District I 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

						OPERA'	TOR		Initial	al Report		Final Repo
		TO Energy,					mes McDaniel					
		00, Aztec, N	lew Mexi	co 87410			No.: (505) 333-3					
Facility Na	me: OH Ra	indel #5				Facility Typ	e: Gas Well (B	asin Da	kota)			
Surface Ow	vner: Triba	ıl		Mineral (Owner				API No	.: 30-045-0	5964	
				LOCA	ATIO	N OF RE	LEASE					
Unit Letter	Section	Township	Range	Feet from the	North	/South Line	Feet from the	East/West Line Co		County		
D	10	26N	11W	990	I	FNL	990	F	WL	San Juan		
]	Latitude 36.50			tude -107.9965	52				
				NAT	TURE	OF REL	EASE					
		ed Oil / Produ					Release: 32.5 BE			Recovered: 0		
ource of Re	elease: 2" Di	rain Valve on	Production	n Tank		Date and Hour of Occurrence: Unknown Time: Unknown Date and Hour of Discove 2:56pm					covery:	1/18/2016
Was Immedi	iate Notice C	Given?					Whom? Cory Sr	nith (NN				
			Yes	No Not R	equired			(,			
By Whom? I	Rex Farnswo	orth (EH&S T	echnician))		Date and F	Hour: 1/19/2016 @	7:53ar	n	Oll r	ONO	DIV DIS
Was a Water	course Read		5			If YES, Vo	olume Impacting	the Wate	ercourse.		ONS.	DIV DIS
			Yes 🛚	No						/	DD -	
f a Waterco	urse was Im	pacted, Descr	ibe Fully.*								KI	2017
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Smith, Cory, EMNRD

From: Smith, Cory, EMNRD

Sent: Friday, April 7, 2017 1:35 PM

To: 'McDaniel, James'; Devin Hencmann

Cc:Powell, Brandon, EMNRD; Fields, Vanessa, EMNRDSubject:RE: OH Randel #5 Confirmation Sampling COAAttachments:RE: OH Randel #5 Confirmation Sampling Plan

James,

Please send me the Sampling Plan and a C-141 before close of business on Friday April 14. 2017 as previously requested in the attached Email. If possible on the C-141 If XTO could include a <u>reasonable</u> time frame in which they think they can commence the sampling event would be helpful.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: McDaniel, James [mailto:James_McDaniel@xtoenergy.com]

Sent: Friday, April 7, 2017 1:22 PM

To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Devin Hencmann <dhencmann@ltenv.com>

Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>

Subject: RE: OH Randel #5 Confirmation Sampling COA

Cory,

I apologize for not getting back sooner. We have gotten quotes for completion of the sampling plan as discussed with NMOCD and are awaiting management approval to pull the trigger. I am hoping for approval by next week. Thank you for your patience with this project.

James McDaniel EH&S Supervisor CHMM #15676 CSP #30009 XTO Energy Inc. 382 Road 3100

Aztec, New Mexico 87410

Phone: 505.333.3701 | Mobile: 505.787.0519

james mcdaniel@xtoenergy.com

An ExxonMobil Subsidiary

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]

Sent: Tuesday, April 04, 2017 11:13 AM **To:** Devin Hencmann; McDaniel, James

Cc: Powell, Brandon, EMNRD; Fields, Vanessa, EMNRD **Subject:** RE: OH Randel #5 Confirmation Sampling COA

Importance: High

Hello All,

I haven't heard back from Devon in terms of XTO planning to start the work at the OH Randel #5 closure needs to start soon.

Can anyone give me a status update?

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Smith, Cory, EMNRD

Sent: Monday, March 6, 2017 8:59 AM

To: 'Devin Hencmann' <dhencmann@ltenv.com>

Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; McDaniel, James <James McDaniel@xtoenergy.com>;

Fields, Vanessa, EMNRD < Vanessa. Fields@state.nm.us > Subject: RE: OH Randel #5 Confirmation Sampling COA

Devon,

OCD has reviewed XTO request and have approved the following:

- "*Impact will be defined by OVM (PID) measurements exceeding 100 ppm.
 - o Impacts will also be defined by stained or wet soils that are obvious signs of hydrocarbon impacts.
- XTO still must drill each bore hole to ATLEAST a depth of 25' or to the depth of the deepest impacts (Whichever is greater).
- If an XTO Borehole shows no signs of hydrocarbon impacts, (No staining, no OVM, uniform lithology) an alternative sampling rate may be proposed and approved prior to submitting the samples to the lab.

When is XTO planning to start the closure sampling? The original plan indicated that the SVE would run for 6 months which was signed on 5/31/16. I would like to give XTO enough time to organize contractors and equipment.

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Devin Hencmann [mailto:dhencmann@ltenv.com]

Sent: Tuesday, February 21, 2017 8:10 AM

To: Smith, Cory, EMNRD < Cory.Smith@state.nm.us>

Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; McDaniel, James <James McDaniel@xtoenergy.com>

Subject: OH Randel #5 Confirmation Sampling COA

Cory,

XTO has reviewed the conditions of approval sent in your email dated January 26, 2017 for LTE's Confirmation Sampling Plan dated December 30, 2016. In response to the conditions of approval, LTE, on behalf of XTO, proposes using field headspace screening as a tool for delineation and to assist in determining which samples be submitted to the laboratory for analysis. See the asterisks below:

- Each Bore hole:
 - Must be drilled to ATLEAST a depth of 25' or to the same depth of the deepest impacts (Whichever is greater).
 - *Impact will be defined by OVM (PID) measurements exceeding 100 ppm.
- Soil sampling will be one composite sample over the first 10' and additional composite samples every 5' thereafter.
 - Each composite sample will be analyzed for TPH (GRO-DRO-MRO/ORO), and Total BTEX.
 - *Soil samples will be collected for laboratory analysis when OVM (PID) readings exceed 100 ppm.
- XTO will provide the OCD with at least 72 hour notice but no more than one week prior to the start of drilling.

Please review these proposals and let us know if you approve.

