Bratcher, Mike, EMNRD

From: Gregston, Terry G [tgregsto@blm.gov]
Sent: Monday, January 30, 2012 3:18 PM
To: Tavarez, Ike; Bratcher, Mike, EMNRD
Cc: Misty Hein (mistyh@fergusoncc.com); Pat Ellis; Joshua Russo; Grubbs, Robert
Subject: RE: Electra Federal 5 Water Line-Work Plan Approval Stipulations

Gentlemen,

The submitted cleanup plan for the Electra Federal 5, federal tracking number 11NU010TG, is approved with the following conditions of approval:

Notification Stipulations:

1. A copy of the cleanup plan and conditions of approval must be given to the contractor or site work personnel and be present on the location during all cleanup operations.

2. The authorized officer must be notified at the following phases of cleanup or conditions:

a. Prior to moving equipment on location for cleanup
b. When the excavation is nearing completion and a BLM inspection of the excavation or witnessing of sampling is required by the cleanup plan COA's.
c. When the cleanup work is nearing completion and to schedule a final onsite prior to removal of equipment.
d. Three days before the site is seeded.
e. Any time that a variance of the approved plan or conditions of approval is required.
f. In the event that you encounter excavation difficulties, unexpected void areas, or archeological artifacts the Authorized Officer must be contacted immediately. An onsite may be required to assess the situation.

3. The authorized officer on this undesirable event case is:

Terry G. Gregston
(575) 361-2635
tgregsto@blm.gov

Pasture Impacted Areas:

1. The BLM requires horizontal cleanup of the spill impacted areas in addition to vertical cleanup/mitigation measures.
2. The BLM may wish to inspect the excavation once it reaches cleanup depth/width. Confirmation samples of excavation sidewalls and any visibly affected areas outside of the excavation trench will be required; the BLM may witness the sampling. Contact the authorized officer to schedule.
3. Lab analysis of the confirmation sampling must be forwarded to the authorized officer for final approval before backfilling. Based on the sampling results, additional cleanup may be required or the site may be approved for closure.
4. Once final approval of cleanup is given, the excavation can be backfilled with clean soil to the level of the original native contour plus enough loft to accommodate the settling and compaction of unconsolidated fill soils.
5. The top 2 feet of the backfill material must be topsoil similar to that in the surrounding native terrain.
6. Install erosion control measures in the pasture-affected areas to prevent the unconsolidated reclamation materials from washing or blowing away until reclaimed areas settle and begin to revegetate.
7. Rip and seed reclaimed and equipment-impacted pasture areas with BLM seed mix **#2 and #4, 50/50 mix.**

Installation of Liner Cap in Spill Cleanup Areas:

1. Liner must be installed 4 feet below surface. The area to be covered by the liner should be slightly mounded in the center so that water/fluids do not pool and stand atop the liner. The edges of the lined area should be trenched and the liner installed so that the edges of the liner "keystone", or encase, the top portion of the containment area.
2. An inspection by the Authorized Officer is required prior to backfilling the liner installation.

Other Stipulations:

1. At the time of the final onsite for this location the surrounding pasture areas must be in a condition that will pass a routine inspection.
2. All household trash, debris, disconnected pipe and equipment must be removed from the area and the surrounding pasture and hauled to an authorized landfill. Do not bury cleanup trash, equipment debris, or household garbage in the cleanup excavation.

BLM approval of this proposal does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health, or the environment, or if the location fails to reclaim properly. In such an event that location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state, or local laws/regulations.

Terry Gregston
Environmental Protection Specialist
Bureau of Land Management
620 E. Greene St.
Carlsbad, NM 88220
Office (575) 234-5958
Cell (575) 361-2635
Fax (575) 234-5927

Bratcher, Mike, EMNRD

From: Tavarez, Ike [Ike.Tavarez@tetratech.com]
Sent: Wednesday, January 25, 2012 4:10 PM
To: Bratcher, Mike, EMNRD; Gregston, Terry G
Cc: Misty Hein (mistyh@fergusoncc.com); Pat Ellis; Joshua Russo; Grubbs, Robert; James_Amos@blm.gov
Subject: COG - Electra Federal #5 Water Line - Work Plan Approval Request
Attachments: COG - Electra Federal #5 Water Line - Work Plan .pdf

Mike and Terry,

Please find the enclosed Work Plan for the Electra Federal #5 Water Line located in Eddy County, New Mexico. The work plan includes the soil assessment and remedial recommendations for the site. I will mail you a hard copy of the work plan for your files. Once approved, Tetra Tech will schedule the soil remediation and notify you prior to implementing the work plan.. Please let me know if you need additional information or call me if you have any questions, thanks

Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

Ike.Tavarez@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

1910 North Big Spring | Midland, TX 79705 | www.tetratech.com

SITE INFORMATION

Report Type: Work Plan

General Site Information:		
Site:	Electra Federal #5 - Water Line	
Company:	COG Operating LLC	
Section, Township and Range	Unit A - Section 21 - Township 17S - Range 30E	
Lease Number:	30-015-34211	
County:	Eddy County	
GPS:	32.82343	103.96848
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From the intersection of Hwy 82 and CR-219 in Loco Hills, travel north on CR-219 for 0.4 mi, turn right (east) go 0.5 miles to Well pad (Apache El Federal #10, spill area is located approx. 300' SE of well pad.	

