

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

HOBBS OCD
AUG 28 2014
RECEIVED

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company COG Operating LLC	Contact Pat Ellis
Address 600 West Illinois Avenue, Midland, Texas 79701	Telephone No. (432) 230-0077
Facility Name Prohibition Federal Unit #2	Facility Type SWD

Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-025-31716
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LOCATION OF RELEASE

Unit Letter K	Section 11	Township 22S	Range 32E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
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Latitude N 32.40443 ° Longitude W 103.64730°

NATURE OF RELEASE

Type of Release: Oil and produced water	Volume of Release 10 bbls of oil 30 bbls produced water	Volume Recovered 7 bbls of oil 25 bbls produced water
Source of Release: Water Tank	Date and Hour of Occurrence 09-24-2013	Date and Hour of Discovery 09-24-2013 8:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☒ Not Required	If YES, To Whom? Geoffrey Leking NMOCD	
By Whom? Michelle Mullins	Date and Hour 09-25-2013 07:39 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

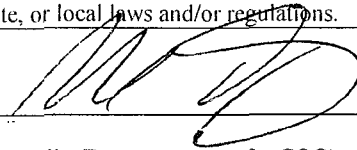
Describe Cause of Problem and Remedial Action Taken.*

Plunger on triplex pump broke. Replaced triplex pump.

Describe Area Affected and Cleanup Action Taken.*

Initially 10 bbls of oil and 30 bbls of produced water were released due to a mechanical failure on the triplex pump, causing the water tank to overflow. We were able to recover 7 bbls of oil and 25 bbls of produced water with a vacuum truck. The spill occurred in an unlined facility. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL or impacted chloride soil were removed and hauled away for proper disposal. The entire facility was capped with clay and backfilled 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: 

Printed Name: **Ike Tavarez (agent for COG)**

Title: **Senior Project Manager**

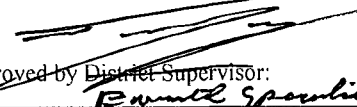
E-mail Address: **ike.tavarez@tetratech.com**

Date: **7-2-14**

Phone: **(432) 686-3023**

OIL CONSERVATION DIVISION

Approved by District Supervisor:



Approval Date: **8-28-14**

Expiration Date: **_____**

Conditions of Approval:

Attached ☐

IRP-3283

AUG 28 2014

09-11-229137
N701424 041693
P701424 041609

SITE INFORMATION**Report Type: Closure Report****General Site Information:**

HOBBS OCD

Site:	Prohibition Federal Unit #2 SWD				
Company:	COG Operating LLC				
Section, Township and Range	Unit K	Sec 11	T22S	R32E	AUG 28 2014
Lease Number:	API-30-025-31716				
County:	Lea County				
GPS:	32.40443° N			103.64730° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	East of Loving at the intersection of Hwy 31 and Hwy 128 (Jal Hwy), travel east on Hwy 128 for 17.8 miles, turn left onto Red Rd and travel for 7.32 miles, turn right (Mills Ranch Rd) and travel for 7.1 miles, turn left and travel 1.2 miles to site.				

Release Data:

Date Released:	9/25/2013
Type Release:	Oil and Produced Water
Source of Contamination:	Produced Water Tank
Fluid Released:	10 bbls of Oil, 30 bbls of Produced Water
Fluids Recovered:	7 bbls of Oil, 25 bbls of Produced Water

Official Communication:

Name:	Robert McNeill	Ike Tavaréz
Company:	COG Operating, LLC	Tetra Tech
Address:	600 W. Illinois Ave.	4000 N. Big Spring
P.O. Box		Suite 401
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 682-4559
Fax:	(432) 684-7137	
Email:	rmcneill@conchoresources.com	ike.tavaréz@tetrattech.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**

July 2, 2014

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC., Prohibition Federal Unit #2 SWD, Unit K, Section 11, Township 22 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Prohibition Federal Unit #2 SWD, Unit K, Section 11, Township 22 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.40443°, W 103.64730°. 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 September 24, 2013, and released approximately ten (10) barrels of oil and thirty (30) barrels of produced water from the water tank with seven (7) barrels oil and twenty five (25) barrels of produced water recovered. The spill was completely contained inside the firewalls of the tank battery and measured approximately 20' x 85'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 11. According to the NMOCDD groundwater map, the average depth to groundwater in this area is approximately 350' below surface. The USGS and the New Mexico State Engineers have wells listed in Section 14 at depths to groundwater of 382' and 350', respectively. The average depth to groundwater map is shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.com

