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1RP-4155
Investigation Summary and Scope of Work
South Monument Pipeline Spill
March 3, 2016

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Introduction

This investigation summary and scope of work for additional investigation is submitted to the New Mexico Oil Conservation Division (OCD) on behalf of Holloman Corporation (Holloman) for a produced water spill at the XTO Energy, Inc. (XTO) Eunice Monument South Unit (EMSU) located in Lea County, New Mexico. The spill occurred on January 24, 2016, when Holloman struck buried fiberglass flow lines causing produced water to spill over an area measuring about 75 x 170 feet. The fiberglass flow lines are owned by XTO whom estimated the volume of the release at approximately 65 barrels (bbl). Approximately 6 bbl of fluid (water and oil) was recovered. XTO excavated and exposed the fiberglass lines at 2 locations (EX-1 and EX-2) and made repairs. On February 3, 2016, Holloman submitted the initial C-141. The OCD issued remediation project number 1RP-4155. The legal description is Unit P (SE/4, SE/4), Section 6, Township 21 South and Range 36 East. The geodetic position is north 32° 30' 31.76876" and west 103° 17' 48.29119". Figure 1 presents a location and topographic map. Figure 2 presents an aerial map. Figure 3 presents the site drawing. Attachment A presents the initial C-141.

Setting

The setting is as follows:

- The Site is located about 250 feet north of the XTO EMSU Well #621 (API number 30-025-33186);
- The surface elevation is approximately 3,585 feet above mean sea level (AMSL);
- Topography slopes toward the south-southeast;
- No surface water features are located within 1 mile of the Site;
- Surface geology is comprised of unconsolidated Holocene to mid- Pleistocene-age eolian deposits that overlie the Triassic-age Chinle formation of the Dockum group which is comprised of interbedded sand, clay, and mudstone;
- Depth to groundwater is approximately 160 feet bgs;
- The nearest fresh water well is located about 0.8 miles south of the Site according to the State of New Mexico Office of the State Engineer (OSE);
- The surface is owned by the State of New Mexico.

Remediation Action Levels

Remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD (*Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993*):

Criteria	Result	Score
Depth-to-Groundwater	>100 feet	0
Wellhead Protection Area	No	0
Distance to Surface Water Body	> 1000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 0

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 5,000 mg/Kg

Initial Samples and Analysis

On February 19, 2016, personnel from Larson & Associates, Inc. (LAI) collected initial soil samples from the bottom and sidewall of two (2) excavations. The west excavation (EX-1) contains 3 fiberglass flow lines. An 8-inch steel pipeline is located adjacent to the west side of the west (EX-1) excavations. The east excavation (EXT-2) contains 1 fiberglass flow line. All lines run from north to south. The samples were collected with a stainless steel hand auger at about 5 feet bgs (bottom) and about 3 feet bgs (sidewall). Trace Analysis, Inc. (Trace) located in Midland and Lubbock, Texas, analyzed the samples for total petroleum hydrocarbons (TPH) by SW-846 method 8015 modified, including gasoline (GRO) and diesel (DRO) range organics and chloride by method 300. Table 1 presents the analytical data summary. Figure 3 presents a Site drawing and sample locations. Attachment B presents the laboratory report. Attachment C presents photographs.

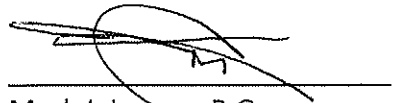
Referring to Table 1, TPH was 2,019.49 milligrams per kilogram (mg/Kg) in the bottom sample from the west excavation (EX-1) sample and below the RRAL of 5,000 mg/Kg. TPH was below the method reporting limit (<54.00) in the sidewall sample from the west (EX-1) excavation and the bottom and sidewall samples from the east (EX-2) excavation. Chloride was 4,400 mg/Kg and 2,580 mg/Kg in the bottom and sidewall samples, respectively, from the west (EX-1) excavation and exceeds the OCD delineation level of 250 mg/Kg. Chloride was 125 mg/Kg in the bottom and 541 mg/Kg in the sidewall samples from the east (EX-2) excavation.