Release Data:	
Date Released:	11/3/2010
Type Release:	Produced Water
Source of Contamination:	4" Water line
Fluid Released:	30 bbls
Fluids Recovered:	25 bbls

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		432-682-4559
Fax:	(432) 684-7137		
Email:	pellis@conchoresources.com		ike.tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	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

January 16, 2012

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
1301 West Grand Avenue
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating LLC., Electra Federal #5 Flow line, Unit A, Section 21, Township 17 South, Range 30 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a release from a 4-inch poly line associated with the Electra Federal #5, Unit A, Section 21, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.82343°, W 103.96848°. The site location is shown on Figures 1 and 2.

Background

On November 3, 2010, Ferguson Construction was installing an underground line for Holly Energy. Prior to trenching, Ferguson moved a COG 4-inch poly line and which parted while being moved. As results, the leak released approximately 30 barrels of produced water. COG immediately responded and recovered 25 barrels of fluid with a vacuum truck. According to the C-141, the spill affected an area measuring 70' x 85' directly on and adjacent the poly line right-of-way. Ferguson has since installed the Holly Energy line and backfilled the site. The initial C-141 form is enclosed in Appendix A.

Tetra Tech
[illegible]
Tel [illegible] Fax [illegible]

Groundwater

No water wells were listed within Section 21. According to the NMOCD groundwater map, the average depth to groundwater in the area is approximately 300' below surface. The average depth to groundwater map is shown in Appendix A.

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

On December 7, 2010, Tetra Tech personnel inspected and sampled the spill area. Six auger holes (AH-1 through AH-6) were installed using a stainless steel hand auger to assess the impacted soils. Select 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 laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all submitted samples were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected in the majority of the auger holes. Auger hole (AH-1) did not show chloride impact to the soils. The areas of AH-5 and AH-6 showed a shallow impact to the soils, which were vertically defined at 1.0' and 4.0', respectively. The remaining auger holes (AH-2, AH-3 and AH-4) showed chloride impact which was not vertically defined.

In order to define the chloride impact, boreholes were proposed in the areas of AH-2, AH-3 and AH-4. The area of AH-2 was not drilled due to an overhead power line. Based on the proximity of AH-3, the data from AH-3 will be utilized for the area of AH-2. On December 7, 2011, Tetra Tech

personnel supervised the installation of two (2) boreholes (BH-1 and BH-2) utilizing an air rotary rig. The results of the sampling are summarized in Table 1. The borehole locations are shown on Figure 3.

Referring to Table 1, a deeper chloride impact was encountered in the areas of BH-1 and BH-2. In the area of borehole (BH-1), the chloride concentration spiked at 15.0' with a concentrations of 13,500 mg/kg, which declined with depth to 225 mg/kg at 60.0' below surface. In addition, borehole (BH-2) spiked at 7.0' with a concentration of 13,300 mg/kg and declined with depth to <200 mg/kg at 70.0' below surface.

Work Plan

The goal of the remediation is to reduce the environmental liabilities for the protection of the groundwater. Based on the results and depth to groundwater, the proposed excavation areas and depths are highlighted (green) in Table 1 and shown on Figure 4. As shown in Table 1, the proposed excavation depths will range from 1.0' to 10.0' below surface in majority of the impacted areas.

COG has two lines in the vicinity of the spill area. The underground line and a poly line are located on the west edge of the spill area. The Holly Energy underground line is located in the center of the spill area. The distance between the COG lines and Holly line measured approximately 35.0'. Due to the proximity of the lines, the area of AH-4 (BH-1) will be excavated to an approximate depth of 4.0' to 7.0' below surface. Deeper excavation in this area will not be performed due to safety concerns and for structural integrity of the active lines. The proposed excavation area will measure approximately 25' x 30'. Once excavated to the appropriate depth, the area will be capped with a 40 mil liner at 4.0' below surface.

The area of AH-2 and AH-3 (BH-2) will be excavated to a depth of 7.0' to 10.0 below surface to remove the chloride impact exceeding over 10,000 mg/kg. Once excavated to the appropriate depth, the area will be capped with a 40 mil liner at 4.0' below surface.

Based on site formation, the proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable.

TETRA TECH

Once the areas are excavated to the appropriate depths, the excavation will be backfilled with clean soil. Upon completion a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Project Manager

cc: Pat Ellis – COG
cc: Terry Gregston - BLM

Table 1
COG Operating LLC.
Electra Federal #5
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	12/7/2010	0-1'		X		<2.00	662	662	<0.0200	<0.0200	<0.0200	<0.0200	<200
		1-1.5'		X		-	-	-	-	-	-	-	<200
		2-2.5'		X		-	-	-	-	-	-	-	<200
		3-3.5'		X		-	-	-	-	-	-	-	630
AH-2	12/7/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
		1-1.5'		X		-	-	-	-	-	-	-	434
		2-2.5'		X		-	-	-	-	-	-	-	1,480
		3-3.5'		X		-	-	-	-	-	-	-	1,350
		4-4.5'		X		-	-	-	-	-	-	-	2,360
		5-5.5'		X		-	-	-	-	-	-	-	8,130