**TETRA TECH**

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 October 29, 2013, Tetra Tech personnel inspected and sampled the spill area. Four (3) auger holes (AH-1 through AH-3) were installed using a stainless steel hand auger to assess the impacted 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 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 auger holes showed concentrations below the RRAL for TPH, BTEX, and Benzene. However, the auger holes (AH-1, AH-2 and AH-3) showed elevated chloride concentrations. The areas of auger hole (AH-1 and AH-3) were not vertically defined, with bottom hole samples of 3,290 mg/kg at 2-2.5' and 3,460 mg/kg at 1-1.5', respectively. Auger hole (AH-2) did show a significant decline with depth to 798 mg/kg at 2-2.5' below surface.

Remediation Activities

Once the assessment was performed, Tetra Tech submitted a work plan for removal of the impacted soils where accessible. However, COG decided to reconstruct the tank battery facility, which included lining the facility. All of the tanks, piping, and pumps were moved and this allowed Tetra Tech access the area to properly delineate and remediate the site.

On April 30, 2014, Tetra Tech began supervising the excavation of impacted materials as highlighted (green) on Table 1 and shown on Figure 4. Initially, Tetra Tech excavated approximately 2.0' of soil inside the facility firewalls. Once completed, three (3) boreholes were installed in the areas of AH-1 (BH-3), AH-2 (BH-2) and AH-3 (BH-1) to define the chloride extents.

**TETRA TECH**

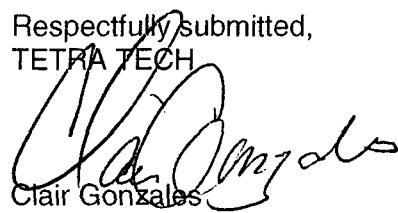
Referring to Table 1, boreholes (BH-1, BH-2, and BH-3) showed elevated chloride concentrations of 18,200 mg/kg at 39'-40', 2,660 mg/kg at 2'-3', and 11,600 mg/kg at 19'-20' below excavation bottom (2.0'), respectively. The chloride concentrations declined with depth to 148 mg/kg at 69'-70', 294 mg/kg at 49'-50', and 500 mg/kg at 39'-40' below excavation bottom.

After drilling the boreholes, an addition 2.0' of soil was removed (total depth 4.0') between the facility firewalls and capped with clay material to prevent vertical migration. The area was backfilled with clean soil and compacted for the construction of the new facility. Approximately 820 yards of excavated soil was transported offsite for proper disposal.

