicker hod: Direct-Push Bentonite Length: JA NA	Project Number: 01291: Drilled By: Earth Works - I Sampling Method: Contin Grout: NA Hole Diameter: 3"	Louis Trujillo
Screen Type: NA	Slot: NA		Ι	Diameter:	Length: JA NA	Total Depth: 24'	Depth to Water: $\sim 17.5'$
Penetration Resistance Moisture Content Vapor (ppm)	Carter of the second se	Sample Run	Recovery	Soil/Rock Type	Lithology/Rer	-	Well Completion
	0	Щ	4				NA
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	*			Cuttings observed until im visual screer		* + * + * + * + * + * + * + * + * + * +

								Boring/Well #	SB05	]
		iance "	Enaine	ering "	Remedia	atio	n	Project:	Sullivan GC D#1E	
	LTEn	vironn	nental.	Inc.	Sincure			Project #	012915025	
	//		• • • • • • • •					Date	8/19/2015	
Penetration Resistance Moisture	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
				15						
	t 17.6			15         16         17         18         19         20         21         22         23         24         25         26         27         28         29         30         31         32         33         34         35			SC	Brown 7.5YR 4/4 very dry, high 50% fine grained sa	layey Sand 4, 70% silt, 30% clay, soft, plasticity, cohesive, no and, 50% clay, low plasticty - - - TD @ 24'	
				36					-	F
				37						





Compliance <sub>«</sub> Engineering <sub>«</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: SD07 Sulliven CC D#1E

			P					Boring/Well	Number: SB07	Project: Sullivan GO	C <b>D</b> #1E
	and the second	Ser and	- ···	D		Y AND AN		Date:	8/19/2015	Project Number: 012915	
	144					5		Logged By:		Drilled By:	
Elevation:	1		Detector:			「日本の日本」の	A. A. MAR	Drilling Me	Michael A. Wicker	Earth Works - L Sampling Method:	ouis Trujillo
Elevation.	5,470'		Detector.	Min	iRae 200	0		Drining Me	Direct-Push	Continu	ous
Gravel Pa			-					Seal:	Bentonite	Grout: NA	
Casing Ty	NA pe:							Diameter:	Length:	Hole Diameter:	Depth to Liquid:
	NA			01.4					NA NA	3"	NA Depth to Water:
Screen Ty	pe: NA			Slot: N	A	-		Diameter:	Length: NA NA	Total Depth: 24'	~18.5'
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Ret	marks	Well Completion
		,			0	lin —					NA
						L.			Silty San		-
					1 _	₽			Brown 7.5YR 4/3, 85% silt		-
	Very Dry	77.7			2	t			sand, loose, very dry, no cohesive, no stain		+
					-	П					F I
	_				3	┢┥				-	+
	-				4	<del>†</del>					+
						11				-	
	-				5	H				-	+
	Very Dry	54.2			6	+					+
						Ħ				-	Į I
	_				7	₽				-	-
	-				8	╊┃		SM			+
						<u>[ </u>			Brown 7.5YR 4/3, loose, ve	ry dry, non-plastic,	t l
					9	H			non-cohesive, no sta		Ļ ∣
├───	Very Dry	104			10	ŧI					+ I
		101				Ħ				-	t l
					11					-	↓
	-				12	Ŧl					+ I
					12	Ħ				-	<u>+</u>
					13	Ц			Dark gray 7.5YR 4/1 st	aining, no odor	Į I
	Very Dry	56.0			14	+l					╞───│
					14	Ħ				-	+
					15	TI					Γ

Statistics         Simple bit of the second sec									Boring/Well #	SB07	
Use         LT Environmental, Inc.         Project #         01203025           bate         01203025         01203025         01203025           Date         01203025         01203025         01203025           000000000000000000000000000000000000			lianco	Engine	orina	Romodi	atin	n			
Note         Note         New (N2015)           unput of the second state of th		LTFn	vironn	nental	Inc.	Cincul					
united by the second		_, _//									
Wey Dy       1,913       Image: SB07 (integrating the second seco	Penetration Resistance Moisture	Vapor (ppm)	Staining	Sample #	(ft. bgs.)	Sample Run	Recovery	Soil/Rock Type			
Very by       1,913       Image: Shift of the second secon					10						
		t 2,231		@ 16-18'	16         17         18         19         20         21         22         23         24         25         26         27         28         29         30         31         32         33         34         35			SM	Gray 10YR 5/1 an 70% medium grain sand, 10% fines, sta	d black 10YR 2/1 staining, ned sand, 20% fine grained wet, non-plastic, cohesive, aining/odor	
37											





Compliance <sub>#</sub> Engineering <sub>#</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

### BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project:

Tel com	tille and		Pr -	-	-			Boning wen	SB08	Sullivan G	C D#1E
	The states	AND THE REAL	- IND	-	at the	mail for		Date:	8/19/2015	Project Number: 012915	025
								Logged By:		Drilled By:	025
	Pites + C					and the second	241-		Michael A. Wicker	Earth Works - L	ouis Trujillo
Elevation:	5 470		Detector:	Min	iRae 200	0		Drilling Met	hod: Direct-Push	Sampling Method: Continu	10112
Gravel Pac	<u>5,470'</u> <sup>k:</sup>			IVIIII	IRae 200	0		Seal:	Direct-Push	Grout:	ious
	NA								Bentonite	NA	
Casing Typ								Diameter:	Length: JA NA	Hole Diameter: 3"	Depth to Liquid: NA
Screen Typ	NA ne:			Slot:				Diameter:	Length:	Total Depth:	Depth to Water:
	NA			N	A				NA NA	24'	~18.5'
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	marks	Well Completion
					0						NA
					1	ŧI			Silt	150/ 6	+
					1 _	Ħ			Brown 7.5YR 4/3, 85% silt snad, loose, very dry, no		+
	Very Dry	27.2			2	t			cohesive, no stair	-	<u>†</u>
						Į.					T I
					3 _	H				-	+
					4	+					+
					• -				Very dark brown 7.	5YR 2.5/3,	+
					5	Ĭ			no staining/o		I I
		0.0				4I			-		+
	Very Dry	8.8			6	H				-	+
					7	<del>†</del>					†
					· _	T .		ML		-	†
					8	TL		IVIL		-	I I
I└───						41					+
├───					9	H				-	+
	Very Dry	19.7			10	†					†
						Π				-	T I
					11					-	∔ ∣
					12	Ŧl					+
├───					12 -	Ħ				-	+
					13	tl					<u>†</u>
						Γ				-	T I
I└───	U D	22.0			14	H				• •	+
	Very Dry	22.8			15	+			Black 10 YR 2/1 stai	ning, no odor	+

									Boring/Well #	SB08	
ľ		Compl	iance "	Engine	ering "	Remedia	atio	n	Project:	Sullivan GC D#1E	
	, <b>Z</b>	LTEn	vironn	nental.	Inc.				Project #	012915025	
$\sim$				,					Date	8/19/2015	
Penetration Resistance	15           SB08           16								Litho	ology/Remarks	Well Completion
					15	Щ					
	Very Dry	2,175		SB08 @ 16-17' 1540	_	+ + + +		ML	S	nd black 10YR 2/1 staining, trong odor	
	Wet	1,937			19 20	- - -			Gray 10YR 5/1 an 70% medium grai sand, 10% fines,	Silty Sand ad black 10YR 2/1 staining, ned sand, 20% fine grained wet, non-plastic, cohesive, aining/odor	+ + + +
	Wet	2,068			21 22 23 24	+- + - - +-		SM		-	+ + + +
					25 26	- - -				+ + + +	
					27 28 29	+- + +- +-				-	+ + +
										-	+ + + +
					32 33 34	+-  +- +- +-				-	
					35 36	+ +- + +-				-	+ + + + +
					37						





Compliance " Engineering " Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

# BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: SB09 Sullivan GC D#1E Date: Project Number: 8/19/2015 012915025

	15.00					in a state		Logged By:	Michael A. Wic	ker	Drilled By: Earth Works - L	ouis Truiillo
Elevation:			Detector:					Drilling Me	thod:	KVI	Sampling Method:	
	5,470'			Min	iRae 200	0		G 1	Direct-Push		Continu	ous
Gravel Pack:	NA							Seal:	Bentonite		Grout: NA	
Casing Type:								Diameter:	Length:		Hole Diameter:	Depth to Liquid:
Screen Type:	NA			Slot:				Diameter:	NA Length:	NA	3" Total Depth:	NA Depth to Water:
Screen Type:	NA			N	A				VA	NA	24'	$\sim 18'$
Penetration Resistance	Moisture Content	(ind)     indication     indition     indication				Recovery	Soil/Rock Type		ithology/Ren		Well Completion	
					0					~		NA
v	'ery Dry	6.4			1 2 3 4	+ + + + +			White 7.5YR 8 grained sand, 20		, 70% fine-coarse	+ - - - - -
v	'ery Dry	11.7			4 _ 5 _ 7 _ 8 _			SM	coarse grained sa		% silt, 20% fine-	
v v	'ery Dry	3.2			9 10 11 12 13	+ + + + + + + + + + + +			grained sand, lo		5% silt, 15% fine , non-plastic, non- ing/odor	+ - - - - - -
v	Very Dry	7.6			14 15	+					-	- - - -