Table 1
COG Operating LLC.
Electra Federal #5
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-3	12/7/2010	0-1'		X		3.94	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	389
		1-1.5'		X		-	-	-	-	-	-	-	489
		2-2.5'		X		-	-	-	-	-	-	-	2,350
		3-3.5'		X		-	-	-	-	-	-	-	14,900
		4-4.5'		X		-	-	-	-	-	-	-	14,800
BH-2	11/4/2011	0-1'	-	X		-	-	-	-	-	-	-	<200
	"	3'	-	X		-	-	-	-	-	-	-	<200
	"	5'	-	X		-	-	-	-	-	-	-	12,400
	"	7'	-	X		-	-	-	-	-	-	-	13,300
	"	10'	-	X		-	-	-	-	-	-	-	6,380
	"	15'	-	X		-	-	-	-	-	-	-	8,670
	"	20'	-	X		-	-	-	-	-	-	-	5,850
	"	25'	-	X		-	-	-	-	-	-	-	3,490
	"	30'	-	X		-	-	-	-	-	-	-	535
	"	40'	-	X		-	-	-	-	-	-	-	5,040
	"	50'	-	X		-	-	-	-	-	-	-	1,350
	"	60'	-	X		-	-	-	-	-	-	-	1,130
	"	70'	-	X		-	-	-	-	-	-	-	<200

Table 1
COG Operating LLC.
Electra Federal #5
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-4	12/7/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	744
		1-1.5'		X		-	-	-	-	-	-	-	1,070
		2-2.5'		X		-	-	-	-	-	-	-	2,810
		3-3.5'		X		-	-	-	-	-	-	-	5,370
		4-4.5'		X		-	-	-	-	-	-	-	5,040
		5-5.5'		X		-	-	-	-	-	-	-	5,190
BH-1	11/4/2011	0-1'	-	X		-	-	-	-	-	-	-	791
	"	3'	-	X		-	-	-	-	-	-	-	461
	"	5'	-	X		-	-	-	-	-	-	-	2,470
	"	7'	-	X		-	-	-	-	-	-	-	3,980
	"	10'	-	X		-	-	-	-	-	-	-	9,370
	"	15'	-	X		-	-	-	-	-	-	-	13,500
	"	20'	-	X		-	-	-	-	-	-	-	4,340
	"	25'	-	X		-	-	-	-	-	-	-	6,340
	"	30'	-	X		-	-	-	-	-	-	-	8,880
	"	40'	-	X		-	-	-	-	-	-	-	507
	"	50'	-	X		-	-	-	-	-	-	-	1,100
	"	60'	-	X		-	-	-	-	-	-	-	226

Table 1
COG Operating LLC.
Electra Federal #5
EDDY COUNTY, NEW MEXICO

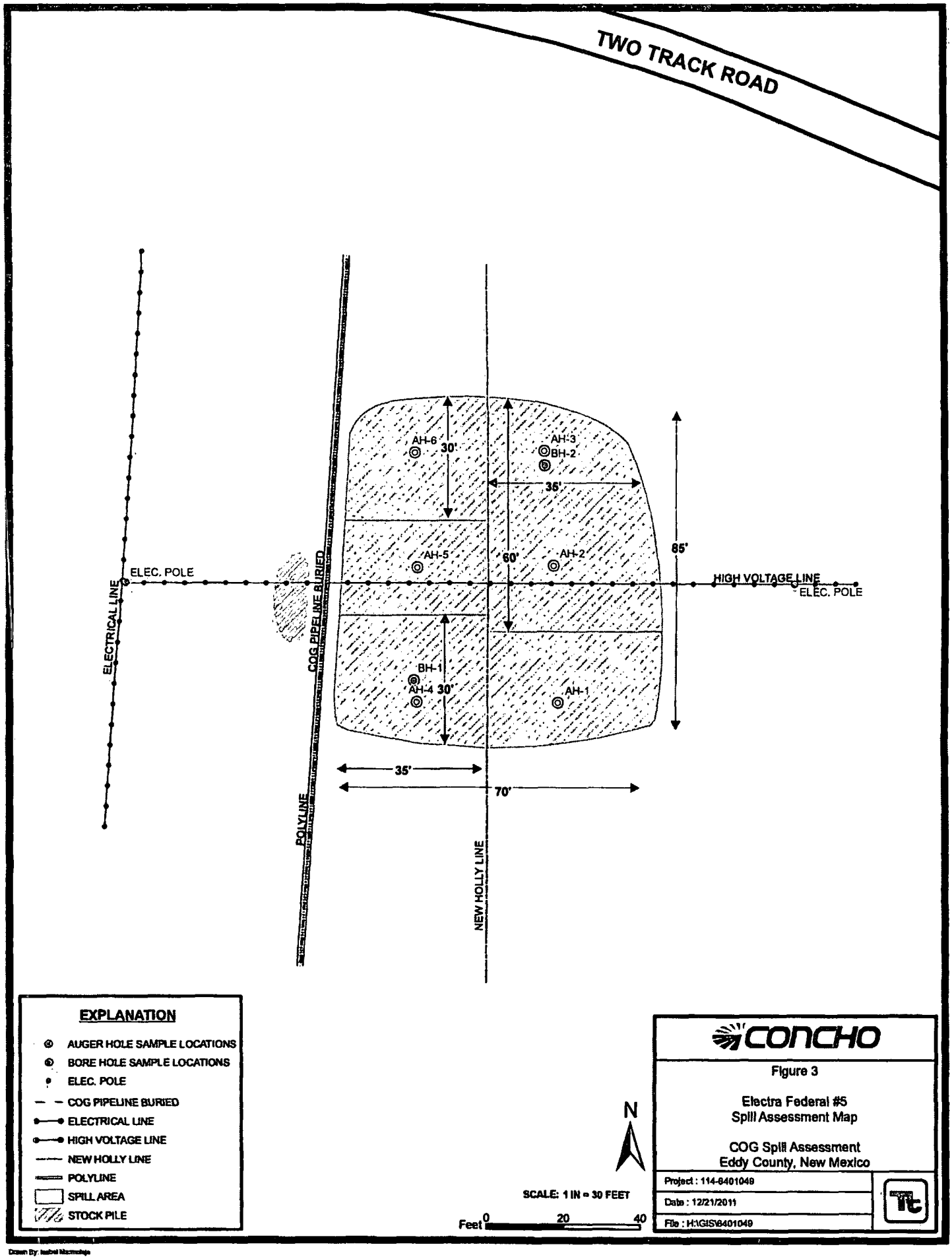
Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-5	12/7/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	1,710
		1-1.5'		X		-	-	-	-	-	-	-	<200
		2-2.5'		X		-	-	-	-	-	-	-	<200
		3-3.5'		X		-	-	-	-	-	-	-	<200
		4-4.5'		X		-	-	-	-	-	-	-	380
		5-5.5'		X		-	-	-	-	-	-	-	290
AH-6	12/7/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	5,870
		1-1.5'		X		-	-	-	-	-	-	-	7,710
		2-2.5'		X		-	-	-	-	-	-	-	4,840
		3-3.5'		X		-	-	-	-	-	-	-	3,440
		4-4.5'		X		-	-	-	-	-	-	-	874
		5-5.5'		X		-	-	-	-	-	-	-	245