Additional Investigation

Holloman proposes to drill a boring (SB-1) about 15 feet west of the west of the west (EX-1) excavation to delineate chloride. The boring will be drilled to approximately 30 feet bgs with an air rotary rig. Soil samples will be collected with a jam tube sampler every 5 feet (0, 5, 10, 15, 20 feet, etc.) to approximately 30 feet bgs. The samples will be analyzed for chloride by method 300. Surface samples (0 to 4 feet) will be collected at 3 locations (DP-1, DP-2 and DP-3) to assess the spill area. The surface samples will be collected with a direct push (Terraprobe®) rig and stainless steel core barrel. The samples will be analyzed for TPH and chloride by EPA SW-846 method 8015M and 300, respectively.

Remediation Plan

A remediation plan will be prepared for approval by the OCD following receipt of the laboratory analysis.

A handwritten signature in black ink, appearing to read 'Mark J. Larson', is written over a horizontal line.

Mark J. Larson, P.G.
President/Sr. Project Manager

Tables

Table 1
Initial
Soil Sample Analytical Data Summary
Holloman Corporation South Monument Pipeline Spill
Lea County, New Mexico

Date	Sample	Location	Depth Feet BGS	GRO (mg/Kg)	DRO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
RRAL:							
02/19/2016	EX-1	Bottom	5 - 6	2,010	9.49	2,019.49	4,400
		Sidewall	3 - 4	<50.0	<4.00	<54.0	2,580
02/19/2016	EX-2	Bottom	5 - 6	<50.0	<4.00	<54.0	125
		Sidewall	3 - 4	254	<4.00	254	541

Notes: Analysis performed by Permian Basin Environmental Lab, Midland, Texas

Laboratory results reported in milligrams per kilogram (mg/Kg) equivalent to parts per million (ppm)

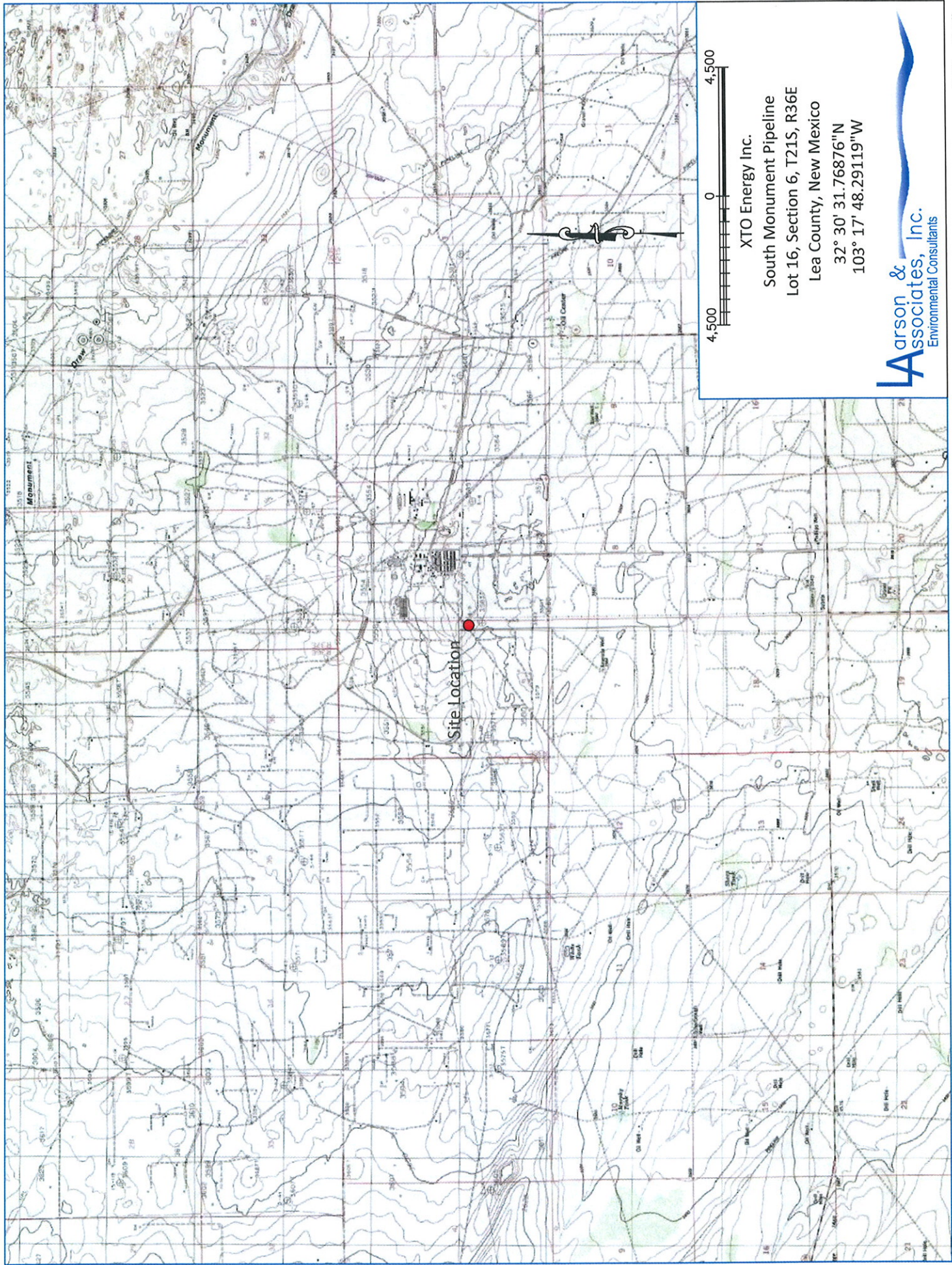
Depth referenced in feet below ground surface (bgs)

