HOBBS OCD
AUG 0 4 2015
RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, 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

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company **COG Operating LLC**	Contact **Robert McNeil**
Address **600 West Illinois Avenue, Midland, Texas 79701**	Telephone No. **(432) 230-0077**
Facility Name Lusk Deep Unit #22H	Facility Type **Well**

Surface Owner: Federal	Mineral Owner	API No. 30-025-40705

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	17	19S	32E	380	North	1770	West	Lea

Latitude N 32.66682 ° **Longitude** W 103.791219°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release **150 bbls**	Volume Recovered **70 bbls**
Source of Release: Flowline	Date and Hour of Occurrence 12/12/2014 8:00 pm	Date and Hour of Discovery **12/12/2014 8:00 pm**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Tomas Oberding – NMOCD / Jeff Robertson – BLM**	
By Whom?	Date and Hour 12-13-2014	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

APPROVED
By Kellie Jones at 8:16 am, Oct 29, 2015

Describe Cause of Problem and Remedial Action Taken.*

This release was caused by a third party contractor, Sweatt Construction, using a dozer. The driver punctured the poly line while moving it. Vacuum trucks were dispatched and all standing fluid was disposed of at a NMOCD approved Facility.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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: [signature] (Agent for COG)	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez	Approved by District Supervisor: [signature]	
Title: Senior Project Manager; P.G.	Approval Date: 10/29/2015	Expiration Date: //
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval: //	Attached ☐ 1RP-3498
Date: 4/22/15 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

REVIEWED
By Kellie Jones at 8:16 am, Oct 29, 2015

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

HOBBS OCD
JAN 12 2015
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

HOBBS OCD
AUG 04 2015
RECEIVED

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

☒ Initial Report ☐ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077
Facility Name: Lusk Deep Unit a #22H	Facility Type: Well

Surface Owner: Federal	Mineral Owner:	API No. 30-025-40705

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	17	19S	32E	380	North	1770	West	Lea

Latitude 32.6668204887527 **Longitude** -103.791219305425

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 150 bbls	Volume Recovered: 70 bbls
Source of Release: Flowline	Date and Hour of Occurrence: 12/12/2014 8:00 pm	Date and Hour of Discovery: 12/12/2014 8:00 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Tomas Oberding – NMOCD / Jeff Robertson – BLM	
By Whom? Lupe Carrasco	Date and Hour: 12-13-2014	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

This release was caused by a third party contractor, Sweatt Construction, using a dozer. The driver punctured the poly line while moving it. Vacuum trucks were dispatched and all standing fluid was disposed of at NMOCD approved facility.

Describe Area Affected and Cleanup Action Taken.*

The impacted area is located in a pasture adjacent to the location. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

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: A Trujillo	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Amanda Trujillo		
Title: Senior Environmental Coordinator	Approval Date: 1-12-15	Expiration Date: 3-12-15
E-mail Address: atrujillo@concho.com	Conditions of Approval: Sites explan report. Robin	Attached ☐ IRP-3498
Date: January 9, 2015 Phone: 575-748-6940		

* Attach Additional Sheets If Necessary

229137

JAN 13 2015

nTO 1501231968
pTO 1501232141

SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	**Lusk Deep Unit #22H**					
Company:	**COG Operating, LLC**					
Section, Township and Range	**Unit C**	**Sec 17**	**T 19S**	**R 32E**		
Lease Number:	**API No. 30-025-40705**					
County:	**Lea**					
GPS:	**32.66682° N**			**103.79121° W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	In Rural Lea County at the intersection of Hwy 243 and CR 126A for 6.75 miles, the spill is on the EAST side of 126A in the pasture.					

HOBBS OCD
AUG 04 2015
RECEIVED

Release Data:	
Date Released:	12/12/2014
Type Release:	Produced Water
Source of Contamination:	Flowline
Fluid Released:	150 bbls
Fluids Recovered:	70 bbls

Official Communication:			
Name:	Candy Jimenez	Amanda Trujillo	Ike Tavarez
Company:	Sweatt Construction	COG Operating, LLC	Tetra Tech
Address:	2401 Pecos Ave.	2407 Pecos Ave.	4000 N. Big Spring
			Ste 401
City:	Artesia, NM	Artesia, NM	Midland, Texas
Phone number:	575-365-8805	575-748-6930	(432) 687-8110
Fax:	575-748-1230		
Email:	c.jimenez@sweattconstruction.com	atrujillo@concho.com	Ike.Tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	***0***	*0*
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	***0***	0
Total Ranking Score:	**0**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	5,000

TETRA TECH

June 22, 2015

Dr. Tomas Oberding
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating, LLC location Lusk Deep Unit #22H, Unit C, Section 17, Township 19 South, Range 32 East, Lea County, New Mexico.

Dr. Oberding:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG), Inc to assess and remediate a spill from the COG Lusk Deep Unit #22H, Unit C, Section 17, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.66682°, W 103.79121°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 12, 2014, and released approximately 150 barrels produced fluid from a flowline that was punctured by a Sweatt Construction dozer while it was being moved. Approximately 70 bbls of produced water were recovered. The spill initiated in the pasture impacting an area of approximately 200' X 20' and 240' x 20'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 17. According to the NMOCD groundwater map, the average depth to groundwater in this area is between 400' and 500' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 North Big Spring, Ste 401 Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

Auger Holes

On February 2, 2014, Tetra Tech personnel installed of eight (8) auger holes (AH-1 through AH-8) using an stainless steel hand auger to assess the soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of the laboratory analysis chain-of-custody documentation are included in Appendix C. The auger hole results are summarized in Table 1 and shown on Figure 3.

Referring to Table 1, none of the samples exceeded the RRAL's for TPH or BTEX. The areas of auger holes (AH-1, AH-2, AH-3, AH-4, AH-5, AH-6, and AH-8) showed chloride concentrations increasing with depth. Auger holes (AH-1, AH-4 and AH-8) showed chloride highs at a bottom hole depth at 2.0'-2.5' below surface of 14,400 mg/kg, 10,600 mg/kg, and 12,900 mg/kg, respectively. Auger holes (AH-2, AH-3, AH-5 and AH-6) showed chloride highs at a bottom hole depth at 3.0'-3.5' below surface of 15,200 mg/kg, 12,700 mg/kg, 11,700 mg/kg, 10,800 mg/kg, respectively. The area of auger hole (AH-7) showed chloride concentrations increasing with depth to 4,310 mg/kg at 3.0'-3.5' below surface before slightly declining to 2,710 mg/kg at 3.5'-4.0' below surface. None of the areas were vertically defined.