Thank you,

Devin

Devin Hencmann Project Geologist



COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc. 848 East 2nd Avenue Durango, CO 81301 (970) 385-1096 office (970) 403-6023 cell (303) 433-1432 fax www.ltenv.com dhencmann@ltenv.com





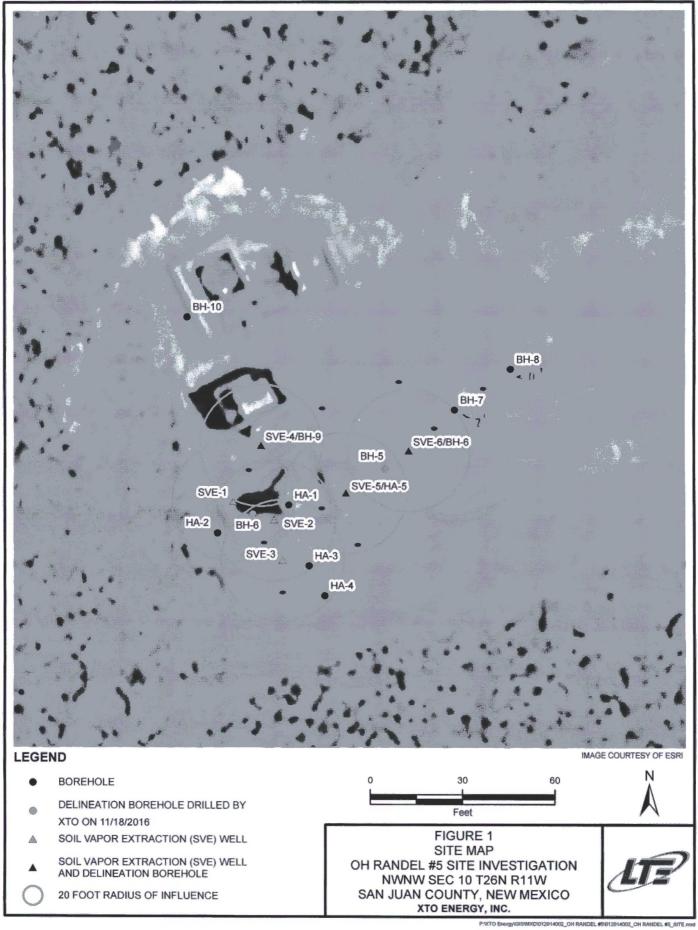


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Smith, Cory, EMNRD

From:

Smith, Cory, EMNRD

Sent:

Wednesday, January 25, 2017 9:57 AM

To:

McDaniel, James (James_McDaniel@xtoenergy.com)

Subject:

RE: OH Randel #5 Confirmation Sampling Plan

James,

Can you please send the plan that Devon sent Via email hardcopy with a C-141 so that I may scan it into the well files.

Thank you,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Smith, Cory, EMNRD

Sent: Wednesday, January 25, 2017 9:56 AM

To: McDaniel, James < James McDaniel@xtoenergy.com>

Cc: Hixon, Logan < Logan Hixon@xtoenergy.com>; 'Devin Hencmann' < dhencmann@ltenv.com>; Fields, Vanessa,

EMNRD <Vanessa.Fields@state.nm.us>

Subject: RE: OH Randel #5 Confirmation Sampling Plan

Good Morning James,

Please see the attached location of OCD closure boreholes for the insitu remediation at the OH Randel #5 and below conditions of approval.

- Each Bore hole:
 - Must be drilled to ATLEAST a depth of 25' or to the same depth of the deepest impacts (Whichever is greater).
- Soil sampling will be one composite sample over the first 10' and additional composite samples every 5' thereafter.
 - Each composite sample will be analyzed for TPH (GRO-DRO-MRO/ORO), and Total BTEX.
- XTO will provide the OCD with at least 72 hour notice but no more than one week prior to the start of drilling.

If you have any additional questions please give me a call.

Cory Smith Environmental Specialist Oil Conservation Division Energy, Minerals, & Natural Resources 1000 Rio Brazos, Aztec, NM 87410 (505)334-6178 ext 115 cory.smith@state.nm.us

From: Devin Hencmann [mailto:dhencmann@ltenv.com]

Sent: Friday, December 30, 2016 3:41 PM

To: Smith, Cory, EMNRD < Cory.Smith@state.nm.us>

Cc: McDaniel, James < James McDaniel@xtoenergy.com>; Hixon, Logan < Logan Hixon@xtoenergy.com>

Subject: OH Randel #5 Confirmation Sampling Plan

Cory,

Attached is the confirmation sampling plan for the OH Randel #5. Please review the plan and get back to us with comments or concerns. We would like to conduct the sampling as soon as the OCD grants approval.

Have a good New Year!

Thank you, Devin

Devin Hencmann Project Geologist



COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc. 848 East 2nd Avenue Durango, CO 81301 (970) 385-1096 office (970) 403-6023 cell (303) 433-1432 fax www.ltenv.com

dhencmann@ltenv.com







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848 2nd Avenue Durango, Colorado 81301 T 970 385 1096 / F 970 385 1873

April 14, 2017

Mr. Cory Smith New Mexico Oil Conservation Division 1000 Rio Brazos Road Aztec, NM 87410

RE: Confirmation Sampling Plan

XTO Energy, Inc.

OH Randel #5, API # 30-045-05964 San Juan County, New Mexico

Dear Mr. Smith:

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), presents the following confirmation sampling plan to evaluate remediation of petroleum hydrocarbon impacted soil and consider closure at the OH Randel #5 natural gas production well (Site). The Site is located west of Highway 550 near Huerfano, New Mexico in Unit D of Section 10 of Township 26 North and Range 11 West.

Background

On January 18, 2016, XTO discovered a frozen valve on a 100-barrel (bbl) production tank that resulted in approximately 27 bbl of condensate and 5.5 bbl of produced water draining onto the ground and infiltrating into the subsurface. The release was contained within the bermed area and no liquids were recovered. The Site was ranked a zero pursuant to the New Mexico Oil Conservation Division's (NMOCD) 1993 *Guidelines for Remediation of Leaks, Spills and Releases*. As such, the remediation action levels applied to the Site are 5,000 parts per million (ppm) total petroleum hydrocarbons (TPH), 10 ppm benzene, and 50 ppm total for the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX).