< Concentration below method detection limit

Denotes concentration exceeds OCD delineation requirement of 250 mg/Kg

Depth to groundwater greater than 100 feet

Figures



XTO Energy Inc.
 South Monument Pipeline
 Lot 16, Section 6, T21S, R36E
 Lea County, New Mexico
 32° 30' 31.76876"N
 103° 17' 48.29119"W

Figure 1 - Topographic Map

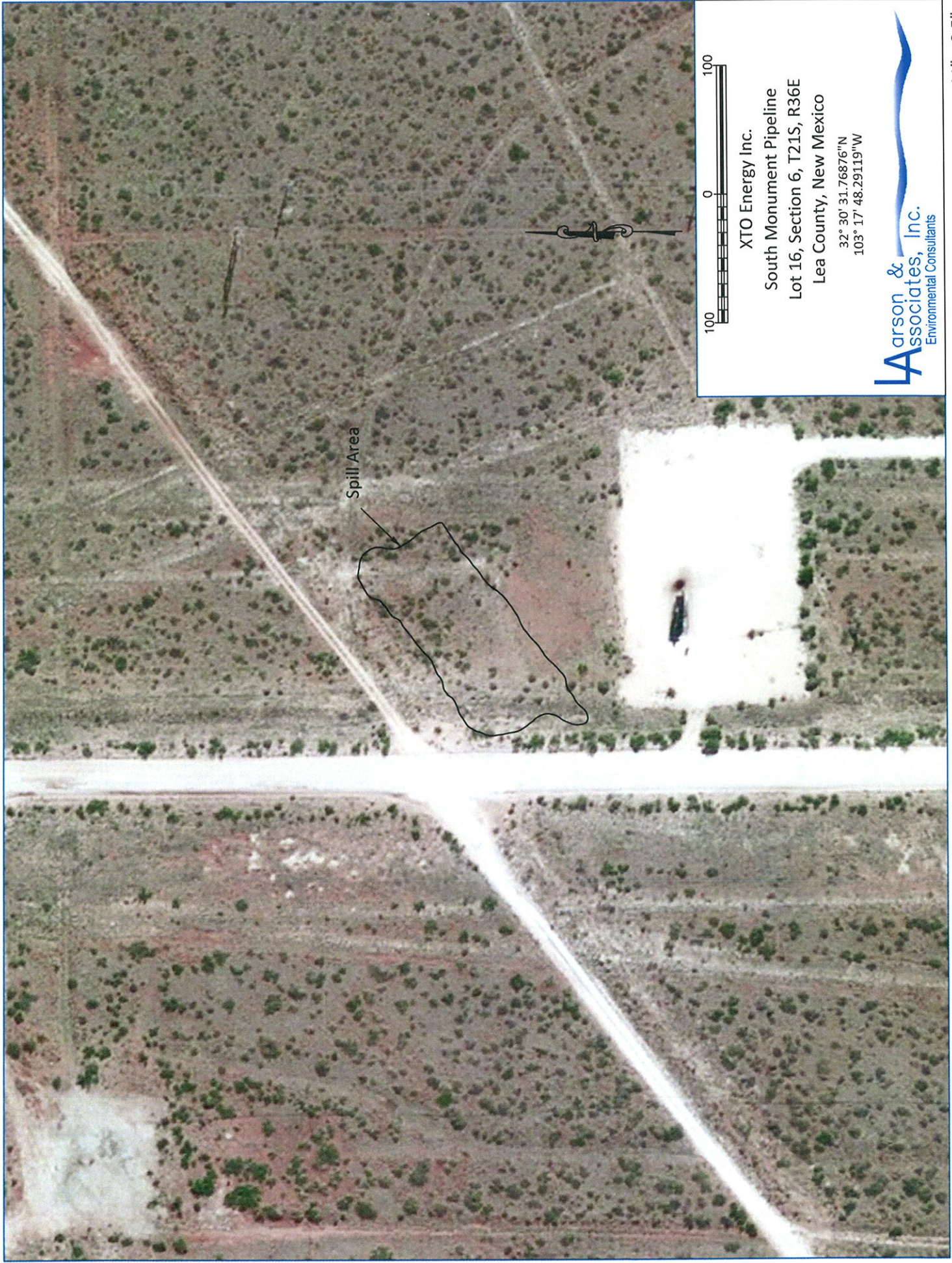


Figure 2 - Aerial Map

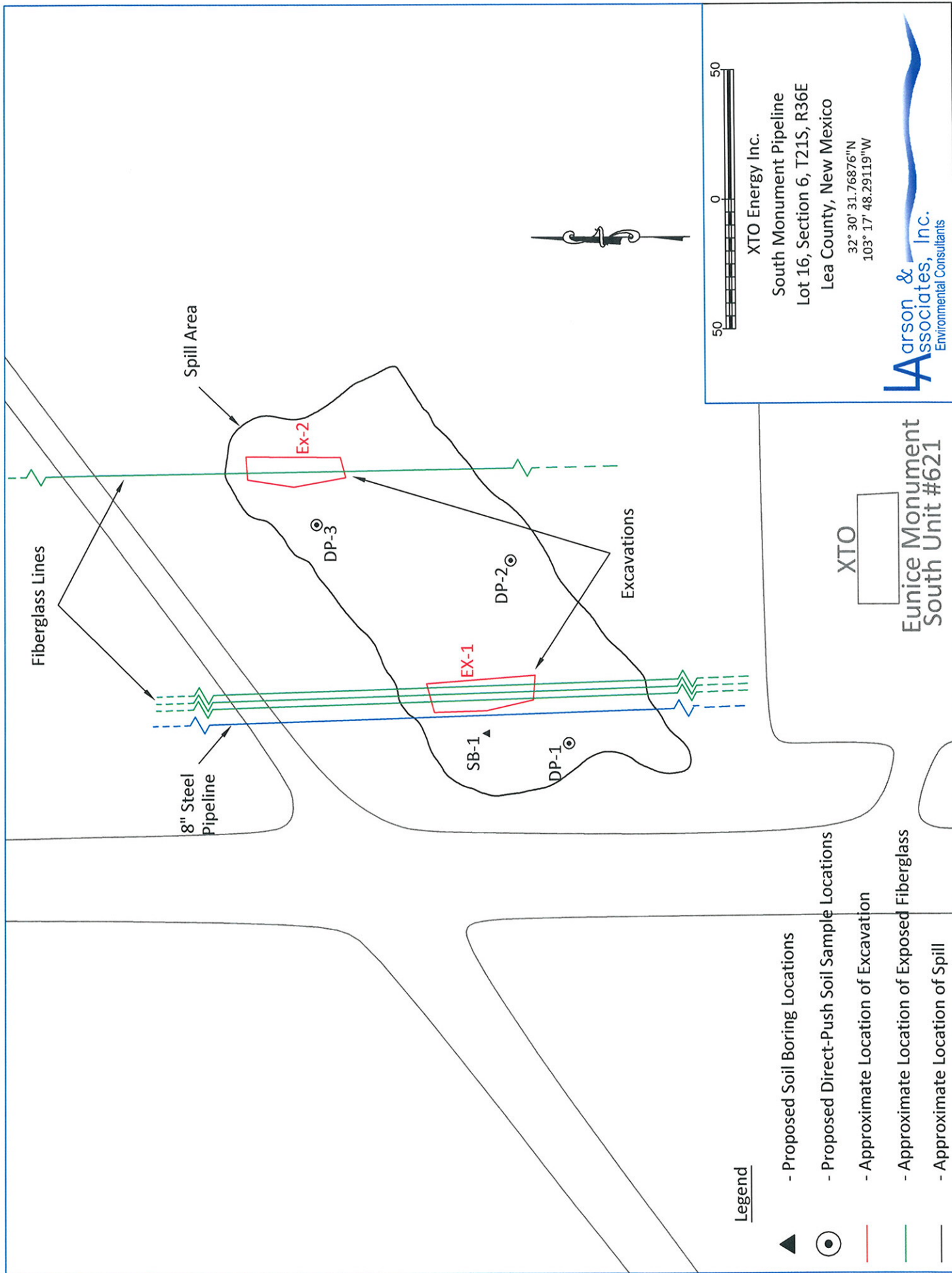


Figure 3 - Site Map Showing Proposed Sample Locations

Attachment A

Initial C-141

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

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

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By JKeyes at 7:17 am, Feb 08, 2016

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

X Initial Report ☐ Final Report



Name of Company	Holloman Corp.	Contact	Dennis Hedger
Address	16410 US-380 Krum, TX 76249	Telephone No.	817-825-8867
Facility Name	EMSU 621 (XTO)	Facility Type	
Surface Owner	State	Mineral Owner	API No. 30-025-33186

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	6	21S	36E	2800	South	185	East	Lea

Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release	Oil and Produced water	Volume of Release	65 bbls of oil and water	Volume Recovered	61bbls of oil and water
Source of Release	Flow Line	Date and Hour of Occurrence	1-24-16 7:00am	Date and Hour of Discovery	1-24-16 7:30 am
Was Immediate Notice Given?	Yes x No <input type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?		Date and Hour			
Was a Watercourse Reached?	<input type="checkbox"/> Yes X No	If YES, Volume Impacting the Watercourse.			
If a Watercourse was Impacted, Describe Fully.*					
Describe Cause of Problem and Remedial Action Taken.* Holloman employee was notified by XTO of a leaking line. The area of the leak had been previously backfilled on 01/22/16 by Holloman. An XTO crew was onsite and contained and isolated the lines. XTO crews exposed and repaired 2 fiberglass lines and one line was found to be cracked. Another line leak was found approximately 50 feet from this location on 1/23/16 and a hydrovac truck had been parked in the location of this leak. Prior to these incidents, Holloman had struck 2 unmarked/unlocated fiberglass lines in the area belonging to XTO.					
Describe Area Affected and Cleanup Action Taken.* The incident occurred on pipeline right-of-way and was contained to that right-of-way. Leaked product was removed by hydrovac and contaminated soil was properly removed.					
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.					
Signature: 		OIL CONSERVATION DIVISION			
Printed Name: Jackie Harrell		Approved by Environmental Specialist: 			
Title: Division Safety Manager		Approval Date: 02/08/2016		Expiration Date: 04/08/2016	
E-mail Address: jackieharrell@hollomancorp.com		Conditions of Approval: Discrete site samples only. Delineate and remediate per NMOCD guidelines.		Attached <input type="checkbox"/> IRP 4155	
Date: 02/03/16		Phone: 940-482-3442			

* Attach Additional Sheets If Necessary

nJXK1603925859
pJXK1603926101

Attachment B
Laboratory Report



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail lab@traceanalysis.com WEB www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Sarah Shissler
Larson and Associates, Inc.