Boreholes

On March 3, 2015, Tetra Tech personnel supervised the installation of eight (8) boreholes using an air rotary rig in order to define the vertical extent of the chloride impact. Selected samples were analyzed for chloride by EPA method 300.0. Copies of the laboratory analysis chain-of-custody documentation are included in Appendix C. The borehole results are summarized in Table 1 and shown on Figure 3.

TETRA TECH

Referring to Table 1, the area of boreholes (BH-3, BH-4, BH-5, BH-6 and BH-8) showed chloride concentrations increasing with depths to 4.0'-5.0' below surface of 10,900 mg/kg, 8,290 mg/kg, 4,980 mg/kg, 7,230 mg/kg, and 12,600 mg/kg, respectively. These areas then declined with depth to bottom hole concentrations of 195 mg/kg at 9.0'-10', 585 mg/kg at 9.0'-10', 99.0 mg/kg at 14'-15', 99.0 mg/kg at 9.0'-10', and 490 mg/kg at 9.0'-10', respectively.

The areas of boreholes (BH-11, BH-2, and BH-7) showed elevated chloride concentrations at 2.0'-3.0' below surface of 7,920 mg/kg, 10,400 mg/kg, and 7,520 mg/kg, respectively. The concentrations declined with depth to bottom hole concentrations of 97.0 mg/kg at 9.0'-10', 386 mg/kg at 19'-20', and <20.0 mg/kg at 14'-15' below surface, respectively. The chloride impact was vertically defined in all areas.

Remedial Activities

On June 2, 2015, Tetra Tech supervised the removal of impacted material as highlighted (green) on Table 1 and shown on Figure 4. Due to an incorrect spot by DCP of the underground poly line, a line was found to run North to South in the areas of auger holes (AH-1, AH-2, AH-3, and AH-4), which somewhat altered the proposed excavation areas. The areas of auger holes (AH-1, AH-3, AH-4, AH-5 and AH-6) were excavated to a depth of 4.0' below surface and the areas of auger holes (AH-2, AH-7, and AH-8) were excavated to 6.0' below surface.

Approximately 1,490 yards of excavated soil were transported offsite for proper disposal. The excavations were all backfilled with clean soil to grade. The area was also tilled and seeded with BLM seed mixture #2.

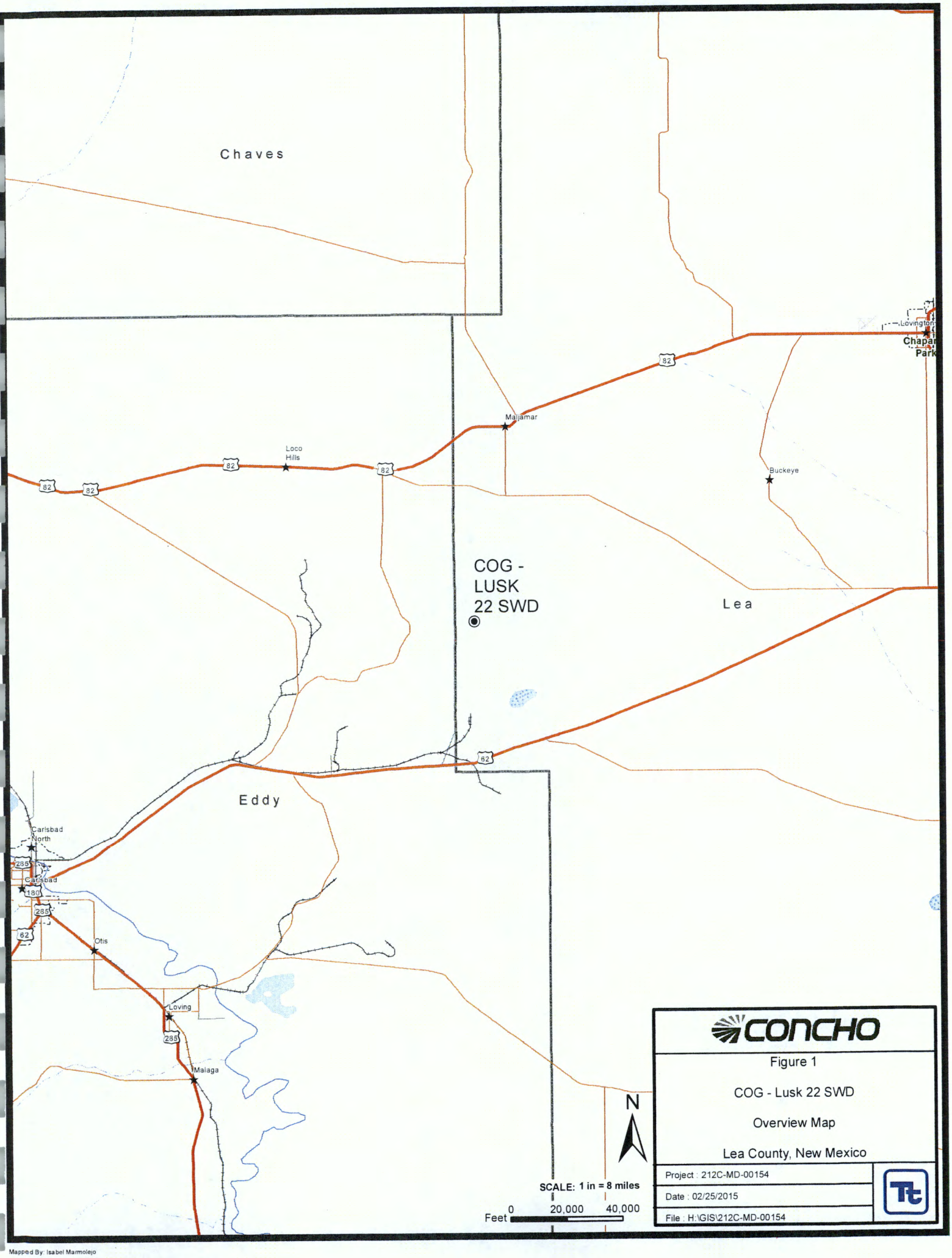
Conclusion

Based on the assessment and work performed, COG requests closure of the site. The Final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Clair Gonzales,
Geologist III