On January 19, 2016, XTO conducted a subsurface assessment using a hand auger. During the assessment, a photo-ionization detector (PID) was utilized to field screen for volatile organic compounds (VOCs) in soil samples collected from within the release footprint. Samples were collected at the surface and intermittently to 9.5 feet below ground surface (bgs). Samples were collected from four different borehole locations and field screened. Samples from two boreholes were submitted for laboratory analysis of BTEX according to United States Environmental Protection Agency (USEPA) Method 8021 and TPH according to USEPA Method 8015. Field screening and laboratory analytical results indicated that impacted soil potentially exceeding NMOCD standards at the release location extended from the ground surface to 9.5 feet bgs vertically, then thinned out to 2 feet bgs south of the release point. The lateral extent appeared to be approximately 300 square feet. XTO described the subsurface soil type as sandy.



On August 3, through August 8, 2016, LTE conducted delineation and concurrently installed a soil vapor extraction (SVE) system for remediation. LTE advanced ten delineation boreholes (HA 1 through HA 5, and BH-6 through BH-10) to depths ranging from 10 feet to 20 feet bgs: one borehole was placed in each cardinal direction from the source area, then additional boreholes were installed outward as impacted soil was encountered (Figure 1). The soil from the delineation boreholes was described and field screened with a PID at one-foot intervals (Attachment A). Soil samples were collected from the highest Organic Vapor Measurement (OVM) measured and from the bottom of each borehole to confirm the vertical impact to the soil has been delineated. Soil samples were analyzed for BTEX using EPA Method 8021 and TPH using EPA Method 8015. If field screening results indicated that no impacted soil was present, no laboratory analysis was conducted (HA 2, HA 3, HA 4, and BH-10).

Based on the preliminary field screening and laboratory analytical results obtained by XTO and additional delineation data collected by LTE, six SVE wells were installed (Figure 1). SVE wells were screened at intervals spanning the impacted zones and placed so their radius of influence would affect the impacted soil encountered during delineation.

Delineation Results

Impacted soil was encountered in HA-1 in the source area to BH-7 laterally and reached a maximum of 20 feet bgs in HA-1. Impact tapered out to the west, with 2 feet of thickness observed in BH-7. Laboratory results indicated the most significant impact occurred at HA-1 with 142 milligrams per kilogram (mg/kg) of BTEX. Toward the edge of the soil plume values of 112 mg/kg BTEX were observed in BH-7.

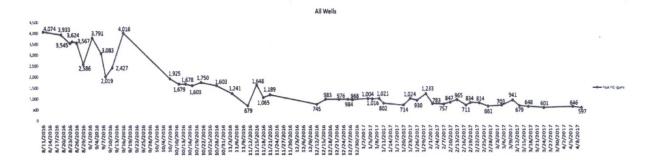
SVE Installation

SVE well locations and screening intervals were based on impacted soil encountered during delineation and a calculated radius of influence of 20 feet that LTE estimated based on subsurface lithological observations. Two SVE wells are located within the source area, two SVE wells are located northeast of the source area, one SVE well is located northwest of the source area, and one SVE well is located south of the source area. Installation of the wells was designed to ensure the 20-foot radius of influence reached all impacted soil encountered (Figure 1).

SVE Performance

The SVE system has been in operation since August 11, 2016, with greater than 90 percent (%) run time. XTO monitored OVM at each SVE well periodically to assess system performance and effectiveness. Below is a graph presenting OVM readings from the main line where vapors from all 6 SVE wells merge. The graph presents data spanning the course of operation.





At start up, OVM readings exceeded 4,000 ppm and have steadily declined during system operation. The average OVM reading between November 17, 2016 and December 11, 2016 was just over 1,000 ppm and the most recent OVM reading was 597 ppm. The decline in OVM readings measured from the combined wells indicate that hydrocarbon impacts have been reduced and soil sampling is prudent to assess residual impacts.

On November 18, 2016, XTO utilized a hand auger to advance two boreholes, one in the original source area (BH-6) and one to the northeast of the source area (BH-5), to assess decline in TPH and BTEX concentrations in soil. Soil samples were collected from each borehole where elevated OVM readings were encountered and from the bottom of the boring. Soil samples were analyzed for BTEX using EPA Method 8021 and TPH using EPA Method 8015 (Table 1). Soil analyzed from these borings was below NMOCD closure standards for this Site. These preliminary results combined with reduced OVM readings from the SVE system prompted further evaluation as proposed in this sampling plan.

Proposed Confirmation Sampling Plan

LTE will utilize a hollow-stem auger soil boring and sampling program using a CME 75 drill rig to advance 9 boreholes to 25 feet below ground surface (bgs) or to the depth of impact, whichever is greater. Boreholes will be located in areas where impacted soil was encountered during delineation and within the radius of influence of the SVE wells. Additional boreholes will be drilled outside of the SVE wells' radius of influence to confirm the subsurface impact was fully delineated during previous investigations (Figure 2).

Continuous soil samples will be logged by an LTE geologist and described using the Unified Soil Classification System (USCS). The intervals from immediately beneath the ground surface to 10 feet bgs and then every five foot interval thereafter will be composited and screened for volatile aromatic hydrocarbons. Screening will be conducted with a PID in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases. Soil with field screening results exceeding 100 ppm or that is stained or wet will be collected for laboratory analysis of BTEX, TPH (GRO, DRO, and MRO).



Reporting

Upon positive evaluation of confirmation soil sampling results, XTO will provide NMOCD with a closure request. SVE remediation activities will continue until the NMOCD approves this plan and any subsequent closure request. Should any of the proposed confirmation soil samples exceed NMOCD standards for TPH or BTEX, XTO will continue to operate the SVE system and resample at those locations until results indicate parameters are compliant with NMOCD standards.

LTE appreciates the opportunity to provide this remediation work plan to the NMOCD. 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 dhencmann@ltenv.com or James McDaniel at (505) 419-0915 or at james_mcdaniel@xtoenergy.com.

Sincerely,

LT ENVIRONMENTAL, INC.