Report Date: February 25, 2016

P. O. Box 50685
Midland, TX, 79710

Work Order: 16021925



Project Name: South Monument Pipeline Spill
Project Number: South Monument Pipeline Spill

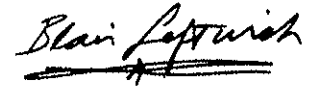
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414744	EX-1 Bottom	soil	2016-02-19	10:20	2016-02-19
414745	EX-1 Sidewall	soil	2016-02-19	10:25	2016-02-19
414746	EX-2 Bottom	soil	2016-02-19	10:30	2016-02-19
414747	EX-2 Sidewall	soil	2016-02-19	10:35	2016-02-19

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 18 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style with a horizontal line underneath.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project South Monument Pipeline Spill were received by TraceAnalysis, Inc. on 2016-02-19 and assigned to work order 16021925. Samples for work order 16021925 were received intact at a temperature of 5.4 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	108741	2016-02-23 at 10:00	128417	2016-02-23 at 10:08
TPH DRO	S 8015 D	108768	2016-02-25 at 08:41	128449	2016-02-25 at 09:37
TPH GRO	S 8015 D	108704	2016-02-22 at 14:35	128397	2016-02-23 at 13:49

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16021925 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 414744 - EX-1 Bottom

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 128417 Date Analyzed: 2016-02-23 Analyzed By: RL
Prep Batch: 108741 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,4	4400	mg/Kg	10	25.0

Sample: 414744 - EX-1 Bottom

Laboratory: Midland
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 128449 Date Analyzed: 2016-02-25 Analyzed By: JL
Prep Batch: 108768 Sample Preparation: 2016-02-25 Prepared By: JL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B	3	2010	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{NT}	Q _{NT}	121	mg/Kg	1	50.0	242	70 - 130

Sample: 414744 - EX-1 Bottom

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 128397 Date Analyzed: 2016-02-23 Analyzed By: AK
Prep Batch: 108704 Sample Preparation: 2016-02-22 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	9.49	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.44	mg/Kg	2	4.00	86	70 - 130

continued ...

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sample continued . . .

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			4.09	mg/Kg	2	4.00	102	70 - 130

Sample: 414745 - EX-1 Sidewall

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 128417
Prep Batch: 108741

Analytical Method: E 300.0
Date Analyzed: 2016-02-23
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,4	2580	mg/Kg	5	25.0

Sample: 414745 - EX-1 Sidewall

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 128449
Prep Batch: 108768

Analytical Method: S 8015 D
Date Analyzed: 2016-02-25
Sample Preparation: 2016-02-25

Prep Method: N/A
Analyzed By: JL
Prepared By: JL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B,Js	3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			46.2	mg/Kg	1	50.0	92	70 - 130

Sample: 414745 - EX-1 Sidewall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 128397
Prep Batch: 108704

Analytical Method: S 8015 D
Date Analyzed: 2016-02-23
Sample Preparation: 2016-02-22

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	3	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.52	mg/Kg	1	2.00	76	70 - 130

Sample: 414746 - EX-2 Bottom

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 128417
Prep Batch: 108741

Analytical Method: E 300.0
Date Analyzed: 2016-02-23
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,4	125	mg/Kg	1	25.0

Sample: 414746 - EX-2 Bottom

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 128449
Prep Batch: 108768

Analytical Method: S 8015 D
Date Analyzed: 2016-02-25
Sample Preparation: 2016-02-25

Prep Method: N/A
Analyzed By: JL
Prepared By: JL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B, Jb	3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			42.4	mg/Kg	1	50.0	85	70 - 130

Sample: 414746 - EX-2 Bottom

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 128397
Prep Batch: 108704

Analytical Method: S 8015 D
Date Analyzed: 2016-02-23
Sample Preparation: 2016-02-22

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	3	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Sample: 414747 - EX-2 Sidewall

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 128417
Prep Batch: 108741

Analytical Method: E 300.0
Date Analyzed: 2016-02-23
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1, 2, 4	541	mg/Kg	2	25.0

Sample: 414747 - EX-2 Sidewall

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 128449
Prep Batch: 108768

Analytical Method: S 8015 D
Date Analyzed: 2016-02-25
Sample Preparation: 2016-02-25

Prep Method: N/A
Analyzed By: JL
Prepared By: JL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B	3	254	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			55.5	mg/Kg	1	50.0	111	70 - 130

Sample: 414747 - EX-2 Sidewall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 128397
Prep Batch: 108704

Analytical Method: S 8015 D
Date Analyzed: 2016-02-23
Sample Preparation: 2016-02-22

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	C	3	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Method Blanks