Conclusion

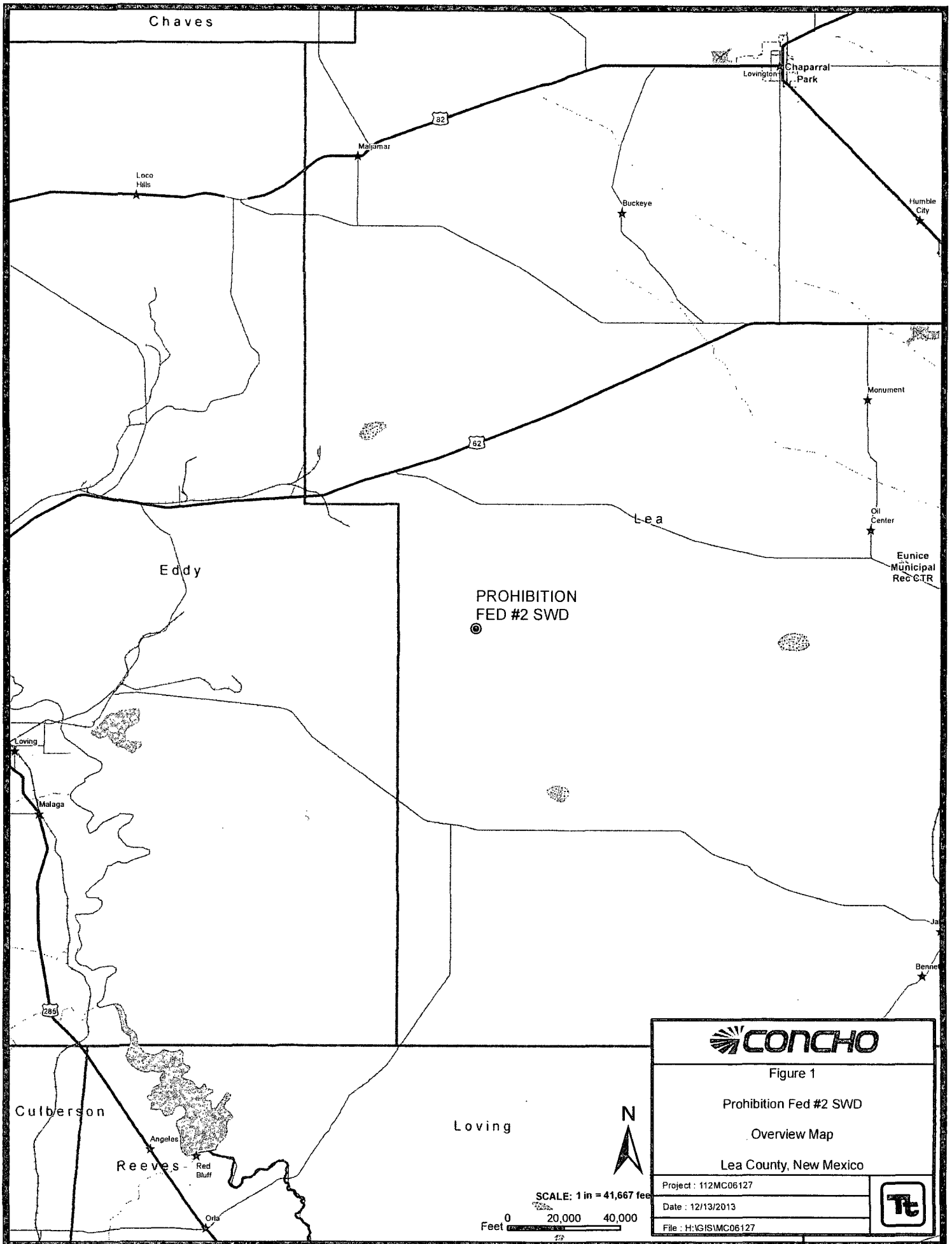
Based on the remedial actions taken, COG requests closure of the site. The Final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