									Boring/Well # SB09		
	$\mathbf{D}$	Compli	iance "	Engine	erin <u>a</u> "	Remedia	atio	n	Project:	Sullivan GC D#1E	
<i> </i> <b>       </b>	ſ	LTĖn	vironn	nental,	Inc.				Project #	012915025	
				· ·					Date	8/19/2015	
Penetration Resistance Moisture	Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
					15						
Very	y Dry	7.8			16 17	-				tainable due to insufficient	
				SB09	18	-					+
v	Wet	1,808		@ 18-20' 1615	19 20	- - -		SM	70% medium grain sand, 10% fines,	nd black 10YR 2/1 staining, ned sand, 20% fine grained wet, non-plastic, cohesive, aining/odor	+ + +
	Vet	2 102			21 22	+  -					+ + +
	Wet	2,102			23 24	-				+ + +	
					25 26	-				+	
					20 _	+ • +					+ + +
					28 29	•					+ + +
					30	-					Ŧ Ŧ
											Ŧ
					33	+  - +					+
					34						‡
					35 36	+					
					37	-					Ŧ





Compliance <sub>#</sub> Engineering <sub>#</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

### BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project:

			•	-	Sintia a	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Boring/ wen	SB10	Sullivan G	C D#1E
	a class	State and	Trismon	Stan galler		And the state		Date:	8/21/2015	Project Number: 012915	025
	Carde .			and the state				Logged By:		Drilled By:	
	26202	A States			24 10 2	Carls States and	₩ <sup>2</sup>		Michael A. Wicker	Michael A.	Wicker
Elevation:	5,470'		Detector:	Min	iRae 200	0		Drilling Me	thod: Hand-Auger	Sampling Method: Continu	10115
Gravel Pac	<:			101111	intue 200			Seal:		Grout:	10 05
G : T	NA							Di	NA	NA	Douth to Linvid
Casing Typ	e: NA							Diameter:	Length: NA NA	Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Typ	e:			Slot:				Diameter:	Length:	Total Depth:	Depth to Water:
	NA			N	A	r	1	1	NA NA	2.5'	NA
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	emarks	Well Completion
					0						NA
	Der	24.7			1 .	Ŧ			Silty Sar		∔
	Dry	24.7		SB10	1 _	<u>}</u>		SM	Black 7.5YR 2.5/1 to light plastic, non-cohesive, stai		+
	Dry	74.3		@	2	†			deph		<u>†</u>
				2'		↓			a ph		↓
				1035	3	₽			Refusal @	2.5'	+
					4	+			due to cot		+
					-	Ħ					Ť I
					5 _	H				-	<b>_</b>
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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: Selling CC D#1E

			P		•			Boring/Well	Number: SB11	Project: Sullivan GC	C <b>D</b> #1E
			Triberta	No.				Date:	8/21/2015	Project Number: 012915	025
	1.23							Logged By:		Drilled By: Devin Hen	
Elevation:	5 4701		Detector:	M	:D 200			Drilling Me	thod:	Sampling Method:	
Gravel Pac	5,470' <sup>k:</sup>			Min	iRae 200	0		Seal:	Hand-Auger	Grout:	ous
Casing Typ	NA							Diameter:	NA Length:	NA Hole Diameter:	Depth to Liquid:
	NA							Ν	NA NA	3.25"	NA
Screen Typ	NA			Slot: N	A			Diameter:	Length: NA NA	Total Depth: 19.5'	Depth to Water: 17.5'
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Ret	marks	Well Completion
					0	II.					NA
	Dry	60.0	None		1	+			Silt Dark brown 7.5YR 3/4, loos	se. drv. non-plastic.	-
	Dry	1,121	Black		2	-			non-cohesive, no sta		-
	-	-				+			Silt		-
	Dry	2,553	Gray	SB11	3				Black 7.5YR 2.5/1 to light g non-plastic, non-cohesive, s		-
	Dry	2,754	Gray	@ 4'	4 _				1 / /	-	-
	Dry	2,567	Gray	1100	5					-	-
	Dry	1,934	Black		6					-	-
	Dry	1,922	Black		7					-	-
	Dry	2,497	Gray		8	-		SM			_
	Dry	1,522	Gray		9	+			<b>9-10'</b> Brown 7.5 YR 5/4 to Gr	av 5/1 staining	-
	Dry	1,608	Gray		10				strong odd		
	Dry	1,308	Ciuj		11	H				-	-
	-					<u> </u>				-	-  -
	Dry	1,606	Mixed Gray		12					-	
	Dry	1,904	-		13	T				-	<b>-</b>
	Dry	1,685	Gray Brown		14	t				-	+ -
	Dry	1,284	DIOWI		15	<u>+ </u>					+

									Doring/Wall #	0011			
		Comri	ianco	Engine	orina	Domodia	ntic	n	Boring/Well # Project:	SB11 Sullivan GC D#1E			
//1		LT En	idiiCe ⊪ vironn	Eligine Iontal	ering ∞i Inc	Remedia	1110	"	Project #	012915025	r		
			• 11 01 111	iciilai,	<i></i>				Date	8/21/2015			
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		ology/Remarks	Well Completion		
Pe R	~ -		•	01	15		F	S					
	Dry	1,634	Black		16						+		
	Dry	1,258	Black		17	-					+		
		1,295	Black Gray		18	-		SM	50% Sand. 50% Silt		+		
	Wet		Gray Black		19	-					÷		
	-				20 21	-			r	TD @ 19.5	+ t		
					22	+							
					23								
	-				24 25	-							
	-				25 <u>-</u> 26	-					+		
	•				27						T T		
	4				28	+  +					+		
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	4				36 37	+  +					+ +		
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A CONTRACTOR			P1		9: ani)			Boring/Well	Number: SB12	Project: Sullivan G	C D#1E
	and Allas	A CARL	Tristance	and a		1		Date:	8/21/2015	Project Number: 012915	
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	1.45							Logged By:		Drilled By:	
Elevation:	- 16 a 14 B	11 1 10 10 10 10 10 10 10 10 10 10 10 10	Detector:					Drilling Met		Michael A. Sampling Method:	
Gravel Pac	5,470'			Min	iRae 200	0		Seal:	Hand-Auger	Grout:	ious
	NA								NA	NA	
Casing Typ	NA							Diameter:	Length: NA NA	Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Typ	be:			Slot:	٨			Diameter:	Length:	Total Depth: 2.5'	Depth to Water: NA
5.0	NA	(r		N	A				NA NA	2.3	INA
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/R	emarks	Well Completion
		F			0						NA
	Dry	0.0			1	+			Silty Sa		+
	Dry	0.0			1 -				Light brown 7.5YR 6/4, c cohesive,staining/odd		
	Dry	12.3			2					о́.	$\frac{1}{2}$
	Dry	5.4			3	-			Dark Gray 7.5YR	4/1 stanning	<u>+</u>
	Dry	67.8			4	$\left  \right $		SM			+
	Dry	72.3			5					-	$\frac{1}{2}$
	Dry	91.2		SB12 @	6	-				-	$\frac{1}{4}$
	Dry	35.4		6' 1145	7						Ŧ
	21)	5011		1115	_						+
					8 _	H			Refusal @ 7.	5' due to	+
					9	Į			cobbl	e	I –
					10	+					<u>+</u>
					11	41					+
					_	Ħ				-	<u>†</u>
					12	H				-	Į I
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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project:

Contraction of			P					Boring/Well	Number: SB13	Project: Sullivan GC	C <b>D</b> #1E
		AND IN THE	- 18-	De la		No. of States		Date:	8/21/2015	Project Number: 012915	
	115					ST. GC		Logged By:		Drilled By:	
Elevation:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R at at at	Detector:					Drilling Me	Devin Hencmann hod:	Devin Hen Sampling Method:	
Gravel Pac	5,470'			Min	iRae 200	00		Seal:	Hand-Auger	Grout:	ous
	NA								NA	NA	
Casing Typ	ne: NA							Diameter:	Length: JA NA	Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Typ	be:			Slot:	ſ <b>A</b>			Diameter:	Length: JA NA	Total Depth: 12.5'	Depth to Water: NA
5 0	NA	(u			A					12.5	INA
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	marks	Well Completion
		-			0						NA
	Dry	0.0			1	+			Silty San Light brown 7.5YR 6/4, 3		-
	_								grained sand, 30% medium		+
	Dry	0.0			2				cobbles, dry, non-plasti	c, non-cohesive -	-
	Dry	0.0			3	†				-	+
	Dry	0.0			4	+				-	-
	Dry	0.0			5	$\left  \right $				-	-
	Dry	0.0			6	$\left  \right $					-
	Dry	0.0			7	-		SM		-	
	Dry	0.0			8	+				-	-
	Dry	0.0			9	$\mathbf{H}$				-	
	Dry	0.0			10	$\frac{1}{1}$				-	+
						<u> </u>				-	
	Dry	0.0			11					-	┡
	Dry	0.0			12	†				-	⊧   ⊢
					13	┟┝────					
					14	$\left  \right $			Refusal @ : due to cob		+
					15	Ŧ]					$\frac{1}{2}$
·					10						