Method Blank (1) QC Batch: 128397

QC Batch: 128397
Prep Batch: 108704

Date Analyzed: 2016-02-23
QC Preparation: 2016-02-22

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		3	<1.76	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70 - 130

Method Blank (1) QC Batch: 128417

QC Batch: 128417
Prep Batch: 108741

Date Analyzed: 2016-02-23
QC Preparation: 2016-02-23

Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,4	<8.34	mg/Kg	25

Method Blank (1) QC Batch: 128449

QC Batch: 128449
Prep Batch: 108768

Date Analyzed: 2016-02-25
QC Preparation: 2016-02-25

Analyzed By: JL
Prepared By: JL

Parameter	Flag	Cert	MDL Result	Units	RL
DRO	B	3	10.2	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			52.0	mg/Kg	1	50.0	104	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 128397
Prep Batch: 108704

Date Analyzed: 2016-02-23
QC Preparation: 2016-02-22

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		s	17.7	mg/Kg	1	20.0	<1.76	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		s	20.4	mg/Kg	1	20.0	<1.76	102	70 - 130	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.97	2.07	mg/Kg	1	2.00	98	104	70 - 130
4-Bromofluorobenzene (4-BFB)	1.74	1.93	mg/Kg	1	2.00	87	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 128417
Prep Batch: 108741

Date Analyzed: 2016-02-23
QC Preparation: 2016-02-23

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,4	257	mg/Kg	1	250	<8.34	103	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,4	257	mg/Kg	1	250	<8.34	103	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Laboratory Control Spike (LCS-1)

QC Batch: 128449
Prep Batch: 108768

Date Analyzed: 2016-02-25
QC Preparation: 2016-02-25

Analyzed By: JL
Prepared By: JL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		s	203	mg/Kg	1	250	10.2	77	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		s	201	mg/Kg	1	250	10.2	76	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	47.2	46.6	mg/Kg	1	50.0	94	93	70 - 130

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 414630

QC Batch: 128397
Prep Batch: 108704

Date Analyzed: 2016-02-23
QC Preparation: 2016-02-22

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		s	19.3	mg/Kg	1	20.0	<1.76	96	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		s	15.8	mg/Kg	1	20.0	<1.76	79	70 - 130	20	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.99	1.97	mg/Kg	1	2	100	98	70 - 130
4-Bromofluorobenzene (4-BFB)	1.95	1.67	mg/Kg	1	2	98	84	70 - 130

Matrix Spike (MS-1) Spiked Sample: 414767

QC Batch: 128417
Prep Batch: 108741

Date Analyzed: 2016-02-23
QC Preparation: 2016-02-23

Analyzed By: RL
Prepared By: RL

Param				MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Qs	Qs	1.2.4	8190	mg/Kg	50	250	7510	272	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD			Spike	Matrix		Rec.		RPD
	F	C		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	Qs	Qs	1.2.4	8670	mg/Kg	50	250	7510	464	80 - 120	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: February 25, 2016
South Monument Pipeline Spill

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Matrix Spike (xMS-1) Spiked Sample: 414655

QC Batch: 128449
Prep Batch: 108768

Date Analyzed: 2016-02-25
QC Preparation: 2016-02-25

Analyzed By: JL
Prepared By: JL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		3	206	mg/Kg	1	250	<7.41	82	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		3	201	mg/Kg	1	250	<7.41	80	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	40.3	44.5	mg/Kg	1	50	81	89	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 128397

Date Analyzed: 2016-02-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		3	mg/Kg	1.00	1.03	103	80 - 120	2016-02-23

Standard (CCV-2)

QC Batch: 128397

Date Analyzed: 2016-02-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		3	mg/Kg	1.00	0.803	80	80 - 120	2016-02-23

Standard (CCV-1)

QC Batch: 128417

Date Analyzed: 2016-02-23

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	25.4	102	90 - 110	2016-02-23

Standard (CCV-2)

QC Batch: 128417

Date Analyzed: 2016-02-23

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	25.7	103	90 - 110	2016-02-23

Report Date: February 25, 2016
South Monument Pipeline Spill

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South Monument Pipeline Spill

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Standard (CCV-1)

QC Batch: 128449

Date Analyzed: 2016-02-25

Analyzed By: JL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		3	mg/Kg	250	200	80	80 - 120	2016-02-25