Figures


Chaves
Lea
Eddy
COG -
LUSK
22 SWD
Maljamar
Loco
Hills
Buckeye
Lovington
Carlsbad
North
Carlsbad
Otis
Loving
Malaga
82
285
180
62
N
SCALE: 1 in = 8 miles
Feet 0 20,000 40,000
CONCHO
Figure 1
COG - Lusk 22 SWD
Overview Map
Lea County, New Mexico
Project : 212C-MD-00154
Date : 02/25/2015
File : H:\GIS\212C-MD-00154
Mapped By: Isabel Marmolejo

CONCHO

Figure 2

COG - Lusk 22 SWD

Topo Map 1:24,000

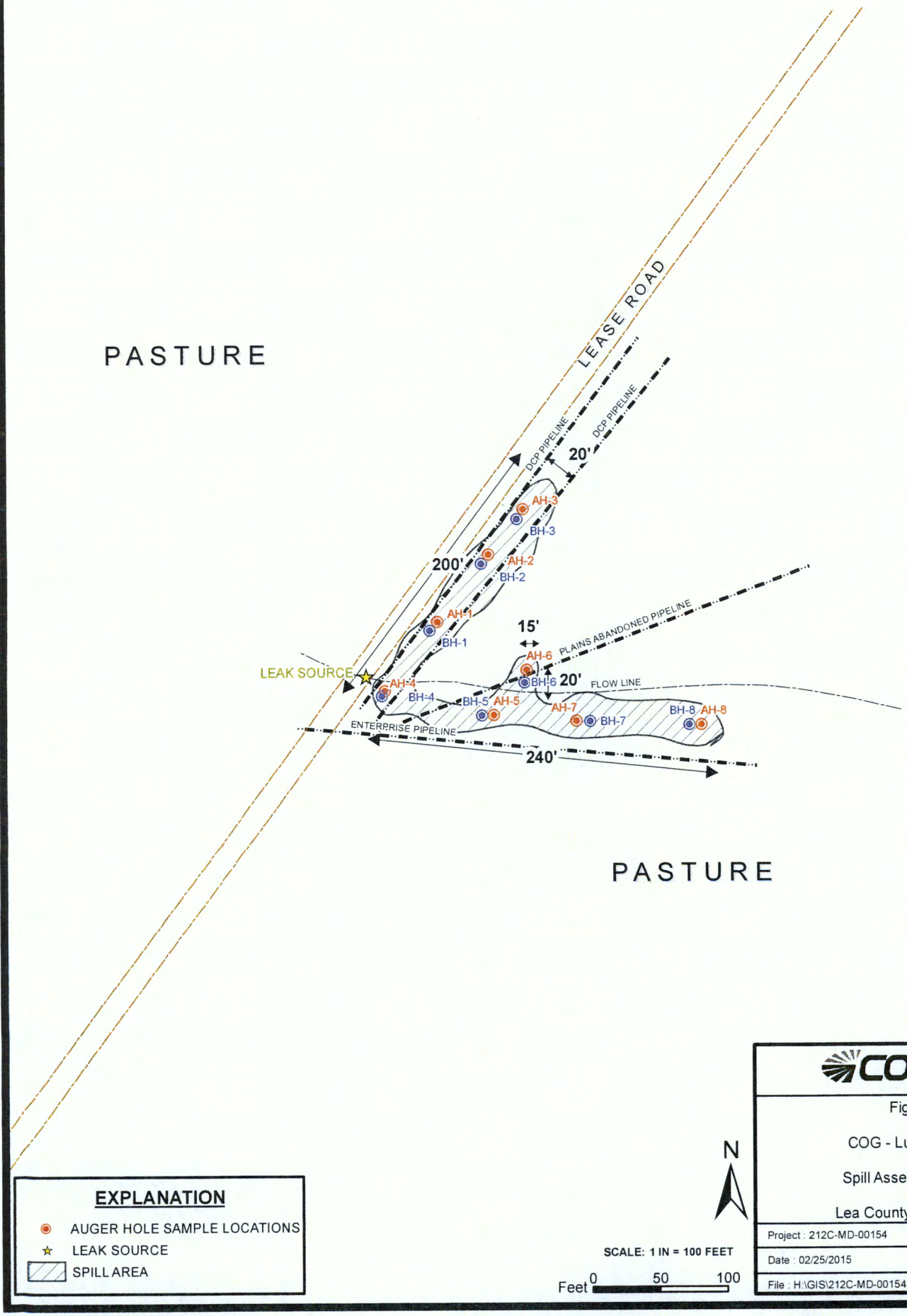
Lea County, New Mexico

Project : 212C-MD-00154

Date : 02/25/2015

File : H:\GIS\212C-MD-00154

Mapped By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- SPILL AREA

N

SCALE: 1 IN = 100 FEET

Feet 0 50 100

CONCHO

Figure 3

COG - Lusk 22 SWD

Spill Assessment Map