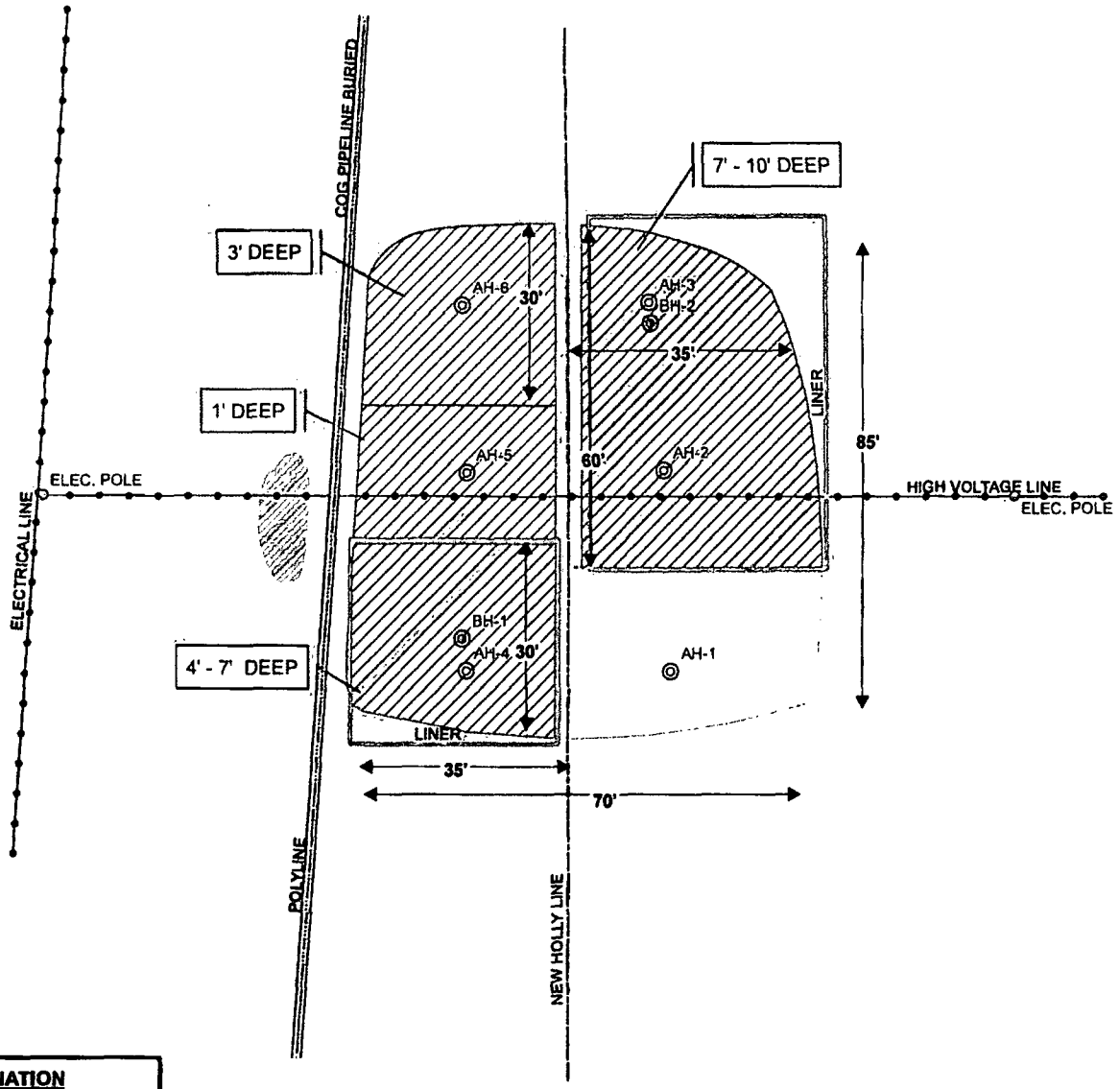
BEB Below Excavation Bottom

(--) Not Analyzed

Proposed Excavation Depth

Liner Installation


TWO TRACK ROAD
AH-6
30'
AH-3
BH-2
35'
85'
AH-5
60'
AH-2
ELEC. POLE
HIGH VOLTAGE LINE
ELEC. POLE
ELECTRICAL LINE
COG PIPELINE BURIED
BH-1
AH-4
30'
AH-1
35'
70'
POLYLINE
NEW HOLLY LINE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BORE HOLE SAMPLE LOCATIONS
ELEC. POLE
COG PIPELINE BURIED
ELECTRICAL LINE
HIGH VOLTAGE LINE
NEW HOLLY LINE
POLYLINE
SPILL AREA
STOCK PILE
N
SCALE: 1 IN = 30 FEET
Feet 0 20 40
CONCHO
Figure 3
Electra Federal #5
Spill Assessment Map