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project:

Date:         Project Number:         Oli2915025           Logad By:         Dollad By:         Michael A. Wicker         Sampling Method           Casing Type:         NA         Sampling Method         Continuous           Casing Type:         NA         Sampling Method         Continuous           Casing Type:         NA         Sampling Method         NA           Steren Type:         NA         Sampling Method         Sampling Method           NA         NA         Sampling Method         Sampling Method         NA           Steren Type:         NA         NA         Sampling Method         Sampling Method         NA           NA         NA         NA         Sampling Method         NA         NA         Sampling Method         NA           NA         NA         NA         NA         NA         Sampling Method         NA         NA         NA           NA         NA         NA         NA         NA         NA         NA         NA           Data of the Method         Ma         NA         NA         NA         NA         NA           NA         NA         NA         NA         NA         NA         NA         NA	Contraction of the second		<b>P</b>		-	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	100	Boring Wei	SB14	Sullivan G	C D#1E
Levator:     Definition of the sector:       Bevalue:     NA     Scat:     NA     Grout:     Scat:     Grout:     Continuous       Grout:     NA     NA     NA     NA     Scat:     Grout:     NA       Scat:     NA     NA     NA     NA     Scat:     NA       Scat:     NA     NA     NA     NA     Scat:     NA       Scat:     NA     NA     NA     NA     NA       Scat:     NA     NA     NA     NA     Scat:     NA       Scat:     NA     NA     NA     NA     Scat:     NA     Scat:       Scat:     NA     NA     NA     NA     NA     Scat:     NA       Scat:     Scat:     NA     NA     NA     Scat:     Scat:     Scat:       Scat:     Scat:     Scat:		and a start of the	NY SHI	- C	art	Mark Stor		Date:	8/21/2015		025
$ \begin{array}{  c c c c c c c c c c c c c c c c c c $								Logged By:		Drilled By:	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Basel .	and the second	5			Cond States and	No.				Wicker
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		,	Detector:	Min	iRae 200	0		Drilling Me		Sampling Method:	10115
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Gravel Pack:			IVIIII		0		Seal:		Grout:	lous
NA     NA     3.25"     NA       Screen Type:     NA     NA     Total Depth:     Total Depth:     NA       NA     NA     NA     NA     NA     NA     NA       uog and size of the second											
Sereen Type:     NA     NA     NA     NA     NA     NA     NA     Start     Depth     Weter:     NA       u     0     1<										Hole Diameter: 3 2.5"	
unstand     unstand <thut th="" unstand<="">     unstand     unstand<td>Screen Type:</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Diameter:</td><td>Length:</td><td>Total Depth:</td><td>Depth to Water:</td></thut>	Screen Type:							Diameter:	Length:	Total Depth:	Depth to Water:
Dry         11.1         SB14         Silty Sand White 7.5YR 8/1, dry, non-plastic, non- cohesive, Gray 7.5YR 5/1 staining/odor @ 10" to deph         NA           Dry         37.4         SB14         SM         SM         Cohesive, Gray 7.5YR 5/1 staining/odor @ 10" to deph         I	NA	-		N	A			Ν	IA NA	3'	NA
Dry       11.1       1       2       3         Dry       37.4       2       3       3         Dry       41.50       0       3       3         1425       4       4       6       7         1425       4       6       7       6         1       1       1       1       1       1         1425       4       1       1       1       1         1425       4       1       1       1       1       1         1425       4       1	Penetration Resistance Moisture Content	Vapor (ppm)	Staining	Sample #	(ft.	Sample Run	Recovery	Soil/Rock Type	Lithology/F	lemarks	Completion
Dry       11.1       White 7.5YR 8/1, dry, non-plastic, non-cohesive, Gray 7.5YR 5/1 staining/odor @ 10" to deph         Dry       37.4       SB14       SM       Refusal @ 3' due to cobble         Dry       41.50       @ 3'       3       due to cobble         1425       4       8       9       10       11         10       11       12       13       10       11       12					0						NA
Dry       37.4       SB14       3       SM       cohesive, Gray 7.5YR 5/1 staining/odor @ 10" to deph         Dry       41.50       @       3       4       Refusal @ 3' due to cobble         1425       4       5       6       7       8         9       10       11       12       13       14	Dry	11 1			1 -	$\left  \right $					+
Dry     37.4     2     0.11     to deph       Dry     41.50     0     3     1425     4       1425     4     1     Refusal @ 3'       6     7     1     1       8     9     10     1       10     11     12     1       12     13     1     1	DIy	11.1			1 _			GM			+
Dry 41.50	Dry	37.4		SB14	2			SM	-		‡
3'     4       1425     4       5     6       7     6       7     8       9     10       11     12       13     13	Dry	41.50			3	+					+
1     1     1       1     1       1     1       1     1       1     1       1     1				3'		-				- <b>-</b>	Ŧ I
				1425	4 _						+
					5	t l			uue to ee		+
					6	+					+
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Compliance <sub>"</sub> Engineering <sub>"</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

#### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Project:

SB15       Sullivan GC D#         Date:       Project Number:         012915025       012915025         Logged By:       Drilled By:         Elevation:       Detector:         5,470'       MiniRae 2000	cker
Logged By:         Drilled By:           Michael A. Wicker         Michael A. Wicker           Elevation:         Drilling Method:         Sampling Method:	cker
Elevation:         Detector:         Drilling Method:         Sampling Method:	
Elevation: Detector: Drilling Method: Sampling Method:	
5 470' MiniRae 2000 Hand-Auger Continuous	
Gravel Pack: Seal: Grout: NA NA NA	
Casing Type: Diameter: Length: Hole Diameter: De	epth to Liquid:
NA NA 3.25"	NA epth to Water:
Screen Type:     Slot:     Diameter:     Length:     Total Depth:     De       NA     NA     NA     NA     2.5'	NA
Tation Tation	Well Completion
	NA
Silty Sand	
Dry 0.0 1 Gray 6/1, dry, loose, non-plastic, cohesive, no	
Dry 3.1 2 staining/odor	
Dry 2.3	
Dry 1.1 4	
Dry 3.6	
Dry 4.3	
Dry 5.1 7	
Dry         5.0         8         SM         Reddish brown 7.5YR 5/3	
Dry 3.1 9	
Dry 2.6	
Dry 1.2	
Dry 1.9	
Dry 0.7	
Dry 0.3	
Dry 0.8 15 T	

								Boring/Well #	SB15	
	Compl	ianco	Engine	orina	Pomodi	Project:	Sullivan GC D#1E			
	JTFn	vironn	nental	Inc	Remedia		<i>''</i>	Project #	012915025	
		• 0111	icinal,					Date	8/21/2015	
Penetration Resistance Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		ology/Remarks	Well Completion
				15						
Dry	1.6		SB15 @	16 17	-				- - -	- - -
	209		17.5' 1624	18	- - -			т		-
				19 20	-			Ĩ		-
				21 22	+  -				- - -	
				23	-				-	-
				24 25	-				-	- - -
				26 27	-  -					+  -
				28	+ - -				-	+ + +
				29 30	-				-	
				31	-				-	
				32 33	- -				-	-
				34					-	- 
				35 36					-	- - -
				37	+					





Compliance <sub>«</sub> Engineering <sub>«</sub> Remediation LT Environmental, Inc. 2243 Main Ave #3 Durango, CO 81301

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: Sulling CC D#1E

			r		vientia i			Boring/Well	Number: SB16	Project: Sullivan G	C <b>D</b> #1E
	and the second	Contraction of the	mileren	- W				Date:	8/21/2015	Project Number: 012915	025
	111							Logged By:	Devin Hecmann	Drilled By: Devin Her	
Elevation:	5 4701		Detector:	M	:D 200			Drilling Met	hod:	Sampling Method:	
Gravel Pack				Min	niRae 200	0		Seal:	Hand-Auger	Grout:	ous
Casing Typ	NA e:							Diameter:	NA Length:	NA Hole Diameter:	Depth to Liquid:
	NA			Slot:					NA NA	3.25"	NA Depth to Water:
Screen Typ	NA				A				Length: JA NA	Total Depth: 9'	NA
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Ren	marks	Well Completion
					0						NA
	Dry	0.0			1	-			<b>Silty San</b> Light brown 6/4, dry, loc		+
	Dry	0.0			2	+			non-cohesive, no sta		-
	Dry	0.0			3	$\left  \right $			Silty San Light brown 6/4, dry, soft,1		+-
					_				cohesive, no stain		+
	Dry	0.0			4 _			SM	Silty San	d	-
	Dry	0.0			5			0111	Light brown 6/4, dry, loo non-cohesive, no sta	-	-
	Dry	0.0			6						+
	Dry	0.0			7					-	+
	Dry	0.0			8					-	+
	Dry	0.0			9	$\left  \right $					<u>+</u>
					10	$\left  \right $					+
					11	$\left  \right $			TD @ 9'	-	Ŧ
						<b> </b>				-	+
					12	<u> </u>				-	+
					13					-	+
					14	T				-	Į I
					15	<u>† </u>					†