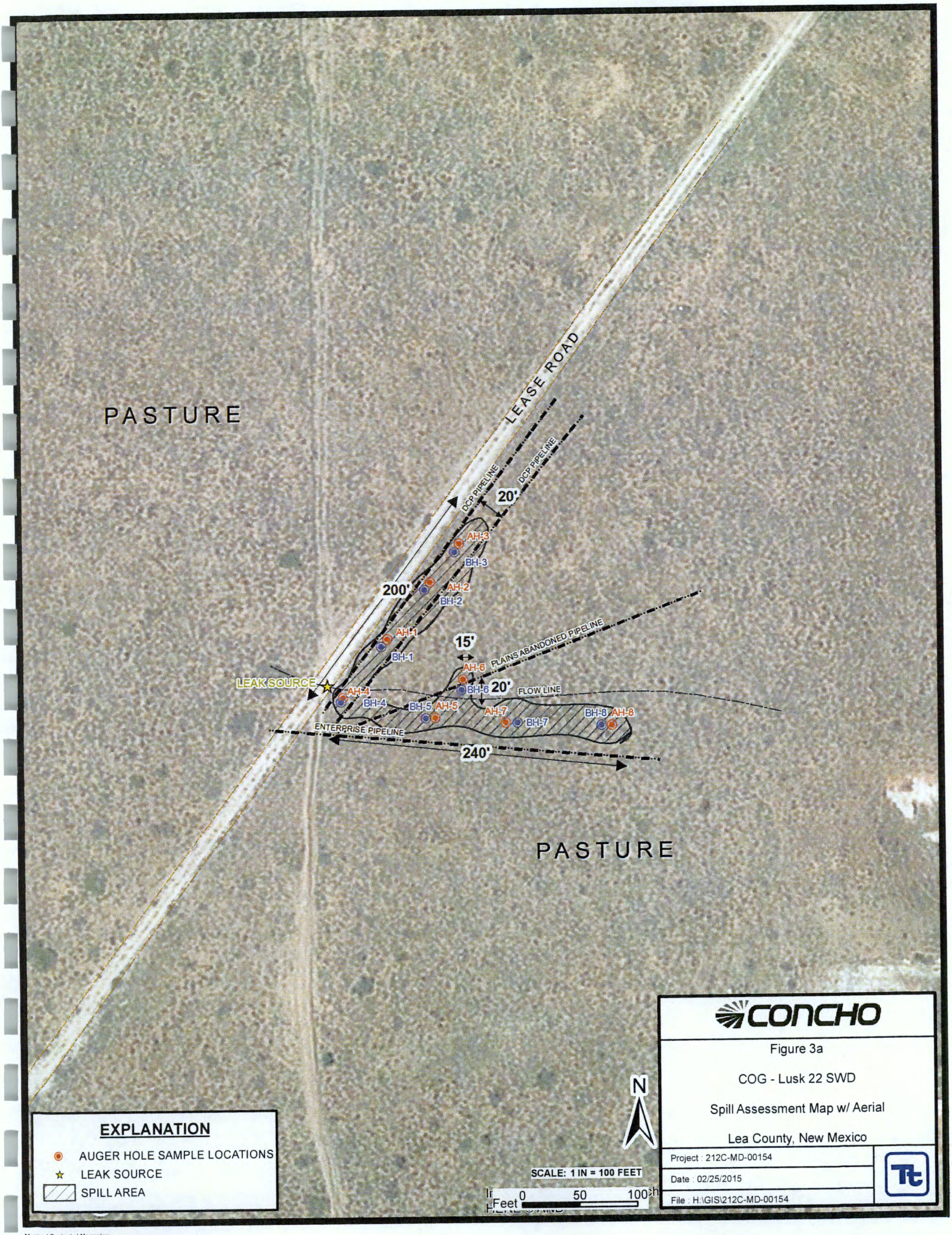
Lea County, New Mexico

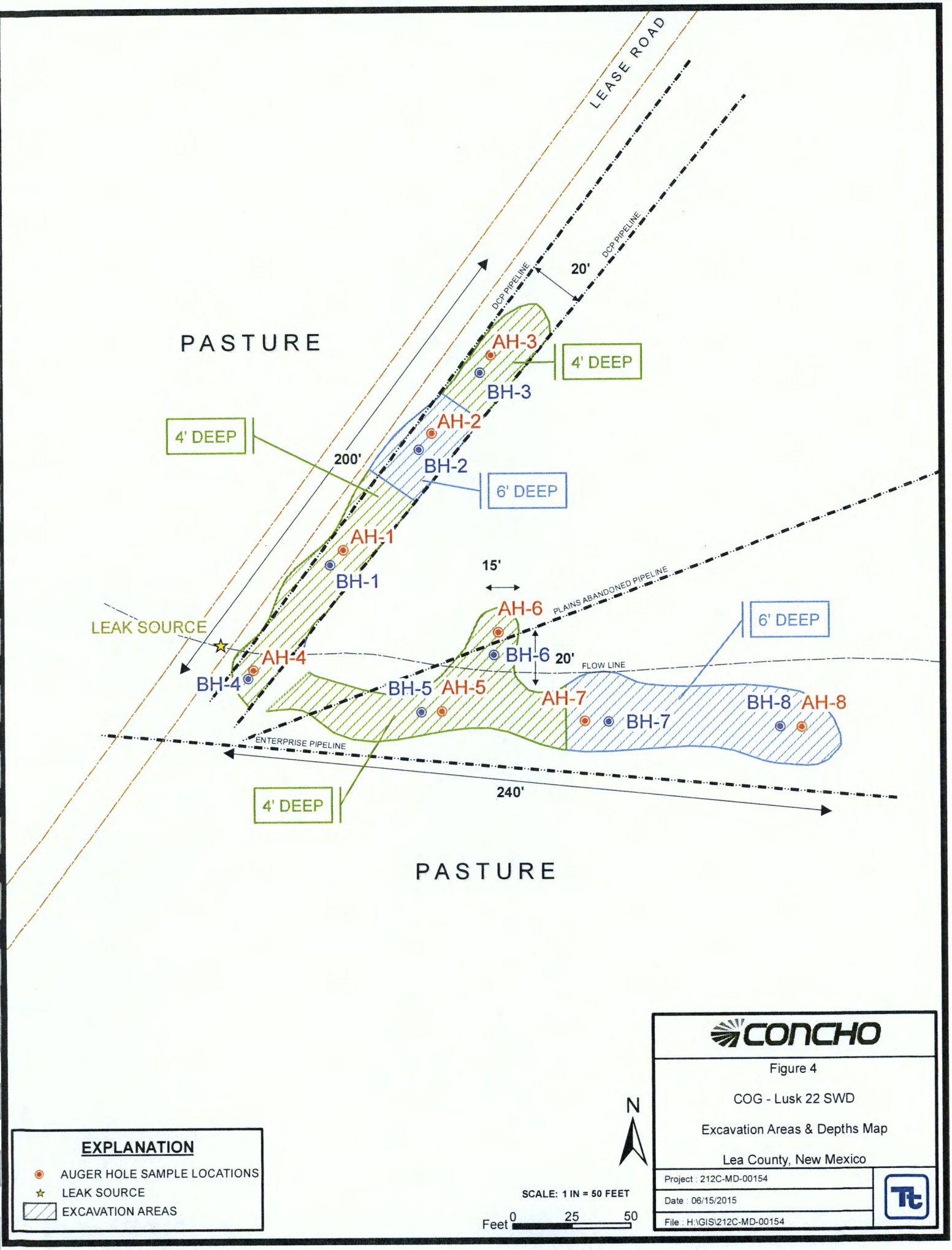
Project : 212C-MD-00154

Date : 02/25/2015

File : H:\GIS\212C-MD-00154

Mapped By: Isabel Marmolejo


PASTURE
LEASE ROAD
DCP PIPELINE
DCP PIPELINE
20'
AH-3
BH-3
200'
AH-2
BH-2
AH-1
BH-1
15'
PLAINS ABANDONED PIPELINE
AH-6
LEAK SOURCE
AH-4
BH-6
20'
FLOW LINE
BH-4
BH-5
AH-5
AH-7
BH-7
BH-8
AH-8
ENTERPRISE PIPELINE
240'
PASTURE
N
SCALE: 1 IN = 100 FEET
0
50
100
Feet
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
CONCHO
Figure 3a
COG - Lusk 22 SWD
Spill Assessment Map w/ Aerial
Lea County, New Mexico
Project : 212C-MD-00154
Date : 02/25/2015
File : H:\GIS\212C-MD-00154
Mapped By: Isabel Marmolejo