COG Spill Assessment
Eddy County, New Mexico
Project : 114-6401049
Date : 12/21/2011
File : H:\GIS\6401049



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- BORE HOLE SAMPLE LOCATIONS
- ELEC. POLE
- PROPOSED LINER
- COG PIPELINE BURIED
- ELECTRICAL LINE
- HIGH VOLTAGE LINE
- NEW HOLLY LINE
- POLYLINE
- PROPOSED EXCAVATION DEPTHS
- STOCK PILE

N

SCALE: 1 IN = 30 FEET

Feet 0 10 20

CONCHO

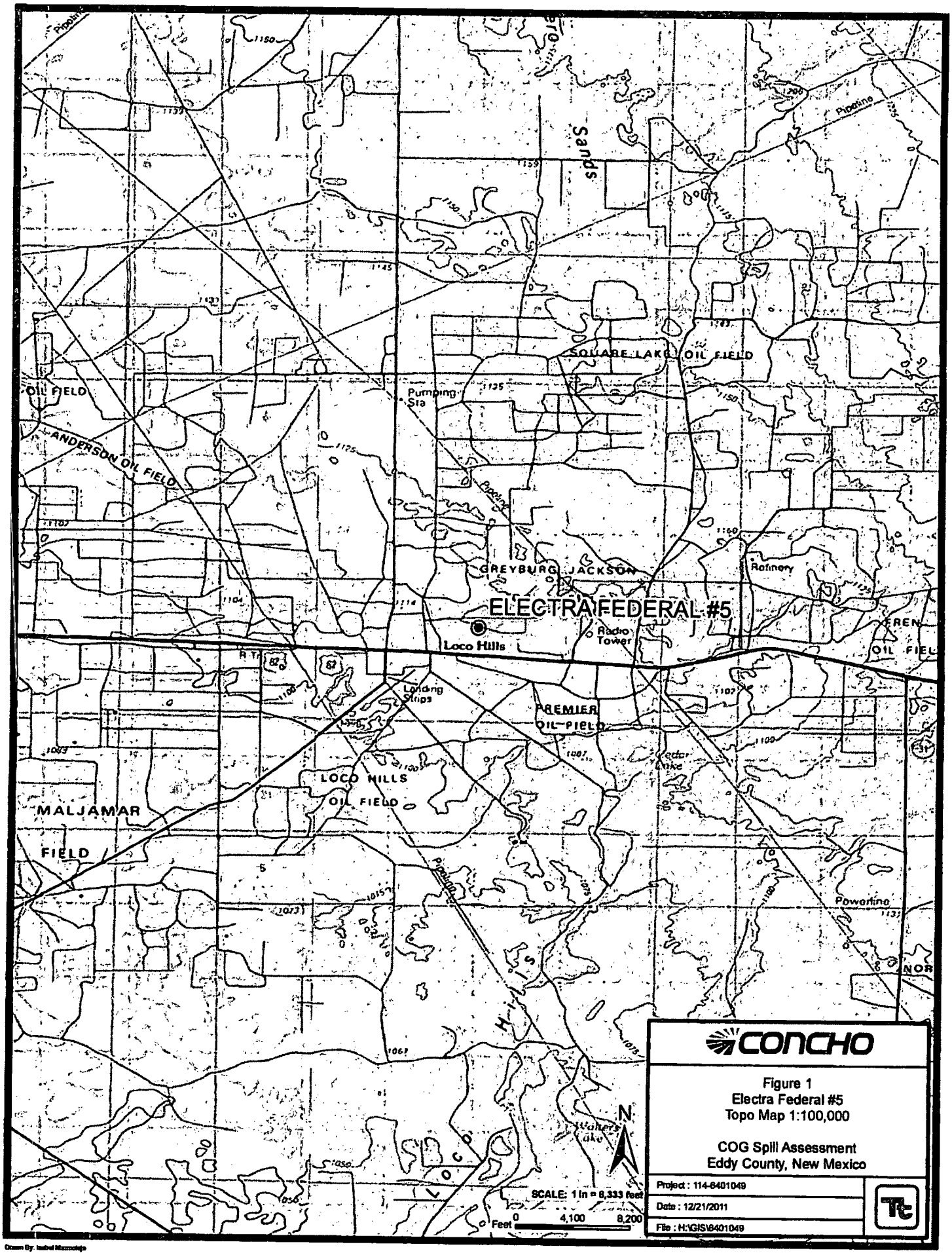
Figure 4

Electra Federal #5
Proposed Excavation Depths

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401049
Date : 12/21/2011
File : H:\GIS\6401049