ATTACHMENT B

LABORATORY ANALYTICAL REPORTS





12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859 Tax I.D. 62-0814289

Est. 1970

James McDaniel XTO Energy - San Juan Division 382 County Road 3100 Aztec, NM 87410

#### Report Summary

Sunday June 21, 2015

Report Number: L770289 Samples Received: 06/10/15 Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

June 21,2015

Date Received	: June 1	0, 2015		ESC	C Sample # :	L770289-01	_	
Description	:			c:+	e ID : SULI	IVAN G.C.I	\ #1₽	
Sample ID	: FARRF-06081	5-1020				IVAN G.C.I	) #IE	
Collected By Collection Date	: Rex Farnswo : 06/08/15 10							
Parameter		Dry Result	Det. Limit	Units	Method	Date	Dil.	
Total Solids		91.9		00	2540 G-2011	06/12/15	1	
Benzene		10.	1.1	mg/kg	8021	06/15/15	2000	
Toluene		67.	11.	mg/kg	8021	06/15/15	2000	
Ethylbenzene		14.	1.1	mg/kg	8021	06/15/15	2000	
Total Xylene		210	3.3	mg/kg	8021	06/15/15	2000	
TPH (GC/FID) L		3500	220	mg/kg	8015	06/15/15	2000	
Surrogate Recove		96.5		. Dee	8015	06/15/15	1	
a,a,a-Trifluor a,a,a-Trifluor		96.5 104.		% Rec. % Rec.	8015 8021	06/15/15		
a,a,a-11111001	ocordene(PID)	104.		% ReC.	0021	00/15/15	T	
TPH (GC/FID) H Surrogate recove		6300	440	mg/kg	3546/DRO	06/13/15	100	
o-Terphenyl		88.2		% Rec.	3546/DRO	06/13/15	100	

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REPORT OF ANALYSIS

June 21,2015

Date Received : June	10, 2015		ESC	Sample # :	L770289-02	2
Description :			Sit	e ID : SULL	IVAN G.C.D	) #1E
Sample ID : FARRF-(	060815-1038		Dro	iect # :		
<b>_</b>	rnsworth 15 10:38		PIO	Ject # •		
Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	90.8		00	2540 G-2011	06/12/15	1
Benzene	8.0	2.8	mg/kg	8021	06/15/15	5000
Toluene	58.	28.	mg/kg	8021	06/15/15	5000
Ethylbenzene	14.	2.8	mg/kg	8021	06/15/15	5000
Total Xylene	200	8.2	mg/kg	8021	06/15/15	5000
TPH (GC/FID) Low Fraction	n 3500	550	mg/kg	8015	06/15/15	5000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FI	ID) 96.4		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PI	ID) 105.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fractic Surrogate recovery(%)	on 5400	440	mg/kg	3546/DRO	06/13/15	100
o-Terphenyl	79.5		% Rec.	3546/DRO	06/13/15	100

Results listed are dry weight basis. BDL - Below Detection Limit Det. Limit - Practical Quantitation Limit(PQL) Note: This report shall not be reproduced, except in full, without the written approval from ESC. The reported analytical results relate only to the sample submitted Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT	OF	ANALYSIS	

June 21,2015

Dave neoerica	:	June 10, 20	)15		ESC	Sample # :	L770289-03	
Description	:				Sit	e ID : SULL	IVAN G.C.D	) #1E
Sample ID :	:	FARRF-060815-110	)5		Pro	ject # :		
Collected By Collection Date	:	Rex Farnsworth 06/08/15 11:05				J		
Parameter			Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids			91.2		90	2540 G-2011	06/12/15	1
Benzene			BDL	0.0027	mg/kg	8021	06/15/15	5

Total Solids	91.2		90	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/15/15	5
Toluene	BDL	0.027	mg/kg	8021	06/15/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/15/15	5
Total Xylene	0.0087	0.0082	mg/kg	8021	06/15/15	5
TPH (GC/FID) Low Fraction	BDL	0.55	mg/kg	8015	06/15/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.9		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction Surrogate recovery(%)	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
o-Terphenyl	60.2		% Rec.	3546/DRO	06/13/15	1

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REPORT OF ANALYSIS

June 21,2015

Date Received Description	:	June	10, 2	015		ESC	C Sample # :	L770289-04	Ł
Sample ID	:	FARRF-060	815-12	10		~	e ID : SULI	JIVAN G.C.I	) #1E
Collected By Collection Date	:	Rex Farns 06/08/15				PIC			
Parameter				Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids				86.7		90	2540 G-2011	06/12/15	1
Benzene Toluene Ethylbenzene Total Xylene TPH (GC/FID) Surrogate Recov a,a,a-Trifluc a,a,a-Trifluc	very- proto	-% oluene(FID)		BDL BDL 0.014 BDL 95.7 103.	0.0029 0.029 0.0029 0.0086 0.58	mg/kg mg/kg mg/kg mg/kg % Rec. % Rec.	8021 8021 8021 8021 8015 8015 8021	06/15/15 06/15/15 06/15/15 06/15/15 06/15/15 06/15/15	5 5 5 5 1
TPH (GC/FID) Surrogate recov o-Terphenyl				14. 71.3	4.6	mg/kg % Rec.	3546/DRO 3546/DRO	06/13/15 06/13/15	1 1

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June 21,2015

Date Received Description	:	June 10, 20	015		ESC Sample # : L770289-05							
Sample ID	:	FARRF-060815-130	0		Sit	Site ID : SULLIVAN G.C.D #1E						
-	:	Rex Farnsworth			Pro	ject # :						
Collection Date	:	06/08/15 13:30										
Parameter			Dry Result	Det. Limit	Units	Method	Date	Dil.				
Total Solids			84.1		00	2540 G-2011	06/12/15	1				
Benzene			BDL	0.0030	mg/kg	8021	06/16/15	5				

Benzene	BDL	0.0030	mg/kg	8021	06/16/15	5	
Toluene	BDL	0.030	mg/kg	8021	06/16/15	5	
Ethylbenzene	BDL	0.0030	mg/kg	8021	06/16/15	5	
Total Xylene	BDL	0.0089	mg/kg	8021	06/16/15	5	
TPH (GC/FID) Low Fraction	BDL	0.59	mg/kg	8015	06/16/15	5	
Surrogate Recovery-%			3. 3				
a,a,a-Trifluorotoluene(FID)	90.9		% Rec.	8015	06/16/15	1	
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1	
TPH (GC/FID) High Fraction	8.6	4.8	mq/kq	3546/DRO	06/13/15	1	
Surrogate recovery(%)	0.0	1.0		55 IO, DICO	00/13/13	-	
o-Terphenyl	63.2		% Rec.	3546/DRO	06/13/15	1	
0 icipiiciiyi	05.2		8 1000.	5510/ DI(0	00/15/15	-	

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o-Terphenyl

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June 21,2015

3546/DRO

% Rec.

06/13/15 1

						ESC	Sample # :	L770289-06	5
Date Received	:	June	10, 2	015			-		
Description	:					sit	e ID : SULL	LIVAN G.C.D	) #1F
Sample ID	:	FARRF-06	0815-21	5		Dit		IIVAN G.C.L	, щтп
Collected By Collection Date	: e :	Rex Farr 06/08/15				Prc	ject # :		
Parameter				Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids				89.9		8	2540 G-2011	06/12/15	1
Benzene				BDL	0.0028	mg/kg	8021	06/16/15	5
Toluene				BDL	0.028	mg/kg	8021	06/16/15	5
Ethylbenzene				BDL	0.0028	mg/kg	8021	06/16/15	5
Total Xylene				BDL	0.0083	mg/kg	8021	06/16/15	5
TPH (GC/FID)	Low	Fraction		BDL	0.56	mg/kg	8015	06/16/15	5
Surrogate Recov	very-	- %							
a,a,a-Trifluo	oroto	oluene(FII	)	90.6		% Rec.	8015	06/16/15	1
a,a,a-Trifluo	oroto	oluene(PII	)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) Surrogate recov				BDL	4.4	mg/kg	3546/DRO	06/13/15	1
	-								

78.5

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#### YOUR LAB OF CHOICE

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382 County Road 3100	
Aztec, NM 87410	