LEASE ROAD
DCP PIPELINE
DCP PIPELINE
20'
PASTURE
AH-3
4' DEEP
BH-3
AH-2
4' DEEP
200'
BH-2
6' DEEP
AH-1
BH-1
15'
PLAINS ABANDONED PIPELINE
AH-6
6' DEEP
LEAK SOURCE
AH-4
BH-6
20'
FLOW LINE
BH-4
BH-5
AH-5
AH-7
BH-8
AH-8
BH-7
ENTERPRISE PIPELINE
240'
4' DEEP
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
EXCAVATION AREAS
N
SCALE: 1 IN = 50 FEET
Feet 0 25 50
CONCHO
Figure 4
COG - Lusk 22 SWD
Excavation Areas & Depths Map
Lea County, New Mexico
Project : 212C-MD-00154
Date : 06/15/2015
File : H:\GIS\212C-MD-00154
Mapped By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC
Lusk 22 Salt Water Disposal
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	97.0
	"	1-1.5		X	-	-	-	-	-	-	-	-	9,100
	"	2-2.5		X	-	-	-	-	-	-	-	-	14,400
BH-1	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	7,920
	"	4-5		X	-	-	-	-	-	-	-	-	1,740
	"	6-7	X		-	-	-	-	-	-	-	-	97.0
	"	9-10	X		-	-	-	-	-	-	-	-	97.0
AH-2	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,080
	"	1-1.5		X	-	-	-	-	-	-	-	-	3,290
	"	2-2.5		X	-	-	-	-	-	-	-	-	9,100
	"	3-3.5		X	-	-	-	-	-	-	-	-	15,200
BH-2	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	10,400
	"	4-5		X	-	-	-	-	-	-	-	-	9,950
	"	6-7		X	-	-	-	-	-	-	-	-	7,630
	"	9-10	X		-	-	-	-	-	-	-	-	870
	"	14-15	X		-	-	-	-	-	-	-	-	386
	"	19-20	X		-	-	-	-	-	-	-	-	386

Table 1
COG Operating LLC
Lusk 22 Salt Water Disposal
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-3	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	97.0
	"	1-1.5		X	-	-	-	-	-	-	-	-	7,700
	"	2-2.5		X	-	-	-	-	-	-	-	-	11,600
	"	3-3.5		X	-	-	-	-	-	-	-	-	12,700
BH-3	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	5,760
	"	4-5		X	-	-	-	-	-	-	-	-	10,900
	"	6-7	X		-	-	-	-	-	-	-	-	98.0
	"	9-10	X		-	-	-	-	-	-	-	-	195
AH-4	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	4,030
	"	1-1.5		X	-	-	-	-	-	-	-	-	6,590
	"	2-2.5		X	-	-	-	-	-	-	-	-	10,600
BH-4	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	7,120
	"	4-5		X	-	-	-	-	-	-	-	-	8,290
	"	6-7	X		-	-	-	-	-	-	-	-	390
	"	9-10	X		-	-	-	-	-	-	-	-	585

Table 1
COG Operating LLC
Lusk 22 Salt Water Disposal
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-5	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	948
	"	1-1.5		X	-	-	-	-	-	-	-	-	3,030
	"	2-2.5		X	-	-	-	-	-	-	-	-	7,770
	"	3-3.5		X	-	-	-	-	-	-	-	-	11,700
BH-5	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	1,660
	"	4-5		X	-	-	-	-	-	-	-	-	4,980
	"	6-7	X		-	-	-	-	-	-	-	-	594
	"	9-10	X		-	-	-	-	-	-	-	-	396
	"	14-15	X		-	-	-	-	-	-	-	-	99.0
AH-6	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	28.0
	"	1-1.5		X	-	-	-	-	-	-	-	-	28.0
	"	2-2.5		X	-	-	-	-	-	-	-	-	9,980
	"	2.5-3		X	-	-	-	-	-	-	-	-	10,800
BH-6	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	4,550
	"	4-5		X	-	-	-	-	-	-	-	-	7,230
	"	6-7	X		-	-	-	-	-	-	-	-	99.0
	"	9-10	X		-	-	-	-	-	-	-	-	99.0

Table 1
COG Operating LLC
Lusk 22 Salt Water Disposal
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-7	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,940
	"	1-1.5		X	-	-	-	-	-	-	-	-	3,390
	"	2-2.5		X	-	-	-	-	-	-	-	-	3,970
	"	3-3.5		X	-	-	-	-	-	-	-	-	4,310
	"	3.5-4		X	-	-	-	-	-	-	-	-	2,710
BH-7	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	7,520
	"	4-5		X	-	-	-	-	-	-	-	-	6,830
	"	6-7		X	-	-	-	-	-	-	-	-	2,080
	"	9-10	X		-	-	-	-	-	-	-	-	<20.0
	"	14-15	X		-	-	-	-	-	-	-	-	<20.0
AH-8	2/2/2015	0-1		X	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,450
	"	1-1.5		X	-	-	-	-	-	-	-	-	6,200
	"	2-2.5		X	-	-	-	-	-	-	-	-	12,900
BH-8	3/3/2015	2-3		X	-	-	-	-	-	-	-	-	5,100
	"	4-5		X	-	-	-	-	-	-	-	-	12,600
	"	6-7		X	-	-	-	-	-	-	-	-	2,160
	"	9-10	X		-	-	-	-	-	-	-	-	490