Sugar

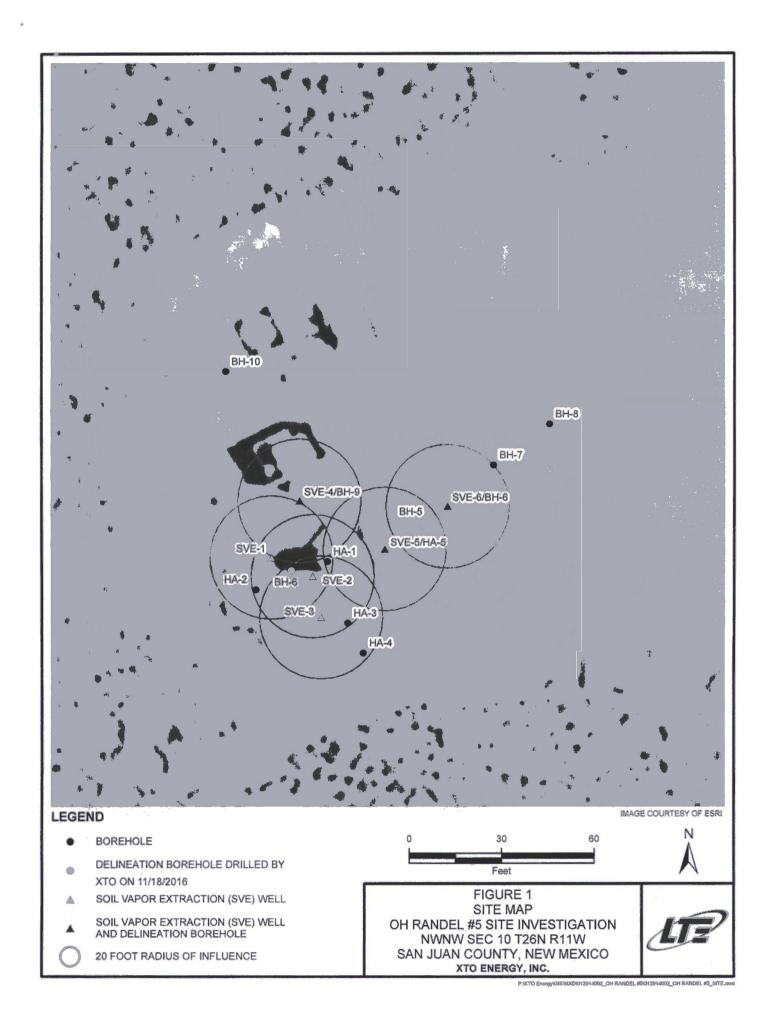
Devin Hencmann Project Geologist Ashley L. Ager, M.S., P.G. Senior Geologist

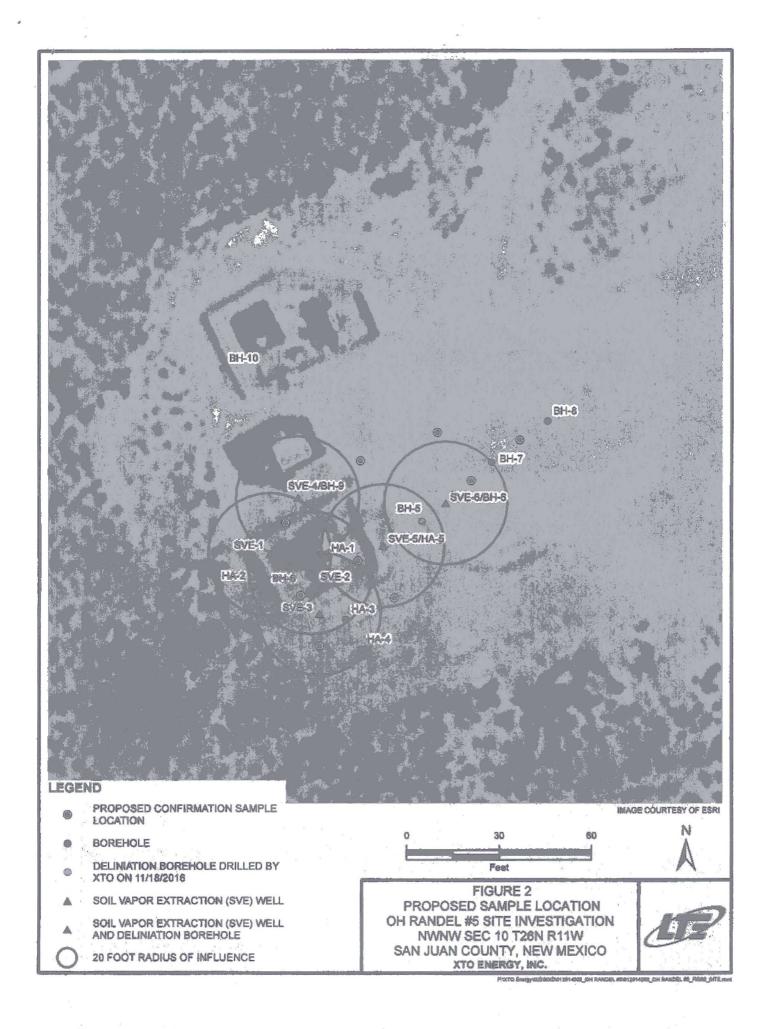
ashley L. ager

Attachments:

Figure 1 – Site Map Figure 2 – Proposed Sample Location Map Table 1 – Borehole Soil Analytical Results Appendix A – Soil Borehole Logs **FIGURES**