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June 21,2015

Date Received Description	:	June	10, 20	)15		ESC Sample # : L770289-07						
-	•		CO01E 200			Sit	e ID : SULL	JIVAN G.C.I	) #1E			
Sample ID	:	FARRF-U	50815-300	J		Dro	oject # :					
Collected By Collection Date	:	Rex Far 06/08/1										
Parameter				Dry Result	Det. Limit	Units	Method	Date	Dil.			
Total Solids				91.7		00	2540 G-2011	06/12/15	1			
Benzene				BDL	0.0027	mg/kg	8021	06/16/15	5			
Toluene				BDL	0.027	mg/kg	8021	06/16/15	5			
Ethylbenzene				BDL	0.0027	mg/kg	8021	06/16/15	5			
Total Xylene				BDL	0.0082	mg/kg	8021	06/16/15	5			
TPH (GC/FID) I	Low	Fraction		BDL	0.54	mg/kg	8015	06/16/15	5			
Surrogate Recov	ery-	00										
a,a,a-Trifluo:	roto	luene(FII	D)	90.7		% Rec.	8015	06/16/15	1			
a,a,a-Trifluo:	roto	luene(PII	))	102.		% Rec.	8021	06/16/15	1			
TPH (GC/FID) I Surrogate recove			n	BDL	4.4	mg/kg	3546/DRO	06/13/15	1			
o-Terphenyl				79.7		% Rec.	3546/DRO	06/13/15	1			

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June 21,2015

Date Received Description	:	June	10, 20	)15		ESC	Sample # :	L770289-08	3	
Description	•					Sit	e ID : SULL	IVAN G.C.I	) #1E	
Sample ID	:	FARRF-06	50815-435	0		Dro	ioat # ·			
Collected By Collection Date	:	Rex Farr 06/08/15			Project # :					
Parameter				Dry Result	Det. Limit	Units	Method	Date	Dil.	
Total Solids				93.7		00	2540 G-2011	06/12/15	1	
Benzene				BDL	0.0027	mg/kg	8021	06/16/15	5	
Toluene				BDL	0.027	mg/kg	8021	06/16/15	5	
Ethylbenzene				BDL	0.0027	mg/kg	8021	06/16/15	5	
Total Xylene				BDL	0.0080	mg/kg	8021	06/16/15	5	
TPH (GC/FID)	Low	Fraction		BDL	0.53	mg/kg	8015	06/16/15	5	
Surrogate Recov	ery-	- %								
a,a,a-Trifluo	roto	oluene(FII	))	90.7		% Rec.	8015	06/16/15	1	
a,a,a-Trifluo	roto	oluene(PII	))	102.		% Rec.	8021	06/16/15	1	
TPH (GC/FID) Surrogate recov			ı	7.8	4.3	mg/kg	3546/DRO	06/13/15	1	
o-Terphenyl	-			94.8		% Rec.	3546/DRO	06/13/15	1	

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TPH (GC/FID) High Fraction

Surrogate recovery(%)

o-Terphenyl

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REPORT	OF	ANALYSIS	

June 21,2015

3546/DRO

3546/DRO

mg/kg

% Rec.

06/13/15 1

06/13/15 1

Date Received Description	:	June	10, 20	)15	ESC Sample # : L770289-09 Site ID : SULLIVAN G.C.D #1E					
Sample ID	:	FARRF-060	815-535	5			e ID : SULI	LIVAN G.C.I	) #1E	
Collected By Collection Date	:	Rex Farns 06/08/15		orth 7:35						
Parameter				Dry Result	Det. Limit	Units	Method	Date	Dil.	
Total Solids				91.6		00	2540 G-2011	06/12/15	1	
Benzene Toluene Ethylbenzene Total Xylene TPH (GC/FID) Surrogate Recov				BDL BDL BDL BDL BDL	0.0027 0.027 0.0027 0.0082 0.54	mg/kg mg/kg mg/kg mg/kg mg/kg	8021 8021 8021 8021 8021 8015	06/16/15 06/16/15 06/16/15 06/16/15 06/16/15	5 5 5 5 5	
a,a,a-Trifluo a,a,a-Trifluo	roto	oluene(FID)		90.7 102.		% Rec. % Rec.	8015 8021	06/16/15 06/16/15	1 1	

4.4

6.6

97.3

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REPORT	OF	ANALYSIS	

June 21,2015

Date Received : June 10 Description :	, 2015		ESC	C Sample # :	L770289-10	)	
Sample ID : FARRF-060815	-930	Site ID : SULLIVAN G.C.D #1E Project # :					
Collected By : Rex Farnswor Collection Date : 06/08/15 09:		FIOJECC # ·					
Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.	
Total Solids	88.4		00	2540 G-2011	06/12/15	1	
Benzene Toluene Ethylbenzene Total Xylene TPH (GC/FID) Low Fraction	BDL 3.0 11. 200 3600	0.28 2.8 0.28 0.85 56.	mg/kg mg/kg mg/kg mg/kg mg/kg	8021 8021 8021 8021 8021 8015	06/16/15 06/16/15 06/16/15 06/16/15 06/16/15	500 500 500 500 500	
Surrogate Recovery-% a,a,a-Trifluorotoluene(FID) a,a,a-Trifluorotoluene(PID)	90.7 102.	501	% Rec. % Rec.	8015 8021	06/16/15 06/16/15	1	
TPH (GC/FID) High Fraction Surrogate recovery(%)	BDL	4.5	mg/kg	3546/DRO	06/13/15		
o-Terphenyl	75.1		% Rec.	3546/DRO	06/13/15	1	

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REPORT OF ANALYSIS

June 21,2015

Date Received :	June 10	, 2015		ESC	C Sample # :	L770289-11	L
Description :				ci+	e ID : SULL	IVAN G.C.I	\ #1ᢑ
Sample ID :	FARRF-060815	-947				IIVAN G.C.I	) #ID
Collected By : Collection Date :				Pro	oject # :		
Parameter		Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids		86.7		00	2540 G-2011	06/12/15	1
Benzene		53.	2.9	mg/kg	8021	06/19/15	5000
Toluene		420	29.	mg/kg	8021	06/19/15	5000
Ethylbenzene		68.	2.9	mg/kg	8021	06/19/15	5000
Total Xylene		860	8.6	mg/kg	8021	06/19/15	5000
TPH (GC/FID) Lo	w Fraction	13000	580	mg/kg	8015	06/19/15	5000
Surrogate Recover	.А-8						
a,a,a-Trifluoro	toluene(FID)	92.2		% Rec.	8015	06/19/15	1
a,a,a-Trifluoro	toluene(PID)	92.4		% Rec.	8021	06/19/15	1
TPH (GC/FID) Hi Surrogate recover		3300	92.	mg/kg	3546/DRO	06/11/15	20
o-Terphenyl	2	78.4		% Rec.	3546/DRO	06/11/15	20

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#### Attachment A List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L770289-01	WG794936	SAMP	o-Terphenyl	R3043222	J7
L770289-02	WG794936	SAMP	o-Terphenyl	R3043222	J7
L770289-11	WG794934	SAMP	o-Terphenyl	R3042967	J7

#### Attachment B Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

#### Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

#### Definitions

- Accuracy The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.
- Surrogate Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

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## LAB SCILENSCES

#### YOUR LAB OF CHOICE

XTO Energy - San Juan Division James McDaniel 382 County Road 3100

Aztec, NM 87410

12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

50-150

WG794934

Quality	Assurance	Report
	Level II	

L770289

June 21, 2015

			atory Blank				
Analyte	Result	Units	8 % R	ec	Limit	Batch	Date Analyzed
Total Solids	< .1	8				WG794915	06/12/15 07:0
Total Solids	< .1	8				WG794917	06/12/15 07:1
TPH (GC/FID) High Fraction	< 4	mg/kg	·				06/11/15 18:1
o-Terphenyl		% Rec	2. 100	.0	50-150	WG794934	06/11/15 18:1
TPH (GC/FID) High Fraction	< 4	mg/kg					06/12/15 14:5
o-Terphenyl		% Rec	2. 100	.0	50-150	WG794936	06/12/15 14:5
Benzene	< .0005	mg/kg					06/14/15 12:5
Ethylbenzene Toluene	< .0005 < .005	mg/kg					06/14/15 12:5
TPH (GC/FID) Low Fraction	< .1	mg/kg mg/kg					06/14/15 12:5
Total Xylene	< .0015	mg/kg					06/14/15 12:5
a,a,a-Trifluorotoluene(FID)	< .0015	% Rec		.30	59-128		06/14/15 12:5
a,a,a-Trifluorotoluene(PID)		% Rec			54-144		06/14/15 12:5
Benzene	< .0005	mg/kg					06/16/15 11:4
Ethylbenzene	< .0005	mg/kg					06/16/15 11:4
Toluene	< .005	mg/kg					06/16/15 11:4
TPH (GC/FID) Low Fraction	< .1	mg/kg					06/16/15 11:4
Total Xylene	< .0015	mg/kg		10	F0 100		06/16/15 11:4
a,a,a-Trifluorotoluene(FID)		% Rec		.40	59-128 54-144		06/16/15 11:4
a,a,a-Trifluorotoluene(PID)		% Rec	2. 102	.0	54-144	WG/95950	06/16/15 11:4
Benzene	< .0005	mg/kc	ı			WG796950	06/19/15 17:3
Ethylbenzene	< .0005	mg/kg					06/19/15 17:3
Toluene	< .005	mg/kg					06/19/15 17:3
TPH (GC/FID) Low Fraction	< .1	mg/kg	3			WG796950	06/19/15 17:3
Total Xylene	< .0015	mg/kg	J			WG796950	06/19/15 17:3
a,a,a-Trifluorotoluene(FID)		% Rec	98	.80	59-128	WG796950	06/19/15 17:3
a,a,a-Trifluorotoluene(PID)		% Rec	92	.30	54-144	WG796950	06/19/15 17:3
		Du	plicate				
Analyte	Units	Result	Duplicate	RPD	Limit	Ref Sam	np Batch
Total Solids	8	82.0	82.1	0.0334	5	L770280	-02 WG79491
Total Solids	8	78.5	78.3	0.254	5	L770294	-01 WG79491
		T - 1	. G				
Analyte	Units	Known Val	r Control Sa R	mpie esult	% Rec	Limit	Batch
Total Solids	e e	50	50.	0	100.	85-115	WG79491
Total Solids	\$	50	50.	0	100.	85-115	WG79491
TPH (GC/FID) High Fraction	mg/kg	60	52.	1	86.8	50-150	WG79493
a Termbonyl	mg/kg	00	52.	1	00.0	50-150	WG79493