(-) Not Analyzed

Excavated Depths

212C-MD-00154

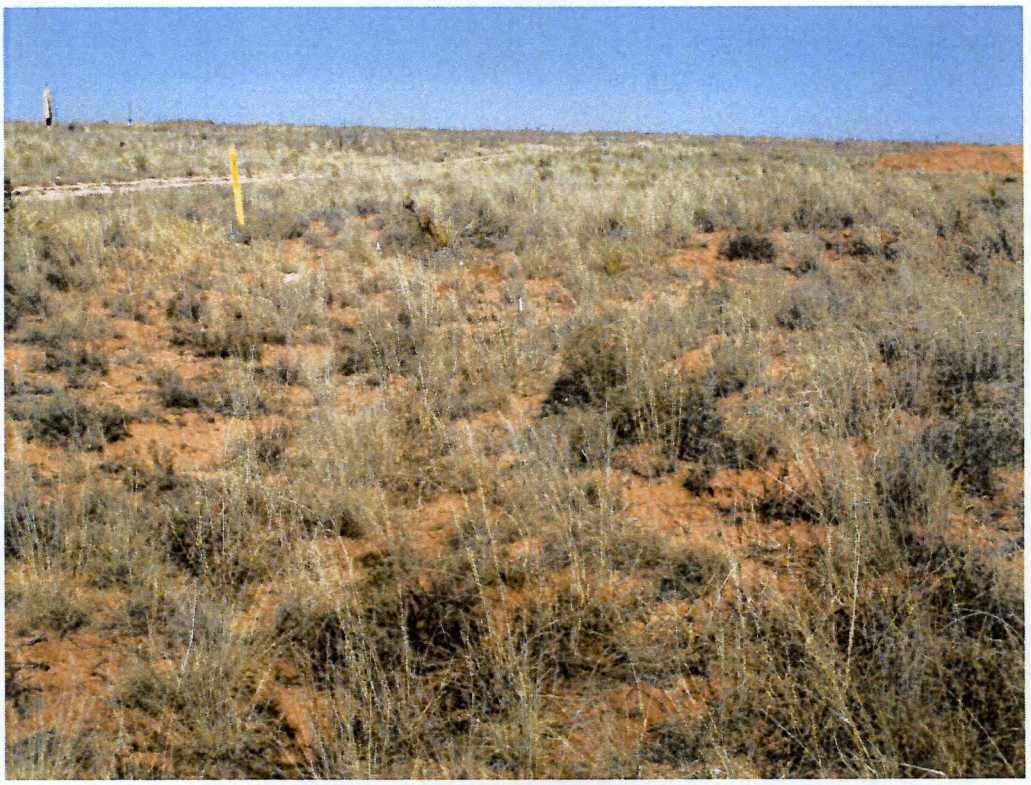
Photos

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

Spill Assessment

View North – Area of AH-1



View North – Areas of AH-2 and AH-3

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View East – Area of AH-4

View East - Area of AH-5

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View North – Area of AH-6

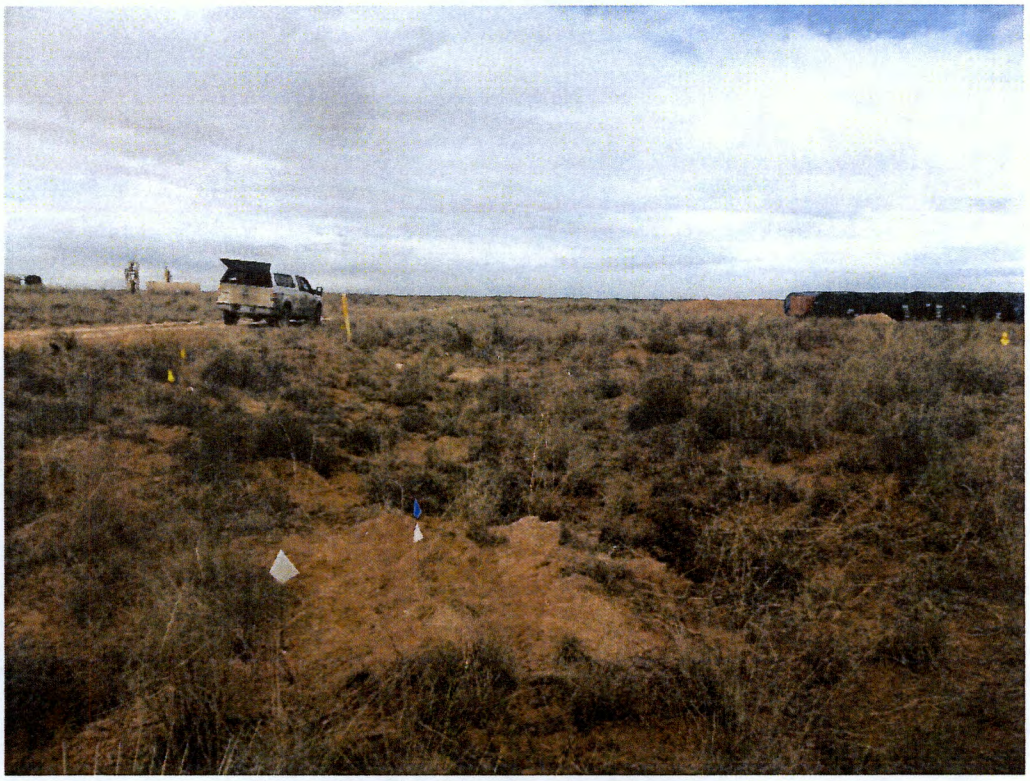
View East – areas of AH-7 and AH-8

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

Drilling

View North – Area of BH-1



View North – Area of BH-2

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View South – Area of BH-3

View East – Area of BH-4 and BH-5

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View Northwest – Area of BH-6

View West – Area of BH-7

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View West – Area of BH-8

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

Excavation

View Northeast – Excavated area of AH-7 and AH-8

View West – Excavated area of AH-4 and AH-5

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View North – Excavated area of AH-6

View West – Spotted DCP Midstream lines along the west portion of the spill area.

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View South – Excavated area of AH-3, AH-2, AH-1, and AH-4

View East – Backfilled area of AH-4, AH-5, AH-7, and AH-8

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View North – Backfilled area of AH-6

View North – Backfilled area of AH-4 and AH-1

COG Operating, LLC
Lusk Deep Unit #22H
Lea County, New Mexico

TETRA TECH

View North – Backfilled area of AH-2 and AH-3

Water Well Data
Average Depth to Groundwater (ft)
COG - Lusk Deep Unit #22H

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15 98	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

18 South 32 East

6	5	4 65	3	2	1
7 460 82	8	9	10	11	12
18	17	16 84	15	14	13
19	20 164	21	22 429	23	24
30	29	28	27	26	25
31	32	33	34 117	35	36

18 South 33 East

6	5	4	3 60	2	1
7	8 100	9	10 62	11 46	12 143 140
18	17 85	16	15	14 36	13 60
19 >140	20	21	22	23	24 195
30 35	29	28	27	26	25
31	32	33 177	34	35	36

19 South 31 East

6	5 SITE	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 180	27	26	25
31	32	33 101	34	35	36 130

19 South 32 East

6	5	4	3	2	1
7	8 365	9	10	11	12
18	17 SITE	16	15	14	13 135 dry
19 102	20 345	21	22	23	24
30	29	28	27	26	25
31	32	33	34 250	35	36