TABLES



TABLE 1

BOREHOLE SOIL ANALYTICAL RESULTS OH RANDEL #5 XTO ENERGY, INC

Soil Sample ID	Sample Date	Laboratory	Depth (feet)	Vapor (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)
BH-6	8/2/2016	Hall	9	3,128	< 0.49	1.8	1.7	20	23.5	840	140	980
BII-0	8/2/2016	Hall	18	1,922	< 0.49	7.3	2.4	27	36.7	1,000	120	1,120
BH-7	8/2/2016	Hall	11	3,159	< 0.42	2.6	3.6	39	45.2	1,700	400	2,100
BII-7	8/2/2016	Hall	12	3,128	< 0.42	9.4	8.3	94	111.7	2,600	350	2,950
BH-8	8/2/2016	Hall	16	3,125	< 0.47	< 0.94	1.3	12	13.3	560	340	900
BH-9	8/2/2016	Hall	16	2,413	<1.0	23	8.7	100	131.7	2,200	240	2,440
HA 1	7/5/2016	Hall	20	2,886	5.1	56	7.3	74	142.4	810	17	827
HA 5	7/5/2016	Hall	16	2,356	0.21	3.5	1.3	15	20.01	310	150	460
HA 5	7/5/2016	Hall	21.5	1,922	< 0.10	2.4	1.0	12	15.4	260	66	326
*BH-5 @ 9.2'	11/18/2016	ESC	9.2	2,494	< 0.121	<1.21	< 0.121	9.2	9.2	783	137	920
*BH-5 @ 13'	11/18/2016	ESC	13	3,172	0.314	<2.45	1.28	25.9	27.494	633	54.1	687.1
*BH-6 @ 9'	11/18/2016	ESC	9	2,197	< 0.0495	< 0.495	< 0.0495	< 0.148	< 0.148	51.1	17.9	69
*BH-6 @10'	11/18/2016	ESC	10	2,980	0.0218	< 0.00500	0.188	0.0413	0.2511	138	9.27	147.27
*BH-6 @12.6'	11/18/2016	ESC	12.6	2,347	< 0.0122	< 0.122	< 0.0122	< 0.0368	< 0.122	53.9	5.81	59.71
NMOCD Closu	ire Criteria				10	NE	NE	NE	50	NE	NE	5,000

NOTES:

- < indicates result is less than the stated laboratory reporting limit
- * Boreholes drilled by XTO

Bold - indicates value exceeds stated NMOCD standard

BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes analyzed by EPA method 8021

DRO - diesel range organics analyzed by EPA Modified Method 8015

ESC - ESC Laboratory Sciences

GRO - gasoline range organics analyzed by EPA Modified Method 8015

Hall- Hall Environmental Analysis Laboratory

mg/kg - milligrams per kilogram

NE - Not established

NMOCD - New Mexico Oil Conservation Division

ppm - parts per million

TPH- total petroleum hydrocarbons



ATTACHMENTS







Compliance " Engineering " Remediation LT Environmental, Inc. 848 E. 2nd Ave Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

									d Log/Montroking v		on Directivi
		- T						Boring/Well	Number: HA-1	Project: OH Rand	del #5
		TOTAL STATE						Date:	6/29/2016	Project Number: 12916	
Google							A	Logged By:		Drilled By:	
Elevation:			Detector:	. 10	T. barran			Josh Drilling Met	Adams/Devin Hencmann	Josh Adams/Dev	in Hencmann
				Mii	ni Rae Lit	e			Hand Auger	Hand A	uger
Gravel Paci	k: NA							Seal:	NA	Grout: NA	
Casing Typ								Diameter:	Length: NA NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Typ	e:			Slot:				Diameter:	Length:	Total Depth:	Depth to Water:
	NA			N	IA			N	NA NA	19.5'	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	marks	Well Completion
					0						
		4187	yes		1 .	0-1'					
]	ti l				7	1
		2822	yes		2 -	1-2'				-	+ 1
		483	yes		3	2-3'				-	Ι Ι
	den	859	yes		4	3-4'		SM	silty sand, 40% silt, 40% sar	nd 10% mud brown, -	
	dry	473	yes		5	4-5'		SIVI	hc oder, HC stains	s 10YR7/4	
		564	no		6	5-6'				-	
		273	yes		7	6-7'				-	<u> </u>
		785	yes		8 _	7-8'					‡
		999	yes		9	8-9'					
		3066	yes		10	9-10'			silty sand 35% silt, 40% fi	_	
	dry	3746	yes		11] 10-11'		ML	sand, 5% course grey color, seems to be historic, b	ecoming more	<u> </u>
		3584	yes		12	.l 11-12'			consolidated 10	YK 7/1 .	
	dry	2655	yes		13	12-13'		SM	grey, stained, mc clay co	mpact 10YR 6/1 -	
	u.,	3384	yes		14] 13-14'		5141	groj, samiea, me eray co		
	dry	3441	yes			14-15'		ML	transition to a si	Ity clay	-

	Boring/Well #											
									Boring/Well #			
M		Compli	ance "	Engine	ering " l Inc.	Remedia	atio	n	Project:			
	Z	LT Env	/ironm	ental,	Inc.				Project #			
							_		Date			
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion	
					15							
	dry	2886	yes		16	15-16'		ML	Light brown silty	clay, ml compact 10YR 7/4	†	
		2322	yes		17	16-17'					-	
	dry	1977	yes		18	17-18'		ML	light brown silty	sand, loose, ml 10YR 7/4	‡	
		2886	yes		19	18-19.5	,				‡	
20										-		
					21						I I	
					22						<u> </u>	
					23	ŀ					<u> </u>	
					24	-						
					25							
					26							
					27					_		
					28							
					29					-	<u> </u>	
					30					-		
					31					-		
					32					_		
					33					_		
					34					_		
					35				1			
					36				‡			
					37							



Slot:

Sample #

NA

Gravel Pack:

Casing Type:

Screen Type:

Resistance

Penetration

NA

NA

NA

Moisture Content

dry

dry

dry

moist

moist

Vapor (ppm)

0

0

0

0

0

0

0

0

0

0

0

1.3

324

34.8

Staining

no

15

T14-15'



Compliance .. Engineering .. Remediation LT Environmental, Inc. 848 E. 2nd Ave Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: OH Randel #5 HA-2 Date: Project Number: 12916007 6/29/2016 Drilled By: Josh Adams/Devin Hencmann Josh Adams/Devin Hencmann Drilling Method: Sampling Method: Mini Rae Lite Hand Auger Hand Auger Grout: Seal: NA NA Depth to Liquid: Diameter Length: Hole Diameter: 3-inch NA NA Total Depth: Depth to Water: Diameter: Length: 17.5 NA NA Soil/Rock Type Recovery Sample Depth Well Lithology/Remarks Run (ft. bgs.) Completion 0 0-1' silty sand, 40% silt, 60% sand light brown SM 10YR7/4 1-2' 3 TI2-31 4 T[3-4' 5 4-5' silty sand, 40%silt, 50% clean sand, 10% lithics, SM 6 5-6' light brown to pale red color, reduced 5YR 6/6 ∐6-7' 7 7-8 8-9' silty sand, 60% sand 40% silt, light grey color 10 T9-10' SM 10YR 7/1 T10-11' 12 11-12' 12-13 13 same lith as above, orange staining/stringers, SM slight HC oder 10YR 7/1 and 5YR 7/8 13-14' 14