Drawn By: Isabel Maimchajo



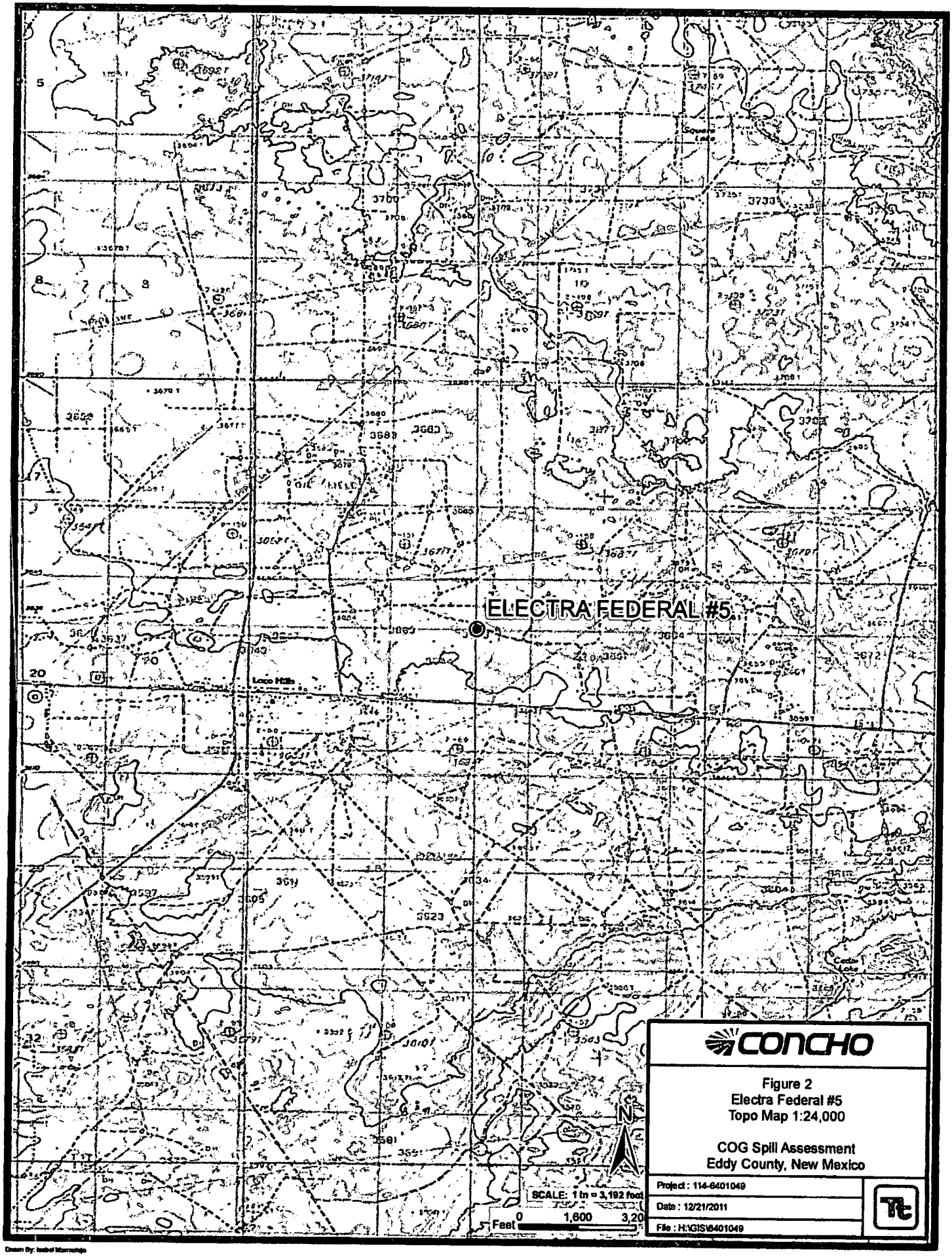
CONCHO

Figure 1
Electra Federal #5
Topo Map 1:100,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401049
Date : 12/21/2011
File : H:\GIS\6401049

Drawn By: Isabel Mazzotija



CONCHO

Figure 2
Electra Federal #5
Topo Map 1:24,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401049
Date : 12/21/2011
File : H:\GIS\6401049

Drawn By: Isabel Marroquin

Appendix A

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	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Electra Federal #5	Facility Type	4" Water Line

Surface Owner Federal	Mineral Owner	Lease No. NMNM-074935 (API#) 30-015-34211

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	21	17S	30E					Eddy

Latitude 32 49.413 **Longitude** 103 58.116

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 30bbls	Volume Recovered 25bbls
Source of Release 4" Electra Federal #5 water line	Date and Hour of Occurrence 11/03/2010	Date and Hour of Discovery 11/03/2010 1:40 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher—OCD	
By Whom? Josh Russo	Date and Hour 11/04/2010 6:25 p.m.	
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.*

As Ferguson was moving our 4" poly line so they could trench for the installation of a buried line, they broke our 4" poly line. The 4" poly line has been refused and put back into service.