19 South 33 East

6	5	4	3	2	1
7	8	9	10	11	12
18 340	17 116	16	15	14	13
19	20	21	22	23	24
30	29	28 130 dry	27	26 92 85	25
31	32 185	33	34	35	36

20 South 31 East

6	5	4	3	2	1
7	8	9	10 130	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36 80

20 South 32 East

6	5	4	3	2	1 21.8
7	8	9	10	11	12
18 89	17	16	15	14	13
19	20	21	22	23	24
30 9.9	29	28	27 12.3	26	25
31	32	33	34	35	36 46

20 South 33 East

6	5 325 278	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24 +300
30	29	28	27	26	25
31	32	33	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

121 Abandoned Waterwell (recently measured)

Summary Report

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: March 16, 2015

Work Order: 15030419

Project Location: Lea County, NM
Project Name: COG-Lusk 22 SWD
Project Number: 212C-MD-00154

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
387990	BH-1 2-3	soil	2015-03-03	00:00	2015-03-04
387991	BH-1 4-5	soil	2015-03-03	00:00	2015-03-04
387992	BH-1 6-7	soil	2015-03-03	00:00	2015-03-04
387993	BH-1 9-10	soil	2015-03-03	00:00	2015-03-04
387994	BH-2 2-3	soil	2015-03-03	00:00	2015-03-04
387995	BH-2 4-5	soil	2015-03-03	00:00	2015-03-04
387996	BH-2 6-7	soil	2015-03-03	00:00	2015-03-04
387997	BH-2 9-10	soil	2015-03-03	00:00	2015-03-04
387998	BH-2 14-15	soil	2015-03-03	00:00	2015-03-04
387999	BH-2 19-20	soil	2015-03-03	00:00	2015-03-04
388000	BH-3 2-3	soil	2015-03-03	00:00	2015-03-04
388001	BH-3 4-5	soil	2015-03-03	00:00	2015-03-04
388002	BH-3 6-7	soil	2015-03-03	00:00	2015-03-04
388003	BH-3 9-10	soil	2015-03-03	00:00	2015-03-04
388004	BH-4 2-3	soil	2015-03-03	00:00	2015-03-04
388005	BH-4 4-5	soil	2015-03-03	00:00	2015-03-04
388006	BH-4 6-7	soil	2015-03-03	00:00	2015-03-04
388007	BH-4 9-10	soil	2015-03-03	00:00	2015-03-04
388008	BH-5 2-3	soil	2015-03-03	00:00	2015-03-04
388009	BH-5 4-5	soil	2015-03-03	00:00	2015-03-04
388010	BH-5 6-7	soil	2015-03-03	00:00	2015-03-04
388011	BH-5 9-10	soil	2015-03-03	00:00	2015-03-04
388012	BH-5 14-15	soil	2015-03-03	00:00	2015-03-04
388013	BH-6 2-3	soil	2015-03-03	00:00	2015-03-04
388014	BH-6 4-5	soil	2015-03-03	00:00	2015-03-04
388015	BH-6 6-7	soil	2015-03-03	00:00	2015-03-04
388016	BH-6 9-10	soil	2015-03-03	00:00	2015-03-04
388017	BH-7 2-3	soil	2015-03-03	00:00	2015-03-04
388018	BH-7 4-5	soil	2015-03-03	00:00	2015-03-04
388019	BH-7 6-7	soil	2015-03-03	00:00	2015-03-04

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
388020	BH-7 9-10	soil	2015-03-03	00:00	2015-03-04
388021	BH-7 14-15	soil	2015-03-03	00:00	2015-03-04
388022	BH-8 2-3	soil	2015-03-03	00:00	2015-03-04
388023	BH-8 4-5	soil	2015-03-03	00:00	2015-03-04
388024	BH-8 6-7	soil	2015-03-03	00:00	2015-03-04
388025	BH-8 9-10	soil	2015-03-03	00:00	2015-03-04