o-Terphenyl 99.20
 \* Performance of this Analyte is outside of established criteria.
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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## ESC IVE NOCUES

#### YOUR LAB OF CHOICE

XTO Energy - San Juan Division James McDaniel 382 County Road 3100

Aztec, NM 87410

12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Quality	Assurance	Report
	Level II	

L770289

June 21, 2015

Analyte	Units	Known	-	rol Sample Result	% Rec	т. і	mit	Batch
Analyte	011105	ICIOWI	i vai	Resure	8 1.00	11		Datten
TPH (GC/FID) High Fraction	mg/kg	60		50.9	84.8	50	-150	WG7949
o-Terphenyl					99.30	50	-150	WG7949
Benzene	mg/kg	.05		0.0452	90.5		-130	WG7953
Sthylbenzene	mg/kg	.05		0.0460	92.0		-130	WG7953
Toluene	mg/kg	.05		0.0448	89.6		-130	WG7953
Total Xylene	mg/kg	.15		0.139	92.4		-130	WG7953
a,a,a-Trifluorotoluene(FID)					95.70		-128	WG7953
a,a,a-Trifluorotoluene(PID)					102.0		-144	WG7953
PH (GC/FID) Low Fraction	mg/kg	5.5		5.97	109.		.5-137	WG7953
a,a,a-Trifluorotoluene(FID)					105.0		-128	WG7953
a,a,a-Trifluorotoluene(PID)					110.0	54	-144	WG7953
Benzene	mq/kq	.05		0.0407	81.4	70	-130	WG7959
Ithylbenzene	mg/kg	.05		0.0456	91.3	70	-130	WG7959
Toluene	mg/kg	.05		0.0435	87.1	70	-130	WG7959
Total Xylene	mg/kg	.15		0.135	90.3	70	-130	WG7959
a,a,a-Trifluorotoluene(FID)					90.90	59	-128	WG7959
a,a,a-Trifluorotoluene(PID)					101.0	54	-144	WG7959
TPH (GC/FID) Low Fraction	mg/kg	5.5		4.89	88.9	63	.5-137	WG7959
a,a,a-Trifluorotoluene(FID)					98.30	59	-128	WG7959
a,a,a-Trifluorotoluene(PID)					112.0	54	-144	WG7959
Benzene	mg/kg	.05		0.0425	84.9	70	-130	WG7969
Ithylbenzene	mg/kg	.05		0.0432	86.3		-130	WG7969
Foluene	mg/kg	.05		0.0431	86.2		-130	WG7969
Total Xylene	mg/kg	.15		0.129	86.2		-130	WG7969
a,a,a-Trifluorotoluene(PID)	5, 5				102.0	54	-144	WG7969
TPH (GC/FID) Low Fraction	mg/kg	5.5		3.99	72.6	63	.5-137	WG7969
a,a,a-Trifluorotoluene(FID)	5. 5				99.80	59	-128	WG7969
		Laboratory	Control S	ample Duplicate				
Analyte		Result	Ref	%Rec	Limit	RPD	Limit	Batch
		F0 0	FO 1	07.0	F0 1F0	0 270	20	1107040
TPH (GC/FID) High Fraction	mg/kg	52.3	52.1	87.0 98.00	50-150	0.370	20	WG7949
o-Terphenyl				98.00	50-150			WG7949
TPH (GC/FID) High Fraction	mg/kg	50.0	50.9	83.0	50-150	1.71	20	WG7949
o-Terphenyl				93.80	50-150			WG7949
enzene	mg/kg	0.0445	0.0452	89.0	70-130	1.74	20	WG795
Sthylbenzene	mg/kg	0.0452	0.0460	90.0	70-130	1.64	20	WG795
Toluene		0.0438	0.0448	88.0	70-130	2.28	20	WG7953
Tatal Valence		0 1 2 6	0 1 2 0	01 0	70 120	1 0 2		1107050

Total Xylene mg/kg 0.136 0.139 91.0 70-130 1.93 20 WG795391 a,a,a-Trifluorotoluene(FID) 96.80 59-128 WG795391 a,a,a-Trifluorotoluene(PID) 103.0 54-144 WG795391 TPH (GC/FID) Low Fraction 116. 63.5-137 20 WG795391 mg/kg 6.39 5.97 6.84 a,a,a-Trifluorotoluene(FID) 104.0 59-128 WG795391 a,a,a-Trifluorotoluene(PID) 110.0 54-144 WG795391 0.0407 mg/kg 0.0403 WG795956 Benzene 80.0 70-130 1.05 20 Ethylbenzene 0.0454 mg/kg 0.0456 91.0 70-130 0.490 20 WG795956 Toluene 0.0435 70-130 20 WG795956 mg/kg 0.0427 85.0 1.82

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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## ESC SICILE NICLES

#### YOUR LAB OF CHOICE

XTO Energy - San Juan Division James McDaniel 382 County Road 3100

Aztec, NM 87410

12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

#### Quality Assurance Report Level II

L770289

June 21, 2015

		-	-	ample Duplicat				
Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Total Xylene	mg/kg	0.135	0.135	90.0	70-130	0.260	20	WG79595
a,a,a-Trifluorotoluene(FID) a,a,a-Trifluorotoluene(PID)		0.135	0.135	91.00 102.0	59-128 54-144	0.200	20	WG79595 WG79595
TPH (GC/FID) Low Fraction	mg/kg	4.86	4.89	88.0	63.5-137	0.670	20	WG79595
a,a,a-Trifluorotoluene(FID) a,a,a-Trifluorotoluene(PID)				98.10 112.0	59-128 54-144			WG79595 WG79595
Benzene	mg/kg	0.0456	0.0425	91.0	70-130	7.03	20	WG79695
Ethylbenzene Toluene	mg/kg mg/kg	0.0465 0.0461	0.0432 0.0431	93.0 92.0	70-130 70-130	7.52 6.63	20 20	WG79695 WG79695
Total Xylene a,a,a-Trifluorotoluene(PID)	mg/kg	0.138	0.129	92.0 101.0	70-130 54-144	6.60	20	WG79695 WG79695
TPH (GC/FID) Low Fraction a,a,a-Trifluorotoluene(FID)	mg/kg	4.15	3.99	76.0 101.0	63.5-137 59-128	3.95	20	WG79695 WG79695

			Matrix Spik	se a				
Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Benzene	mg/kg	0.171	0.0	.05	68.0	49.7-127	L769595-01	WG795391
Ethylbenzene	mg/kg	0.182	0.0	.05	73.0	40.8-141	L769595-01	WG795391
Toluene	mg/kg	0.172	0.0	.05	69.0	49.8-132	L769595-01	WG795391
Total Xylene	mg/kg	0.545	0.00138	.15	72.0	41.2-140	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)					95.30	59-128		WG795391
a,a,a-Trifluorotoluene(PID)					102.0	54-144		WG795391
TPH (GC/FID) Low Fraction	mg/kg	19.9	0.0557	5.5	72.0	28.5-138	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)					101.0	59-128		WG795391
a,a,a-Trifluorotoluene(PID)					106.0	54-144		WG795391
Benzene	mg/kg	0.175	0.000413	.05	70.0	49.7-127	L770289-05	WG795956
Ethylbenzene	mg/kg	0.179	0.000390	.05	71.0	40.8-141	L770289-05	WG795956
Toluene	mg/kg	0.181	0.00429	.05	71.0	49.8-132	L770289-05	WG795956
Total Xylene	mg/kg	0.531	0.00348	.15	70.0	41.2-140	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)					90.60	59-128		WG795956
a,a,a-Trifluorotoluene(PID)					101.0	54-144		WG795956
TPH (GC/FID) Low Fraction	mg/kg	15.0	0.0	5.5	54.0	28.5-138	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)					95.10	59-128		WG795956
a,a,a-Trifluorotoluene(PID)					107.0	54-144		WG795956
Benzene	mg/kg	0.195	0.0	.05	78.0	49.7-127	L771109-01	WG796950
Ethylbenzene	mg/kg	0.188	0.0	.05	75.0	40.8-141	L771109-01	WG796950
Toluene	mg/kg	0.190	0.0	.05	76.0	49.8-132	L771109-01	WG796950
Total Xylene	mg/kg	0.578	0.000561	.15	77.0	41.2-140	L771109-01	WG796950
a,a,a-Trifluorotoluene(PID)	.5,5				96.20	54-144		WG796950
TPH (GC/FID) Low Fraction	mg/kg	14.0	0.0	5.5	51.0	28.5-138	L771109-01	WG796950
a,a,a-Trifluorotoluene(FID)		0		2.5	97.50	59-128		WG796950
					2.100			