Standard (CCV-2)

QC Batch: 128449

Date Analyzed: 2016-02-25

Analyzed By: JL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		3	mg/Kg	250	200	80	80 - 120	2016-02-25

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	LELAP	LELAP-02003	Lubbock
2	NELAP	T104704219-15-11	Lubbock
3	NELAP	T104704392-14-8	Midland
4		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

W00# 16021925

Arson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

CHAIN-OF-CUSTODY

DATE: 2/19/2016 PAGE 1 OF 1
PO #: LAB WORK ORDER # 16021925
PROJECT LOCATION OR NAME: South Monument Pipeline Spill
LAI PROJECT #: N/A COLLECTOR: Sarah Disser

Data Reported to:

TRRP report?

☐ Yes ☒ No

TIME ZONE:

Time zone/State: NM

Field
Sample I.D.

EX-1 Bottom
EX-1 Sidewall
EX-2 Bottom
EX-2 Sidewall

☒ SOIL
☐ WATER
☐ AIR

P=PAINT
SL=SLUDGE
OT=OTHER

Lab #

Date

Time

Matrix

of Containers

PRESERVATION

HCl
HNO₃
H₂SO₄ □ NaOH □
ICE
UNPRESERVED

ANALYSES
TRPH 478.1 □ TPH 1005 □ TPH 1006 □
GASOLINE MOD 8015 □
DIESEL - MOD 8015 □
VOC 8260 □
SVOC 8270 □ PAH 8270 □ HOLDPAH □
8082 PESTICIDES □ 8161 HERBICIDES □
TCDF - METALS (RCRA) □ TCDF VOC □
TCDF - PEST □ TCDF VOC □
TOTAL METALS (RCRA) □ TCDF VOC □
LEAD - TOTAL □ TCDF VOC □
TCDF - TOTAL □ TCDF VOC □
TCDF - TOX □ TCDF VOC □
TCDF - TSS □ TCDF VOC □
PH □ HEXAVALENT CHROMIUM □
EXPLOSIVES □ PESTICIDES □
CHLORIDE □ ANIONS □ ALKALINITY □

FIELD NOTES

414744
414745
414746
414747

TOTAL

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

2/19/16 4:32

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

TURN AROUND TIME

NORMAL

1 DAY ☐

2 DAY ☐

OTHER ☐

LABORATORY USE ONLY:

RECEIVING TEMP: 5.61 THERM #: 78

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

☐ CARRIER BILL #

☒ HAND DELIVERED

CHAIN-OF-CUSTODY

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 2/19/2016 PAGE 1 OF 1
PO #: _____ LAB WORK ORDER #: 16021925
PROJECT LOCATION OR NAME: South Monument Pipeline Spill
LAI PROJECT #: N/A COLLECTOR: Sarah Driscoll

TRRP report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	TIME ZONE: Time zone/State: MM	P=PAINT SL=SLUDGE OT=OTHER			Matrix	# of Containers	PRESERVATION				ANALYSES	FIELD NOTES
		S=SOIL W=WATER A=AIR	Date	Time			HCl	HNO ₃	H ₂ SO ₄ □ NaOH □	ICE		
EX-1 Bottom			2-19-16	10:20	S	1						414744
EX-1 Sidewall				10:25	↓	↓						414745
EX-2 Bottom				10:30	↓	↓						414746
EX-2 Sidewall				10:35	↓	↓						414747

TURN AROUND TIME	
RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
DATE/TIME	DATE/TIME
2/19/16 4:32	2/19/16 16:38
DATE/TIME	DATE/TIME
2/23/16	

LABORATORY USE ONLY:	
RECEIVING TEMP: 5.1	TERM #: 72
CUSTODY SEALS - <input type="checkbox"/> BROKEN <input type="checkbox"/> INTACT <input type="checkbox"/> NOT USED	
CARRIER BILL # 25	ZT45083
<input checked="" type="checkbox"/> HAND DELIVERED	

Attachment C

Photographs



Well Sign



West Excavation (EX-1) Viewing North



West Excavation (EX-1) Viewing East



East Excavation (EX-2) Viewing North



West and East Excavations Viewing Northeast



Oil Staining South of Excavations Viewing Northeast