	Boring/Well #											
I IT	=/	Compli	ance "	Engine	ering " I Inc.	Remedia	atio	n	Project:			
		LT Env	rironm	ental,	Inc.				Project #			
									Date			
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)		Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion	
	moist	3.2	no no			15-16' 16-17'		SM		e, orange staining/stringers, 10YR 7/1 and 5YR 7/8	-	
					18							
					37							



Gravel Pack:

Casing Type:

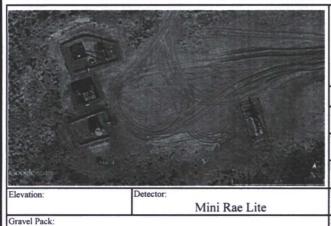
Screen Type:

Penetration Resistance



Compliance " Engineering " Remediation LT Environmental, Inc. 848 E. 2nd Ave Durango, Colorado 81301

							BORIN	IG LOG/MONITORING V	VELL COMPLETIC	N DIAGRAM
							Boring/Well	Number: HA-3	Project: OH Rand	del #5
		-				slivič Fot	Date:		Project Number:	
						A=	Logged By:	6/29/2016	Drilled By:	007
					*	N-		Adams/Devin Hencmann	Josh Adams/Dev	in Hencmann
		Detector:) C	: D I :4	_		Drilling Met		Sampling Method:	
:			Mir	i Rae Lit	e		Seal:	Hand Auger	Hand A	uger
NA		, , , , ,						NA .	NA	
NA							Diameter:	Length: NA NA	Hole Diameter: 3-inch	Depth to Liquid:
NA			Slot:	ΙA			Diameter:	Length: NA NA	Total Depth:	Depth to Water:
INA	<u> </u>		I	A				NA NA	10	
Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	emarks	Well Completion
	Va	01	S			R	S			
				0						
	0	no		1 _	0-1'				_	‡
	0	no		2 -	1-2'					‡
	0	no		3 -	2-3'					<u>†</u>
	0	no		4 _	3-4'				_	<u> </u>
dry	0	no		5 _	4-5'		SM	silty sand, 40% silt, 50% clo light brown 10		‡
	0	no		6	5-6'				-	‡
	0	no		7 _	6-7'				-	‡
	65	no		8 _	7-8'				-	ļ
	907	no		9	8-9'					
	3062	yes		10	9-10'			1 1 199		
				-	-			rock encountered, drilling	advanced stopped .	- 1
]	1 1				_	t II
]						
				-	-					- 11
				-	H I			w.	-	├
				1						†
				-	-					-



Slot:

Sample #

NA

Depth

(ft. bgs.)

0

2

3

5

6

7

8

10

11

12

13

14

15

Sample Run

T 0-1'

1-2'

[2-3]

3-4'

4-5'

5-6'

T 6-7'

T[7-8'

8-9'

9-10'

SM

NA

NA

NA

Moisture Content

dry

moist

moist

Vapor (ppm)

0

0

0

0

0

0

0

0

0

0

0

0

0

Staining

no

Casing Type:

Screen Type:

Penetration Resistance



Compliance " Engineering " Remediation LT Environmental, Inc.

		848 E. 2nd Av Durango, Col	/e				
	BORIN Boring/Well	G LOG/MONITORING W	ELL COMPLETIO	N DIAGRAM			
	Boring/ wei	HA-4	OH Rand	lel #5			
	Date:	6/00/0016	Project Number:	007			
A	Logged By:	6/29/2016	Drilled By:	007			
N.		Adams/Devin Hencmann	Josh Adams/Dev	in Hencmann			
	Drilling Met	hod:	Sampling Method:				
	Seal:	Hand Auger	Hand Auger Grout:				
		JA	NA				
	Diameter:	Length: NA NA	Hole Diameter: 3-inch	Depth to Liquid:			
	Diameter:	Length:	Total Depth:	Depth to Water:			
	<u> </u>	NA NA	13				
Recovery	Soil/Rock Type	Lithology/Rea	marks	Well Completion			
	SM	silty sand, 40% silt, 50% cle light brown 10%					
	ML	silty/clay rich sand, cohesive 7/4	e, light brown 10YR	-			

silty sand, 40% silt, 50% clean sand 10% lithics

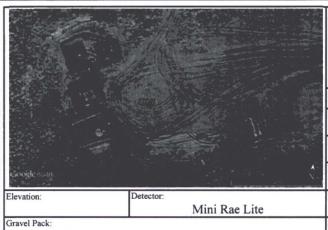
light brown 10YR 7/4

									Compliance LE LT Environme 848 E. 2nd Av Durango, Col	re .	ediation
									G LOG/MONITORING W	ELL COMPLETIO	N DIAGRAM
					\			Boring/Well	Number: HA-5	Project: OH Rand	el #5
		TOTAL STREET						Date:	7/5/2016	Project Number: 129160	07
Google							*	Logged By:		Drilled By: Josh Adams/Alex Crooks	
Elevation:			Detector:	Mi	ni Rae Lit	e		Drilling Met	thod: Hand Auger	Sampling Method: Hand Au	ıger
Gravel Paci	k: NA							Seal:	NA	Grout: NA	
Casing Typ								Diameter:	Length: NA NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Typ				Slot:	IA.			Diameter:	Length: NA NA	Total Depth: 21.5	Depth to Water:
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Ren		Well Completion
					0				silty sand with some gravel,	70% sand, 25% silt	
	dry	0	no		1 _	0-1'		SM	5% gravel med-fine grained red brown 2.5Y	subrounded, pale	· -
		0	no		2	1-2'					
		0	no		3	2-3'		0) (Same as above except no gra	vel 70% sand 30%	-
	dry	0	no		4 -	3-4'		SM	silt 2.5YR 6	-	
		0	no		5	4-5'					
	dry	0	no		6	5-6'		SM	fine grained silty sand 60° subrounded, light golden	_	
		0	no		7	6-7'	_				
	dry	0	no		8	7-8'		SM	silty sand with clay 60% sand light tan grey 10		-
		0	no		9	8-9'					
		0	no		10	.I 9-10'				-	-
	dry	0	no		11	.1 10-11'		SM	same lith as above, orange s		-
		0	no		12	.I 11-12' 			10 1 K //2 and 5	1 1 1 / / 8	
		164	no		13	1 12-13'					•
	dry	427	no] 13-14']		SM	silty sand with clay 60% sand 30% silt 10% clay very fine to fine grained sand, dark golden brown 10YR 6/8		
		2241	yes		15	14-15'			Olowii 101K	0/0	