Describe Area Affected and Cleanup Action Taken.*

Initially 30bbls of produced water was released from the line and we were able to recover 25bbls with a vacuum truck. The spill area measured 75' x 100' directly on and adjacent to the ROW. All free fluid was recovered and disposed of accordingly. (The closest well location to the release is the Apache Corp., E L Federal #10, A-21-17S-30E, 32.8245 – 103.9695, 990' FNL 330' FEL). Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM 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:	OIL CONSERVATION DIVISION	
Printed Name: Josh Russo	Approved by District Supervisor:	
Title: HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:	Attached ☐
Date: 11/15/2010 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Water Well Data
Average Depth to Groundwater (ft)
Electra #5 Water Line Leak
Eddy County, New Mexico

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 220 dry	13
19 110	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 30 East

6	5	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	27	26	25
31	32	33	34	35	36

16 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 280
18	17	16	15	14	13 113
19	20	21	22	23	24
30	29	28	27	26	25
31 290	32	33	34	35	36

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 60	23	24
30	29 210 208'	28	27	26	25
31	32	33	34	35 153	36

17 South 30 East

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

17 South 31 East

6	5	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	27	26	25
31	32	33	34 271	35	36

18 South 29 East

6	5	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	27	26	25
31	32	33	34	35	36

18 South 30 East

6	5	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	27	26	25
31	32	33	34	35	36

18 South 31 East

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

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

Appendix C

Summary Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: December 15, 2010

Work Order: 10121026

Project Location: Eddy Co., NM
Project Name: COG/Electra Federal #5
Project Number: 114-6400741

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
252900	AH-1 0-1'	soil	2010-12-07	00:00	2010-12-10
252901	AH-1 1-1.5'	soil	2010-12-07	00:00	2010-12-10
252902	AH-1 2-2.5'	soil	2010-12-07	00:00	2010-12-10
252903	AH-1 3-3.5'	soil	2010-12-07	00:00	2010-12-10
252904	AH-2 0-1'	soil	2010-12-07	00:00	2010-12-10
252905	AH-2 1-1.5'	soil	2010-12-07	00:00	2010-12-10
252906	AH-2 2-2.5'	soil	2010-12-07	00:00	2010-12-10
252907	AH-2 3-3.5'	soil	2010-12-07	00:00	2010-12-10
252908	AH-2 4-4.5'	soil	2010-12-07	00:00	2010-12-10
252909	AH-2 5-5.5'	soil	2010-12-07	00:00	2010-12-10
252910	AH-3 0-1'	soil	2010-12-07	00:00	2010-12-10
252911	AH-3 1-1.5'	soil	2010-12-07	00:00	2010-12-10
252912	AH-3 2-2.5'	soil	2010-12-07	00:00	2010-12-10
252913	AH-3 3-3.5'	soil	2010-12-07	00:00	2010-12-10
252914	AH-3 4-4.5'	soil	2010-12-07	00:00	2010-12-10
252915	AH-4 0-1'	soil	2010-12-07	00:00	2010-12-10
252916	AH-4 1-1.5'	soil	2010-12-07	00:00	2010-12-10
252917	AH-4 2-2.5'	soil	2010-12-07	00:00	2010-12-10
252918	AH-4 3-3.5'	soil	2010-12-07	00:00	2010-12-10
252919	AH-4 4-4.5'	soil	2010-12-07	00:00	2010-12-10
252920	AH-4 5-5.5'	soil	2010-12-07	00:00	2010-12-10
252921	AH-5 0-1'	soil	2010-12-07	00:00	2010-12-10
252922	AH-5 1-1.5'	soil	2010-12-07	00:00	2010-12-10
252923	AH-5 2-2.5'	soil	2010-12-07	00:00	2010-12-10
252924	AH-5 3-3.5'	soil	2010-12-07	00:00	2010-12-10
252925	AH-5 4-4.5'	soil	2010-12-07	00:00	2010-12-10
252926	AH-5 5-5.5'	soil	2010-12-07	00:00	2010-12-10
252927	AH-6 0-1'	soil	2010-12-07	00:00	2010-12-10
252928	AH-6 1-1.5'	soil	2010-12-07	00:00	2010-12-10
252929	AH-6 2-2.5'	soil	2010-12-07	00:00	2010-12-10

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
252930	AH-6 3-3.5'	soil	2010-12-07	00:00	2010-12-10
252931	AH-6 4-4.5'	soil	2010-12-07	00:00	2010-12-10
252932	AH-6 5-5.5'	soil	2010-12-07	00:00	2010-12-10

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
252900 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**662**	<2.00
252904 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
252910 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	**3.94**
252915 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
252921 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
252927 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 252900 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252901 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252902 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252903 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**630**	mg/Kg	4.00

Sample: 252904 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252905 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**434**	mg/Kg	4.00

Sample: 252906 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**1480**	mg/Kg	4.00

Sample: 252907 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**1350**	mg/Kg	4.00

Sample: 252908 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**2360**	mg/Kg	4.00

Sample: 252909 - AH-2 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**8130**	mg/Kg	4.00

Sample: 252910 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**389**	mg/Kg	4.00

Sample: 252911 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**489**	mg/Kg	4.00

Sample: 252912 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**2350**	mg/Kg	4.00

Sample: 252913 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**14900**	mg/Kg	4.00

Sample: 252914 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**14800**	mg/Kg	4.00

Sample: 252915 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**744**	mg/Kg	4.00

Sample: 252916 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1070**	mg/Kg	4.00

Sample: 252917 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**2810**	mg/Kg	4.00

Sample: 252918 - AH-4 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**5370**	mg/Kg	4.00

Sample: 252919 - AH-4 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**5040**	mg/Kg	4.00

Sample: 252920 - AH-4 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**5190**	mg/Kg	4.00

Sample: 252921 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**1710**	mg/Kg	4.00

Sample: 252922 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252923 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252924 - AH-5 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 252925 - AH-5 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**380**	mg/Kg	4.00

Sample: 252926 - AH-5 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**290**	mg/Kg	4.00