		N	latrix Spik	e Duplicate				
Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit Ref Samp	Batch
Benzene	mg/kg	0.170	0.171	68.0	49.7-127	0.510	23.5 L769595-01	WG795391
Ethylbenzene	mg/kg	0.182	0.182	72.9	40.8-141	0.260	23.8 L769595-01	WG795391
Toluene	mg/kg	0.171	0.172	68.4	49.8-132	0.840	23.5 L769595-01	WG795391
Total Xylene	mg/kg	0.541	0.545	72.0	41.2-140	0.760	23.7 L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)				95.50	59-128			WG795391
a,a,a-Trifluorotoluene(PID)				102.0	54-144			WG795391
TPH (GC/FID) Low Fraction	mg/kg	20.5	19.9	74.2	28.5-138	2.56	23.6 L769595-01	WG795391
* Performance of this Analyte	e is outside	of esta	blished cr	iteria.				

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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## ESC SICILE NICLES

#### YOUR LAB OF CHOICE

XTO Energy - San Juan Division James McDaniel 382 County Road 3100

Aztec, NM 87410

12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

#### Quality Assurance Report Level II

L770289

June 21, 2015

		Ma	trix Spik	e Duplicate					
Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
a,a,a-Trifluorotoluene(FID)				101.0	59-128				
a,a,a-Trifluorotoluene(PID)				107.0	54-144				
Benzene	mg/kg	0.181	0.175	72.3	49.7-127	3.32	23.5	L770289-05	WG7959
Ethylbenzene	mg/kg	0.182	0.179	72.5	40.8-141	1.69	23.8	L770289-05	WG7959
Toluene	mg/kg	0.185	0.181	72.2	49.8-132	2.21	23.5	L770289-05	WG7959
Total Xylene	mg/kg	0.536	0.531	71.0	41.2-140	0.820	23.7	L770289-05	WG7959
a,a,a-Trifluorotoluene(FID)				90.80	59-128				WG7959
a,a,a-Trifluorotoluene(PID)				101.0	54-144				WG7959
IPH (GC/FID) Low Fraction	mg/kg	17.0	15.0	61.8	28.5-138	12.6	23.6	L770289-05	WG7959
a,a,a-Trifluorotoluene(FID)				95.80	59-128				WG7959
a,a,a-Trifluorotoluene(PID)				108.0	54-144				WG7959
Benzene	mg/kg	0.187	0.195	74.9	49.7-127	3.84	23.5	L771109-01	WG7969
Sthylbenzene	mg/kg	0.177	0.188	71.0	40.8-141	5.71	23.8	L771109-01	WG7969
Toluene	mg/kg	0.180	0.190	72.1	49.8-132	5.22	23.5	L771109-01	WG7969
Total Xylene	mg/kg	0.541	0.578	72.1	41.2-140	6.56	23.7	L771109-01	WG7969
a,a,a-Trifluorotoluene(PID)				98.90	54-144				WG7969
TPH (GC/FID) Low Fraction	mg/kg	14.7	14.0	53.4	28.5-138	4.53	23.6	L771109-01	WG7969
a,a,a-Trifluorotoluene(FID)				97.20	59-128				WG796

Batch number /Run number / Sample number cross reference

WG794915: R3042943: L770289-01 02 03 04 05 06 07 08 WG794917: R3042949: L770289-09 10 11 WG794934: R3042967: L770289-11 WG794936: R3043222: L770289-01 02 03 04 05 06 07 08 09 10 WG795391: R3043799: L770289-01 02 03 04 WG79556: R3044022: L770289-05 06 07 08 09 10 WG796950: R3044762: L770289-11

 $^{\ast}$  \* Calculations are performed prior to rounding of reported values.

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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#### YOUR LAB OF CHOICE

XTO Energy - San Juan Division James McDaniel 382 County Road 3100

Aztec, NM 87410

Quality Assurance Report Level II

L770289

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

> Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier. 12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 21, 2015



# ANALYTICAL REPORT

L784324

08/21/2015

August 26, 2015



# **XTO Energy - San Juan Division**

Sample Delivery Group:

Samples Received:

Project Number:

Description:

LT Environmental

Report To:

James McDaniel 382 County Road 3100 Aztec, NM 87410

Entire Report Reviewed By:

Daptime R Richards

Daphne Richards Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

# TABLE OF CONTENTS

*
<sup>1</sup> Cp
<sup>2</sup> Tc
<sup>3</sup> Ss
<sup>4</sup> Cn
⁵Sr
<sup>6</sup> Qc
<sup>7</sup> Gl

A

Sc

1
2
3
4
5
5
6
7
8
8
11
12
13

# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.

\*

Ср

Tc

Ss

Cn

Sr

Qc

GI

ΆI

Sc

FARMW-081915-1100 L784324-04 GW			Collected by MIchael A Wicker	Collected date/time 08/19/15 11:00	Received date/time 08/21/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	20	08/23/15 09:01	08/23/15 09:01	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG810932	250	08/24/15 14:36	08/24/15 14:36	MCB
FARMW-081915-1230 L784324-05 GW			Collected by MIchael A Wicker	Collected date/time 08/19/15 12:30	Received date/time 08/21/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	1	08/23/15 09:24	08/23/15 09:24	MCB
FARMW-081915-1330 L784324-06 GW			Collected by MIchael A Wicker	Collected date/time 08/19/15 13:30	Received date/time 08/21/15 09:00
Method	Batch	Dilution	Preparation	Analysis	Analysis Analyst
			date/time	date/time	
Volatile Organic Compounds (GC) by Method 8021B	WG810927	20	08/23/15 09:45	08/23/15 09:45	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG810932	250	08/24/15 14:58	08/24/15 14:58	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG811603	2000	08/26/15 13:47	08/26/15 13:47	MCB

# CASE NARRATIVE

\*

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the

lapline R Richards

Daphne Richards Technical Service Representative



# SAMPLE RESULTS - 04



### Volatile Organic Compounds (GC) by Method 8021B

<b>o</b> ,		· · ·					
	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		2
Benzene	4.43		0.0100	20	08/23/2015 09:01	WG810927	
Toluene	17.1		1.25	250	08/24/2015 14:36	WG810932	
Ethylbenzene	1.10		0.0100	20	08/23/2015 09:01	WG810927	3
Total Xylene	11.3		0.0300	20	08/23/2015 09:01	WG810927	Ĺ
(S) a,a,a-Trifluorotoluene(PID)	103		55.0-122		08/23/2015 09:01	WG810927	4

# SAMPLE RESULTS - 05

# \*

### Volatile Organic Compounds (GC) by Method 8021B

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		2
Benzene	0.00260		0.000500	1	08/23/2015 09:24	WG810927	T
Toluene	0.00685		0.00500	1	08/23/2015 09:24	WG810927	
Ethylbenzene	0.00193		0.000500	1	08/23/2015 09:24	WG810927	<sup>3</sup> Ss
Total Xylene	0.0225		0.00150	1	08/23/2015 09:24	WG810927	
(S) a,a,a-Trifluorotoluene(PID)	104		55.0-122		08/23/2015 09:24	WG810927	4

# SAMPLE RESULTS - 06

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### Volatile Organic Compounds (GC) by Method 8021B

volatile organie oomp	volutile organice compounds (co) by method co21b										
	Result	Qualifier	RDL	Dilution	Analysis	Batch	Ср				
Analyte	mg/l		mg/l		date / time		2				
Benzene	4.40		0.0100	20	08/23/2015 09:45	WG810927	Tc				
Toluene	40.0		1.25	250	08/24/2015 14:58	WG810932					
Ethylbenzene	1.95		0.0100	20	08/23/2015 09:45	WG810927	<sup>3</sup> Ss				
Total Xylene	18.1		3.00	2000	08/26/2015 13:47	<u>WG811603</u>	55				
(S) a,a,a-Trifluorotoluene(PID)	100		55.0-122		08/23/2015 09:45	WG810927	<sup>4</sup> Cn				