									Boring/Well #		
		Compli	ance	Engine	ering " F	Pamadis	atio	n	Project:	-	
	7	LT Env	ironm	ental	Inc	Cerrieura			Project #		
		LI LIIV		ierriar,	mo.				Date		
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		ology/Remarks	Well Completion
					15						
		2356	yes yes		16	15-16' 16-17'			increase in clay content, silty sand with clay 55% sand 30% silt 15%clay, no staining		
	dry]	17-18'		ML			
		1857	yes		18 _	17-18				-	- 1
		1993	yes		19	18-19'					
	dry	2168	yes		20 _	19-20'		SM		y 60% sand, 30% silt, 10% tan grey 10YR7/2	-
1922 yes 21 20-21.5'										vel 55% sand 35% silt, 10%	
dry 1116 yes SM gra										d, very fine to fine grainded rown grey 10YR 7/2	
					22					, drilling advance stopped	
					23						
					24						
					25					-	-
					26	.				-	-
					27	.				-	
					28	1				-	-
					29	1				-	-
]	1					<u>.</u>
					30					_	-
					31					-	-
					32					Ę	-
					33					-	
					34						
					35						_
					36						<u> </u>
					37				-	-	

								4		Compliance LE LT Environme 848 E. 2nd Av Durango, Col	re .	ediation	
										G LOG/MONITORING W		N DIAGRAM	
									g/Well	Number: BH-6	Project: OH Rand	el #5	
		Wales.						Date:		8/2/2016	Project Number: 129160	07	
Google cart	n.					S	A. N.		Josh	Adams/Devin Hencmann	Drilled By: Louis Tru	ıjillo	
Elevation:			Detector:	Min	ni Rae Lit	e		Drillir	ng Met	thod: Geo Probe	Sampling Method: Continuous		
Gravel Paci	k: NA							Seal:	N	NA	Grout: NA		
Casing Typ								Diame	eter:	Length: NA NA	Hole Diameter: 3-inch	Depth to Liquid:	
Screen Typ				Slot:	IA.			Diame	eter:	Length: NA NA	Total Depth:	Depth to Water:	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	S	Type	Lithology/Ren		Well Completion	
					0		_	SM			_		
		0	no		1 _	0-1'						-	
		0	no		2 -	1-2'					-	-	
		0	no		3 -	2-3'					-	-	
	dry	0	no		4	3-4'				silty sand, 40% silt, 50% fin light brown 10Y		-	
		0	no		5 _	4-5'					-	-	
		0	no		6	5-6'					-	-	
		0	no		7	6-7'					_	-	
		1034	yes		8 -	7-8'							
		3128	yes		9 .	8-9'					-		
		2390	yes		10	9-10'				-'l1 200/ -'l- 200/ 5	1 200/	•	
	dry	3010	yes		11	[] []0-11'				silty sand, 30% silt, 30% fin sand 10% lithics light broad		-	
		2654	yes		12	11-12'					-		
		1884	yes		13	[] 12-13'					-		
	dry	1927	yes] 13-14' 				silty sand 45% silt 50% fine light grey brown 1			
		3025	1/00		15	14 151				B 9 7	1		

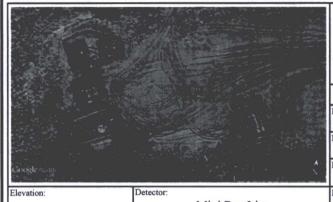
									Boring/Well #		
1		Compli	ance "	Engine	eering " l	Remedia	atio	n	Project:		
	Z	LT Ėnv	vironm	ental,	Inc.				Project #		
									Date		
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
					15						
	dry	2390 2425	yes yes		16 17	15-16' 16-17'				50% fine sand 5%med sand brown 10YR 7/2	
 											
		1922	yes		18	17-18'				6 1 10	
					19				re	efusal at 18'	
					36]	-
					37						





Compliance "Engineering "Remediation

									LT Environm 848 E. 2nd Av Durango, Co	ve Iorado 81301	
								BORIN Boring/Well	IG LOG/MONITORING W	Project:	ON DIAGRAM
							16.5 15.57	Date:	BH-7	OH Rand	lel #5
									8/2/2016	129160	007
anogle &							A. No.	Logged By: Josh	Adams/Devin Hencmann	Drilled By: Louis Tr	uiillo
levation:			Detector:) C	.' D I '4			Drilling Met	hod:	Sampling Method:	
ravel Pac	k:			Mir	ni Rae Lite	e	_	Seal:	Geo probe	Grout:	ious
asing Typ	NA							Diameter:	Length:	NA Hole Diameter:	Depth to Liquid:
	NA								NA NA	3-inch	
creen Typ	e: NA			Slot:	IA			Diameter:	Length: NA NA	Total Depth: 12	Depth to Water:
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	marks	Well Completion
					1 2	0-1'	N R		no recove	- ry - -	
	dry	108 3.5	no no		3 4	2-3'		SM	silty sand with gravel, 60% gravel light brown		
					5 -	4-5' 5-6'	NR		no recover	ry -	
	dry	13.9	no		7 -	6-7' 7-8'		SM	silty sand 40% silt, 30% fi sand minor course light b		
	dry	1805 3159 3128	yes yes		11	8-9' 9-10' 10-11' 		SM	silty sand 30% silt 30% m sand minor course, HC ode 10YR 7/2	er light grey brown	
					-				refusal at 1	2' -	