Sample: 252927 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		**5870**	mg/Kg	4.00

Sample: 252928 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**7710**	mg/Kg	4.00

Sample: 252929 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**4840**	mg/Kg	4.00

Sample: 252930 - AH-6 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**3440**	mg/Kg	4.00

Sample: 252931 - AH-6 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**874**	mg/Kg	4.00

Sample: 252932 - AH-6 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**245**	mg/Kg	4.00

Summary Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: November 11, 2011

Work Order: 11110809

Project Location: Eddy Co, NM
Project Name: COG/Electra Federal #5
Project Number: 114-6401049

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
281835	BH-1 0-1'	soil	2011-11-04	00:00	2011-11-08
281836	BH-1 3'	soil	2011-11-04	00:00	2011-11-08
281837	BH-1 5'	soil	2011-11-04	00:00	2011-11-08
281838	BH-1 7'	soil	2011-11-04	00:00	2011-11-08
281839	BH-1 10'	soil	2011-11-04	00:00	2011-11-08
281840	BH-1 15'	soil	2011-11-04	00:00	2011-11-08
281841	BH-1 20'	soil	2011-11-04	00:00	2011-11-08
281842	BH-1 25'	soil	2011-11-04	00:00	2011-11-08
281843	BH-1 30'	soil	2011-11-04	00:00	2011-11-08
281844	BH-1 40'	soil	2011-11-04	00:00	2011-11-08
281845	BH-1 50'	soil	2011-11-04	00:00	2011-11-08
281846	BH-1 60'	soil	2011-11-04	00:00	2011-11-08
281849	BH-2 0-1'	soil	2011-11-04	00:00	2011-11-08
281850	BH-2 3'	soil	2011-11-04	00:00	2011-11-08
281851	BH-2 5'	soil	2011-11-04	00:00	2011-11-08
281852	BH-2 7'	soil	2011-11-04	00:00	2011-11-08
281853	BH-2 10'	soil	2011-11-04	00:00	2011-11-08
281854	BH-2 15'	soil	2011-11-04	00:00	2011-11-08
281855	BH-2 20'	soil	2011-11-04	00:00	2011-11-08
281856	BH-2 25'	soil	2011-11-04	00:00	2011-11-08
281857	BH-2 30'	soil	2011-11-04	00:00	2011-11-08
281858	BH-2 40'	soil	2011-11-04	00:00	2011-11-08
281859	BH-2 50'	soil	2011-11-04	00:00	2011-11-08
281860	BH-2 60'	soil	2011-11-04	00:00	2011-11-08
281861	BH-2 70'	soil	2011-11-04	00:00	2011-11-08

Sample: 281835 - BH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		791	mg/Kg	4

Sample: 281836 - BH-1 3'

Param	Flag	Result	Units	RL
Chloride		461	mg/Kg	4

Sample: 281837 - BH-1 5'

Param	Flag	Result	Units	RL
Chloride		2470	mg/Kg	4

Sample: 281838 - BH-1 7'

Param	Flag	Result	Units	RL
Chloride		3980	mg/Kg	4

Sample: 281839 - BH-1 10'

Param	Flag	Result	Units	RL
Chloride		9370	mg/Kg	4

Sample: 281840 - BH-1 15'

Param	Flag	Result	Units	RL
Chloride		13500	mg/Kg	4

Sample: 281841 - BH-1 20'

Param	Flag	Result	Units	RL
Chloride		4340	mg/Kg	4

Sample: 281842 - BH-1 25'

Param	Flag	Result	Units	RL
Chloride		6340	mg/Kg	4

Sample: 281843 - BH-1 30'

Param	Flag	Result	Units	RL
Chloride		**8880**	mg/Kg	4

Sample: 281844 - BH-1 40'

Param	Flag	Result	Units	RL
Chloride		**507**	mg/Kg	4

Sample: 281845 - BH-1 50'

Param	Flag	Result	Units	RL
Chloride		**1100**	mg/Kg	4

Sample: 281846 - BH-1 60'

Param	Flag	Result	Units	RL
Chloride		**226**	mg/Kg	4

Sample: 281849 - BH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 281850 - BH-2 3'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 281851 - BH-2 5'

Param	Flag	Result	Units	RL
Chloride		**12400**	mg/Kg	4

Sample: 281852 - BH-2 7'

Param	Flag	Result	Units	RL
Chloride		**13300**	mg/Kg	4

Sample: 281853 - BH-2 10'

Param	Flag	Result	Units	RL
Chloride		**6380**	mg/Kg	4

Sample: 281854 - BH-2 15'

Param	Flag	Result	Units	RL
Chloride		**8670**	mg/Kg	4

Sample: 281855 - BH-2 20'

Param	Flag	Result	Units	RL
Chloride		**5850**	mg/Kg	4

Sample: 281856 - BH-2 25'

Param	Flag	Result	Units	RL
Chloride		**3490**	mg/Kg	4

Sample: 281857 - BH-2 30'

Param	Flag	Result	Units	RL
Chloride		**535**	mg/Kg	4

Sample: 281858 - BH-2 40'

Param	Flag	Result	Units	RL
Chloride		**5040**	mg/Kg	4

Sample: 281859 - BH-2 50'

Param	Flag	Result	Units	RL
Chloride		**1350**	mg/Kg	4

Sample: 281860 - BH-2 60'

Param	Flag	Result	Units	RL
Chloride		**1130**	mg/Kg	4

Sample: 281861 - BH-2 70'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4