# WG810927

Volatile Organic Compounds (GC) by Method 8021B

# QUALITY CONTROL SUMMARY

### Method Blank (MB)

(MB) 08/23/15 06:27				
	MB Result	MB Qualifier	MB RDL	
Analyte	mg/l		mg/l	
Benzene	ND		0.000500	
Toluene	ND		0.00500	
Ethylbenzene	ND		0.000500	
Total Xylene	ND		0.00150	
(S) a,a,a-Trifluorotoluene(PID)	105		55.0-122	

#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 08/23/15 05:21 • (LCSD) 08/23/15 05:43											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%	
Benzene	0.0500	0.0384	0.0434	76.9	86.8	70.0-130			12.1	20	
Toluene	0.0500	0.0405	0.0442	81.0	88.3	70.0-130			8.62	20	
Ethylbenzene	0.0500	0.0409	0.0453	81.9	90.5	70.0-130			9.98	20	
Total Xylene	0.150	0.126	0.138	84.0	92.1	70.0-130			9.19	20	
(S) a,a,a-Trifluorotoluene(PID)				104	104	55.0-122					

#### L783444-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 08/23/15 07:55 • (MS) 08/2	(OS) 08/23/15 07:55 • (MS) 08/23/15 06:49 • (MSD) 08/23/15 07:11																									
	Spike Amou	Spike Amount Original Result		Spike Amount Original Result		Spike Amount Original Result		Spike Amount Original Result		Spike Amount Original Result		Spike Amount Original Result		Spike Amount Original Result		pike Amount Original Result		MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%														
Benzene	0.0500	0.00727	0.0507	0.0497	86.8	84.9	1	57.2-131			1.89	20														
Toluene	0.0500	ND	0.0533	0.0527	107	105	1	63.7-134			1.28	20														
Ethylbenzene	0.0500	0.00407	0.0489	0.0482	89.7	88.3	1	67.5-135			1.42	20														
Total Xylene	0.150	0.00388	0.143	0.141	92.6	91.5	1	65.9-138			1.23	20														
(S) a,a,a-Trifluorotoluene(PID)					104	104		55.0-122																		

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### WG810932

Volatile Organic Compounds (GC) by Method 8021B

# QUALITY CONTROL SUMMARY

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#### Method Blank (MB)

(MB) 08/24/15 11:39						
	MB Result	MB Qualifier	MB RDL			
Analyte	mg/l		mg/l			
Toluene	ND		0.00500			

#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 08/24/15 09:02 • (LCSD) 08/24/15 09:24											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%	
Toluene	0.0500	0.0448	0.0461	89.6	92.1	70.0-130			2.83	20	

#### L784743-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 08/24/15 14:14 • (MS) 08/24/15 12:23 • (MSD) 08/24/15 12:45												
	Spike Amou	int Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Toluene	0.0500	0.000365	0.0471	0.0486	93.4	96.5	1	63.7-134			3.17	20

SDG: L784324

# WG811603

Volatile Organic Compounds (GC) by Method 8021B

# QUALITY CONTROL SUMMARY

#### Method Blank (MB)

(MB) 08/26/15 12:56			
	MB Result	MB Qualifier	MB RDL
Analyte	mg/l		mg/l
Total Xylene	ND		0.00150

#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 08/26/15 10:50 • (LCSD) 08/26/15 11:15											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%	
Total Xylene	0.150	0.140	0.132	93.1	87.9	70.0-130			5.80	20	

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# GLOSSARY OF TERMS

# \*

<sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc	'Ср
Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al	<sup>2</sup> Tc
<sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al	<sup>3</sup> Ss
Sr GQC GI	<sup>4</sup> Cn
<sup>7</sup> Gl <sup>8</sup> Al	⁵Sr
<sup>8</sup> Al	<sup>6</sup> Qc
°AI 9	<sup>7</sup> Gl
<sup>9</sup> Sc	<sup>8</sup> AI
	<sup>9</sup> Sc

#### Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

# ACCREDITATIONS & LOCATIONS

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ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

#### State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
lowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee 14	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

<sup>1.</sup> Drinking Water <sup>2.</sup> Underground Storage Tanks <sup>3.</sup> Aquatic Toxicity <sup>4.</sup> Chemical/Microbiological <sup>5.</sup> Mold <sup>n/a</sup> Accreditation not applicable

#### Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA-Crypto	TN00003	USDA	S-67674

#### **Our Locations**

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



//	te Numbe	r						Ana	ysis		Lab Information			
Y/TO	XT	O Contact		Page of XTO Contact Phone #										
		James			(505) 333-3701									
ENERGY			Emai	Results	to:								Office Abbreviations	
Western Division	AAgere	LTENV.	com	/ DHe	nemannel	TENN.LOW		1997 - P		1.			rmington = FAR	
Well Site/Location		AP	I Number			Test Reason							Du	rango = DUR
Sullivan GC D#IE Collected By Michael A Wicker			ples on Ice		Ke	Turnaround			K					kken = BAK ton = RAT
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LT Environmenta	chu	david			wo Day nree Day	-0.1	208	RC					Barge = LB	
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Sample ID	Sam	ple Name	ne Media		Time	No.		BTE	HAL					Sample Number
ARMW-031915-0930	SB02	e 16-18-	S	8-19-15	0930	Cool	1	$\times$	$\times$	-				L784324-01
ARMW-001915-1300	SBOT	7@ 16-18-	S	8-19-15	1500	(60)	2	$\boxtimes$	$\propto$					0, 0, 0, 0
ARMW-001913-1540	SBO8		S	8-14-15	1540	Cool	2	$\times$	X					63
ARMW-081915-1100	SBO		GW	8-19-15	1100	Cool	3	${\succ}$		14		- 16	11.53	of
ARMW-081915-1230	SBO		GW			Cool	3 X	$\ge$		12				05
ARMW-081913-1330	SBO	SBOG		GW 8-19-15		Cool	3	$\ge$					06	
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dia : Filter = F Soil = S Wastev	vater = WV	V Groundwat	er = GW D	Prinking V	Vaster = D	W Sludge = SC S	urface Wate	CU	Air-	A D-	II Mud	- DM	Others	07
linquished By: (Signature)			Date: 8-20		Time: 1330	Received By: (Sig		AIT -	A Dr	Number of Bott			the second se	
Relinquished By: (Signature) Relinquished By: (Signature)			Date:		Time:	Received By: (Signature)			Tempera				ure: 2.12	2 Other Information
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		O Contact:		хто							A1	37				
ХТО	Jan	ne McDanie			(505) 333-3701				- 1	- 1				breviations		
Well Mte/ Location			Email Resu AAger@lten	v.com;				- 1					Office AD armington =			
		Dł	Hencmann@	ltenv.con				- 1	- 1				)urango = Dl	JR		
		PI Number			Test Reason Release							E	Bakken = BA Raton = RAT	к		
Sullivan GC D#1E Collected By	Sample	s on Ice	(Yes)	24.4	Turnaround	1.1						- 1	Piceance = PC			
Michael A Wicker				24-H	ext Day				1				Roosevelt = R			
Company	QA/	QC Reques	ted		vo Day	1.1.1.2	1 K					La Barge = Orangeville		= OV		
LT Environmental, Inc.		Standard		X Three Day				ភ្	1 1		8	-1	Orangevine			
ignature	Gray Are	A REAL PROPERTY OF THE REAL PR			Bus. Days(by a	contract)	В,	( (8021)			No.					
		Media	Date	Time	Preservative	No. of Conts.	TPH-GRO/DRO	BTEX	SAR	ដ្ឋ	CHLORIDE			le Number		
Sample ID	Sample Name	S	8/21/2015	1035	Cool	1	Х	Х					78487			
FARMW-082115-1035	SB10@2'	S	8/21/2015	1100	Cool	1	Х	Х						07. 13		
FARMW-082115-1100	SB11@4'	s	8/21/2015		Cool	1	X	Х					and the second			
FARMW-082115-1145	SB12@6'	S	8/21/2015	1425	Cool	1	X	X						er er		
FARMW-082115-1425	SB14@3'	S	8/21/2015		Cool	- <b>1</b> :32	X	X	er	1		1.10		66		
FARMW-082115-1624	SB15@17.5'	5	0/21/2013	1024									Constant of the			
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		10.000 000	8	1000		1.1					2		Did Other	TOT		
Media : Filter = F Soil = S Wa	staugetat - WW Grou	indwater = (	GW Drinking	Waster =	DW Sludge = S	G Surface	e Wate	er = \$V	V A	ir = A	Drill	Mud	= DM Other	Sample Condition		
		Date:		Time:	Received By	: (Signatu	ire)				Num	nber	of Bottles	sampre		
Relinquished By: (Signature)		8	-24-15	1345							Tom		entures 0			
Relinquished By: (Signature)		Date:		Time:			:ure)				_	Temperature:		Other Information		
Relinquished By: (Signature)		Date:		Time:	Time: Received for Lab by:			(Signature)				te: 25/	5 0900			

\* Sample ID will be the office and sampler-date-military time-sampler initials FARJM-MMDDYY-1200