Sample: 387990 - BH-1 2-3

Param	Flag	Result	Units	RL
Chloride		**7920**	mg/Kg	4

Sample: 387991 - BH-1 4-5

Param	Flag	Result	Units	RL
Chloride		**1740**	mg/Kg	4

Sample: 387992 - BH-1 6-7

Param	Flag	Result	Units	RL
Chloride		**97.0**	mg/Kg	4

Sample: 387993 - BH-1 9-10

Param	Flag	Result	Units	RL
Chloride		**97.0**	mg/Kg	4

Sample: 387994 - BH-2 2-3

Param	Flag	Result	Units	RL
Chloride		**10400**	mg/Kg	4

Sample: 387995 - BH-2 4-5

Param	Flag	Result	Units	RL
Chloride		**9950**	mg/Kg	4

Sample: 387996 - BH-2 6-7

Param	Flag	Result	Units	RL
Chloride		**7630**	mg/Kg	4

Sample: 387997 - BH-2 9-10

Param	Flag	Result	Units	RL
Chloride		**870**	mg/Kg	4

Sample: 387998 - BH-2 14-15

Param	Flag	Result	Units	RL
Chloride		**386**	mg/Kg	4

Sample: 387999 - BH-2 19-20

Param	Flag	Result	Units	RL
Chloride		**386**	mg/Kg	4

Sample: 388000 - BH-3 2-3

Param	Flag	Result	Units	RL
Chloride		**5760**	mg/Kg	4

Sample: 388001 - BH-3 4-5

Param	Flag	Result	Units	RL
Chloride		**10900**	mg/Kg	4

Sample: 388002 - BH-3 6-7

Param	Flag	Result	Units	RL
Chloride		**98.0**	mg/Kg	4

Sample: 388003 - BH-3 9-10

Param	Flag	Result	Units	RL
Chloride		**195**	mg/Kg	4

Sample: 388004 - BH-4 2-3

Param	Flag	Result	Units	RL
Chloride		**7120**	mg/Kg	4

Sample: 388005 - BH-4 4-5

Param	Flag	Result	Units	RL
Chloride		**8290**	mg/Kg	4

Sample: 388006 - BH-4 6-7

Param	Flag	Result	Units	RL
Chloride		**390**	mg/Kg	4

Sample: 388007 - BH-4 9-10

Param	Flag	Result	Units	RL
Chloride		**585**	mg/Kg	4

Sample: 388008 - BH-5 2-3

Param	Flag	Result	Units	RL
Chloride		**1660**	mg/Kg	4

Sample: 388009 - BH-5 4-5

Param	Flag	Result	Units	RL
Chloride		**4980**	mg/Kg	4

Sample: 388010 - BH-5 6-7

Param	Flag	Result	Units	RL
Chloride		**594**	mg/Kg	4

Sample: 388011 - BH-5 9-10

Param	Flag	Result	Units	RL
Chloride		**396**	mg/Kg	4

Sample: 388012 - BH-5 14-15

Param	Flag	Result	Units	RL
Chloride		**99.0**	mg/Kg	4

Sample: 388013 - BH-6 2-3

Param	Flag	Result	Units	RL
Chloride		**4550**	mg/Kg	4

Sample: 388014 - BH-6 4-5

Param	Flag	Result	Units	RL
Chloride		**7230**	mg/Kg	4

Sample: 388015 - BH-6 6-7

Param	Flag	Result	Units	RL
Chloride		**99.0**	mg/Kg	4

Sample: 388016 - BH-6 9-10

Param	Flag	Result	Units	RL
Chloride		**99.0**	mg/Kg	4

Sample: 388017 - BH-7 2-3

Param	Flag	Result	Units	RL
Chloride		**7520**	mg/Kg	4

Sample: 388018 - BH-7 4-5

Param	Flag	Result	Units	RL
Chloride		**6830**	mg/Kg	4

Sample: 388019 - BH-7 6-7

Param	Flag	Result	Units	RL
Chloride		**2080**	mg/Kg	4

Sample: 388020 - BH-7 9-10

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 388021 - BH-7 14-15

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 388022 - BH-8 2-3

Param	Flag	Result	Units	RL
Chloride		**5100**	mg/Kg	4

Sample: 388023 - BH-8 4-5

Param	Flag	Result	Units	RL
Chloride		**12600**	mg/Kg	4

Sample: 388024 - BH-8 6-7

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	4

Sample: 388025 - BH-8 9-10

Param	Flag	Result	Units	RL
Chloride		**490**	mg/Kg	4

Summary Report

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: February 10, 2015

Work Order: 15020316

Project Location: Lea County, NM
Project Name: Sweatt/ COG Lusk 22 SWD
Project Number: 212C-MD-00154

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
385753	AH-1 0-1'	soil	2015-02-02	00:00	2015-02-03
385754	AH-1 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385755	AH-1 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385756	AH-2 0-1'	soil	2015-02-02	00:00	2015-02-03
385757	AH-2 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385758	AH-2 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385759	AH-2 3-3.5'	soil	2015-02-02	00:00	2015-02-03
385760	AH-3 0-1'	soil	2015-02-02	00:00	2015-02-03
385761	AH-3 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385762	AH-3 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385763	AH-3 3-3.5'	soil	2015-02-02	00:00	2015-02-03
385764	AH-4 0-1'	soil	2015-02-02	00:00	2015-02-03
385765	AH-4 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385766	AH-4 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385767	AH-5 0-1'	soil	2015-02-02	00:00	2015-02-03
385768	AH-5 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385769	AH-5 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385770	AH-5 3-3.5'	soil	2015-02-02	00:00	2015-02-03
385771	AH-6 0-1'	soil	2015-02-02	00:00	2015-02-03
385772	AH-6 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385773	AH-6 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385774	AH-6 2.5-3	soil	2015-02-02	00:00	2015-02-03
385775	AH-7 0-1'	soil	2015-02-02	00:00	2015-02-03
385776	AH-7 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385777	AH-7 2-2.5'	soil	2015-02-02	00:00	2015-02-03
385778	AH-7 3-3.5'	soil	2015-02-02	00:00	2015-02-03
385779	AH-7 3.5-4'	soil	2015-02-02	00:00	2015-02-03
385780	AH-8 0-1'	soil	2015-02-02	00:00	2015-02-03
385781	AH-8 1-1.5'	soil	2015-02-02	00:00	2015-02-03
385782	AH-8 2-2.5'	soil	2015-02-02	00:00	2015-02-03

This is only a summary. Please, refer to the complete report package for quality control data.

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
385753 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385756 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385760 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385764 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385767 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385771 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385775 - AH-7 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
385780 - AH-8 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

Sample: 385753 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**97.0**	mg/Kg	5

Sample: 385754 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**9100**	mg/Kg	5

Sample: 385755 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**14400**	mg/Kg	5

Sample: 385756 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**2080**	mg/Kg	5

Sample: 385757 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**3290**	mg/Kg	5

Sample: 385758 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**9100**	mg/Kg	5

Sample: 385759 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**15200**	mg/Kg	5

Sample: 385760 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**97.0**	mg/Kg	5

Sample: 385761 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**7700**	mg/Kg	5

Sample: 385762 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**11600**	mg/Kg	5

Sample: 385763 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**12700**	mg/Kg	5

Sample: 385764 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**4030**	mg/Kg	5

Sample: 385765 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**6590**	mg/Kg	5

Sample: 385766 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**10600**	mg/Kg	5

Sample: 385767 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**948**	mg/Kg	5

Sample: 385768 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**3030**	mg/Kg	5

Sample: 385769 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**7770**	mg/Kg	5

Sample: 385770 - AH-5 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**11700**	mg/Kg	5

Sample: 385771 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		**28.0**	mg/Kg	5

Sample: 385772 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**28.0**	mg/Kg	5

Sample: 385773 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride	Qs	**9980**	mg/Kg	5

Sample: 385774 - AH-6 2.5-3

Param	Flag	Result	Units	RL
Chloride	Qs	**10800**	mg/Kg	5

Sample: 385775 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride	Qs	**1940**	mg/Kg	5

Sample: 385776 - AH-7 1-1.5'

Param	Flag	Result	Units	RL
Chloride	Qs	**3390**	mg/Kg	5

Sample: 385777 - AH-7 2-2.5'

Param	Flag	Result	Units	RL
Chloride	Qs	**3970**	mg/Kg	5

Sample: 385778 - AH-7 3-3.5'

Param	Flag	Result	Units	RL
Chloride	Qs	**4310**	mg/Kg	5

Sample: 385779 - AH-7 3.5-4'

Param	Flag	Result	Units	RL
Chloride	Qs	**2710**	mg/Kg	5

Sample: 385780 - AH-8 0-1'

Param	Flag	Result	Units	RL
Chloride	Qs	**1450**	mg/Kg	5

Sample: 385781 - AH-8 1-1.5'

Param	Flag	Result	Units	RL
Chloride	Qs	**6200**	mg/Kg	5

Sample: 385782 - AH-8 2-2.5'

Param	Flag	Result	Units	RL
Chloride	Qs	**12900**	mg/Kg	5