Compliance " Engineering " Remediation LT Environmental, Inc. 848 E. 2nd Ave Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Google Elevation:		3	Detector:	Mir	ni Rae Lit	e	^	Drilling Met Seal:	BH-8 8/2/2016 Adams/Devin H	lencmann	Project: OH Ran Project Number: 12916 Drilled By: Louis T Sampling Method: Contin	5007 rujillo
Casing Typ	e: NA							Diameter:	Length:	NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Typ				Slot:	ΙA			Diameter:	Length:	NA	Total Depth:	Depth to Water:
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		ithology/Ren		Well Completion
		0	no		1 2 3	0-1' 1-2' 2-3'	N R			no recover		+
	dry	3	no		4 -	3-4'		SM	silty sand with s	surface gravel 7/4	l light brown 10YR	+
					5 _	4-5' 5-6'	NR			no recover	у	+
	dry	5.3 1.5 2 2.2	no no no		7 - 8 - 9 -	6-7' 7-8' 8-9'		SM	silty sand 60% s	sand 40% silt 7/4	i light brown 10YR	
	moist	468 772 88	no no		11	10-11' 11-12' 12-13' 13-14' 14-15'		ML		n clay 50% sa ht grey brown	and 40% silt 10% n 10YR 7/2	- - - - -

							Boring/Well #				
1		Compli	ance "	Engine	ering " l Inc.	Remedia	Project:				
		LT Env	<i>ironm</i>	ental,	Inc.				Project #		
							_		Date		
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	(ft. bgs.)		Recovery	Soil/Rock Type	Litho	Well Completion	
					15				silty sand with clay 50% sand 40% silt 10% clay		
	moist	3125	yes		16	15-16'		ML	, light gre	-	
					17				refusal at 16'	-	
					18					-	-
					19					-	-
					20 _	\parallel				_	_
					21					-	-
					22					-	-
					23					-	-
					24					-	-
					25					_	_
					26						_
					27					_	_
					28					_	_
					29					-	_
					30					_	_
					31					_	_
					32	1					_
					33	1					_
					34					}	
					35					-	
					36]	
					37					-	

								Compliance Lengineering Remediation LT Environmental, Inc. 848 E. 2nd Ave Durango, Colorado 81301						
								BORIN	IG LC	G/MONITORING	WELL COMPLETION	ON DIAGRAM		
		BH-9			1			Boring/Well	l Numbe	BH-9	Project: OH Rane	del #5		
								Date:			Project Number:			
Google ear							A	Logged By:		8/2/2016	Drilled By:			
Elevation:			Detector:		71A	7.0		Josh Drilling Mer		ns/Devin Hencmann	Louis Tr	ujillo		
Gravel Pac	1			Mi	ni Rae Lit	te				Geo probe	Contin	uous		
	NA								NA		Grout: NA			
Casing Typ	ne: NA							Diameter:	NA	Length: NA	Hole Diameter: 3-inch	Depth to Liquid:		
Screen Typ				Slot:	JA			Diameter:	NA.	Length: NA	Total Depth:	Depth to Water:		
= 0		(i)			I				NA.	INA	10			
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		Lithology/R	emarks	Well Completion		
					0									
					1 2	0-1' 1-2'	N R			no recov	ery .	- -		
					3	2-3'			2:142	dithf	al light house 10VP			
	dry	0	no		4	3-4'		SM	Silty	sand with surface grav 7/4	el light brown 104 K	†		
		0	no		5 _	4-5'						+		
		0	0 no 6	6	5-6'						†			
		0.4	no		7 _	6-7'						1		
	dry	0.6	no		8	7-8'		SM	silt	y sand 40% silt 40%		†		
		0	no		9 .	8-9'				sand light brown 10YR7/4				
		3.7	no		10	9-10'								
		13.5	no		11	10-11'						‡		
		776	yes		12	11-12'						†		
		1927	yes		13	[] 12-13'		ar -	silty	sand 50% med sand 2	0% fine sand 30% silt	+		
	dry	2355	yes			13-14'		SM	light grey 10YR7/2 hc odd			<u> </u>		
		2114	yes		15	14-15'								

							Boring/Well #				
11		Compli	ance "	Engine	ering " l Inc.	Remedia	Project:				
	7	LT Env	<i>ironm</i>	ental,	Inc.				Project #		
									Date		
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Run	Recovery	Soil/Rock Type	Litho	Well Completion	
					15				silty sand 50% me		
	dry	2413	yes		16	15-16'		SM	silt light grey 10\	-	
					17				refusal at 16'	-	
					18					_	
					19						-
					20 _					_	_
					21					-	
					22					-	-
					23					_	-
					24					-	-
					25					-	
					26					-	
					27	-				-	
					28	-				_	-
					29						-
					30					* -	-
					31					-	.
					32	.				_	-
					33					-	-
					34						-
					35						-
					36					-	-
	37 T										

Compliance _M Engineering _M Remediation LT Environmental, Inc. 848 E. 2nd Ave Durango, Colorado 81301 BORING LOG/MONITORING WELL COMPLETION DIAGRAM Boring/Well Number: Project: BH-10 OH Randel #5 Date: Project Number: 12916007 8/2/2016 Drilled By: Logged By: Josh Adams/Devin Hencmann Louis Trujillo Drilling Method: Sampling Method: Elevation: Mini Rae Lite Geo Probe Continuous Gravel Pack: Seal: NA NA NA Depth to Liquid: Hole Diameter: Casing Type: Diameter: Length: 3-inch NA NA NA Screen Type: Slot: Diameter: Length: Total Depth: Depth to Water: NA NA NA NA 12 Vapor (ppm) Penetration Soil/Rock Type Resistance Moisture Content Staining Sample # Depth Sample Well Lithology/Remarks Run (ft. bgs.) Completion 0 0 1 0-1 no 0 1-2' no 0 3 2-3' no silty sand, 40% silt, 50% clean sand 10% dry 0 3-4' SM no surface gravel light brown 10YR 7/4 0 5 4-5' no 0 no 5-6' 0 6-7' no 0 8 7-8' no 9 0 8-9' no silty sand with clay 50% sand 40% silt 10% clay 0 10 9-10' no ML dry cohesive, light grey 10YR7/2 0 11 10-11' no 0 12 11-12' no refusal at 12'