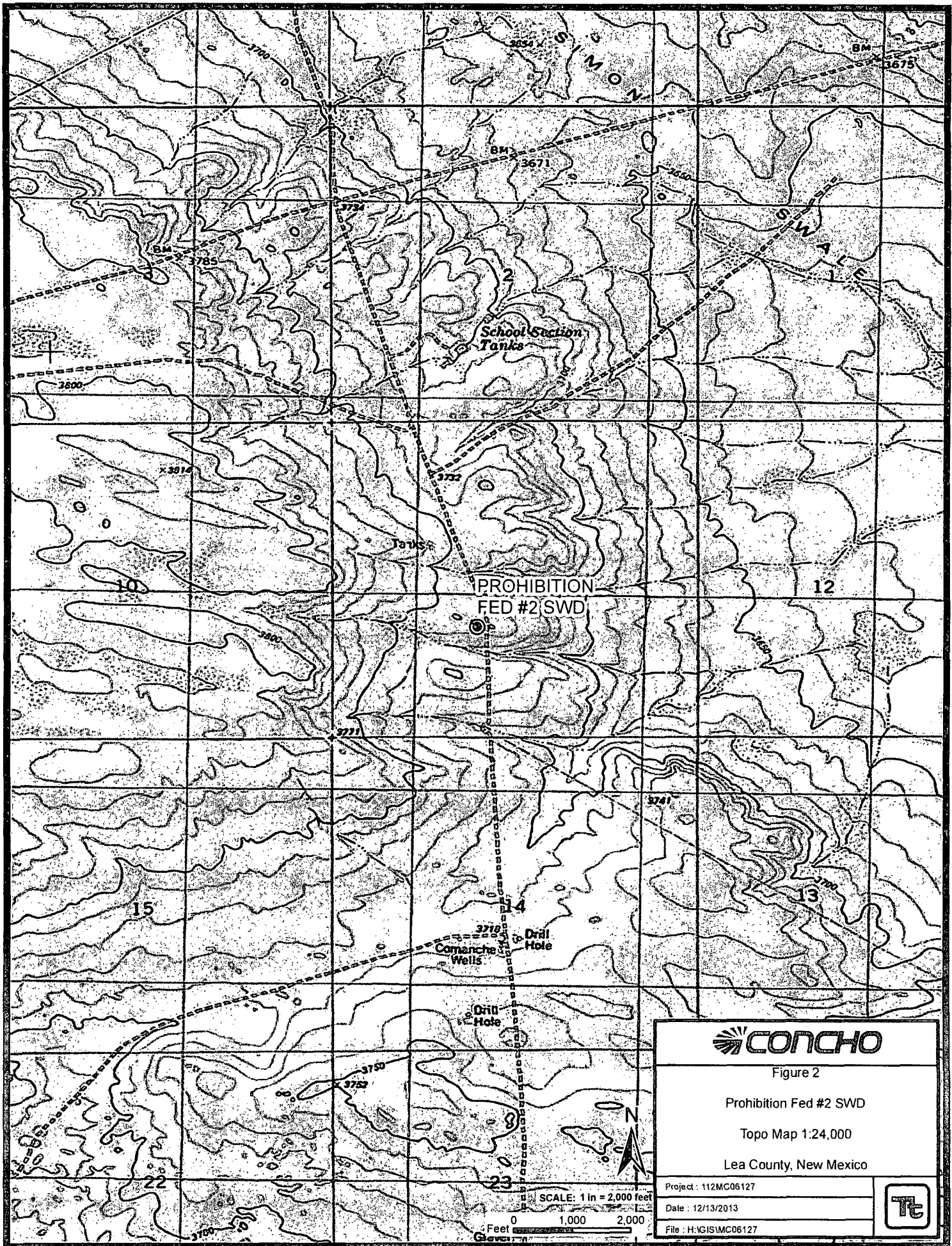


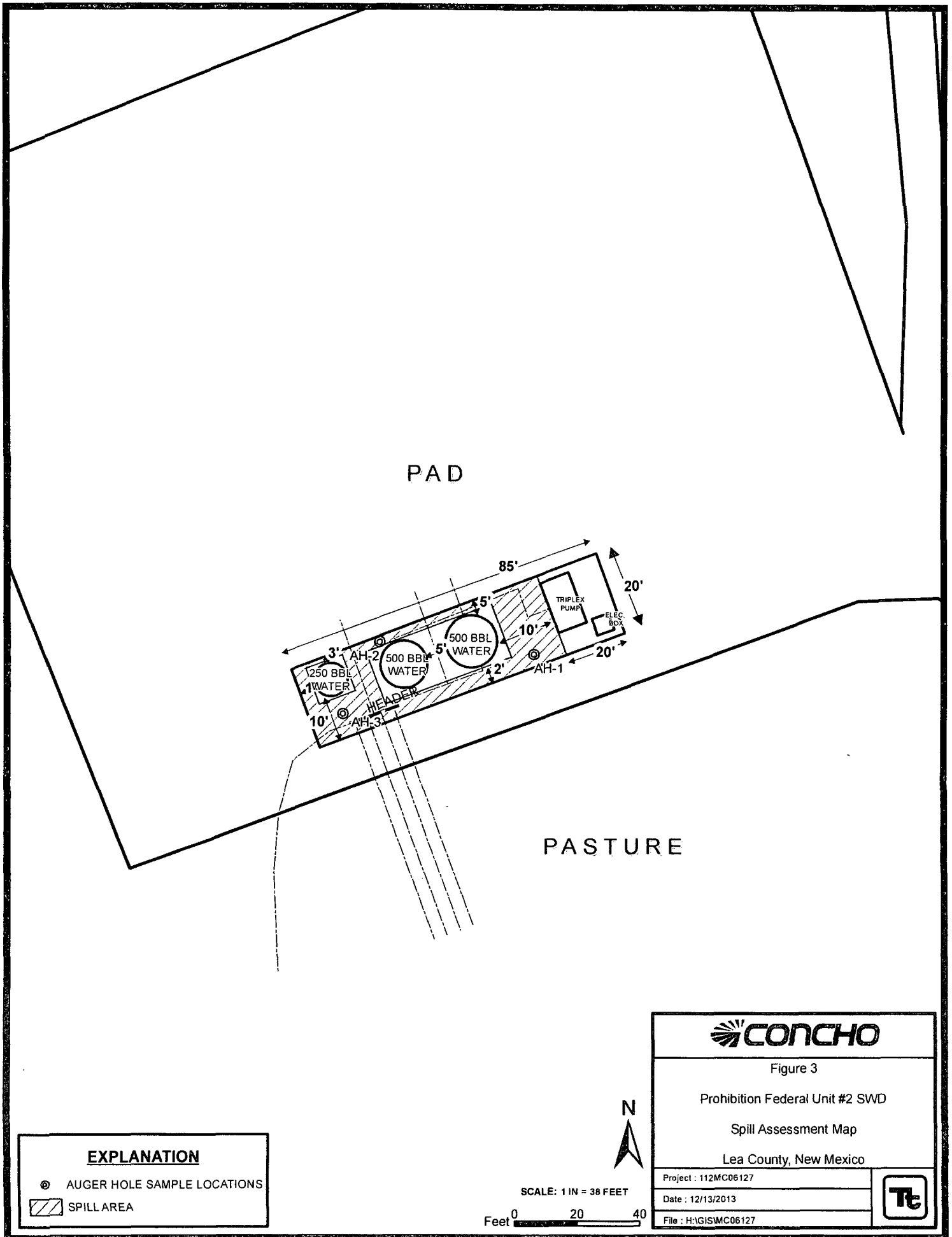
Clair Gonzales
Geologist

cc: Robert McNeill – COG
cc: Jeff Robertson - BLM

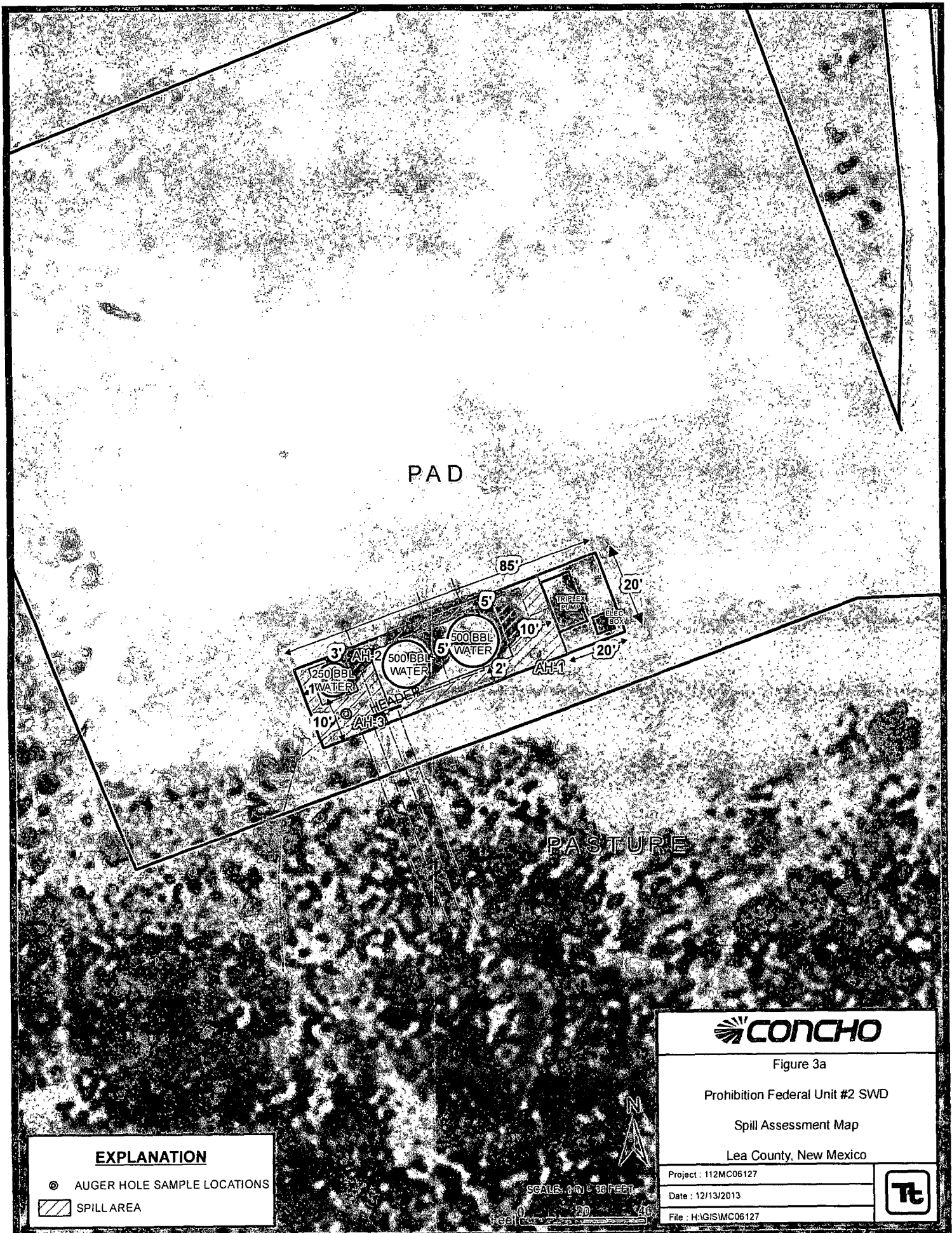


Drawn By: Isabel Marmolejo



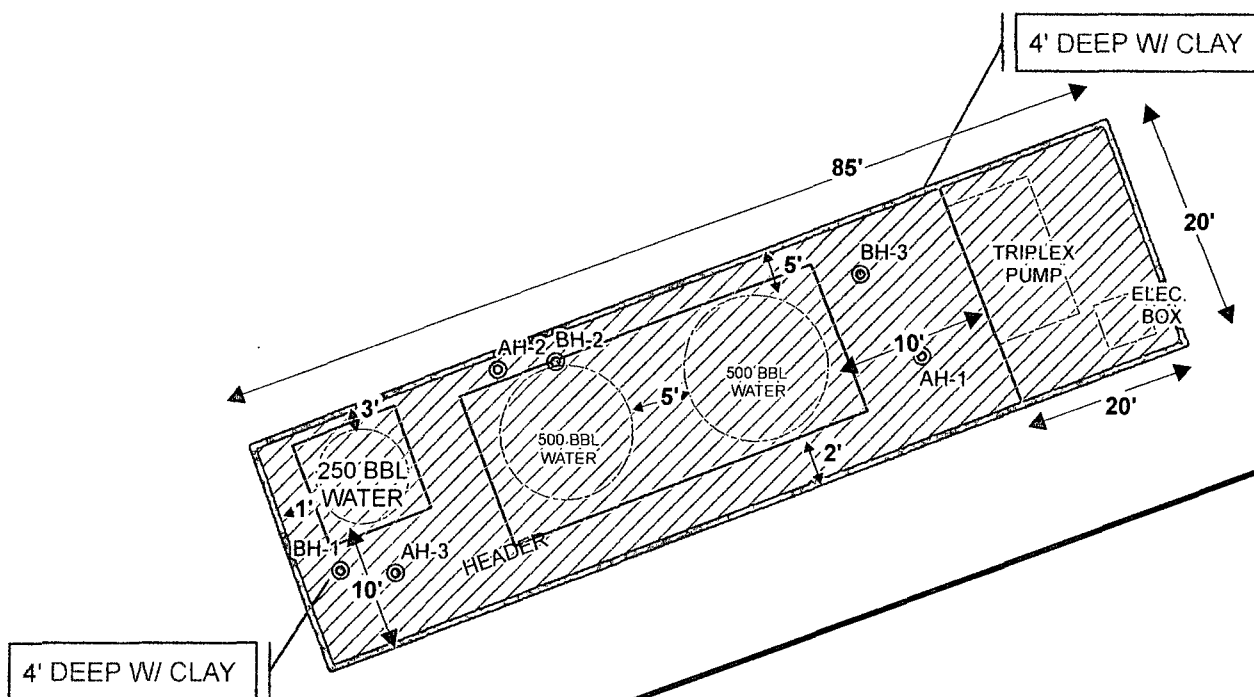


Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo

PAD



PASTURE

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ⊙ BORE HOLE SAMPLE LOCATIONS
- ▭ INSTALLED CLAY
- ▨ EXCAVATED AREAS
- ▭ ALL EQUIPMENT INSIDE FIREWALL WAS REMOVED FOR NEW FACILITY CONSTRUCTION



SCALE: 1 IN = 22 FEET

Feet 0 5 10



Figure 4

Prohibition Federal Unit #2 SWD

Excavation Areas & Depths Map

Lea County, New Mexico

Project : 112MC06127

Date : 06/13/2014

File : H:\GIS\MC06127



Table 1
COG Operating LLC.
Prohibition Federal #2 Salt Water Disposal
Lea County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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	10/29/2013	0-1	0		X	23.7	261	285	<0.100	<0.100	<0.100	<0.100	<0.100	11,800
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	3,290
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	3,290
BH-3	5/12/2014	0-1	2		X	-	-	-	-	-	-	-	-	5,290
	"	2-3	2		X	-	-	-	-	-	-	-	-	9,900
	"	4-5	2		X	-	-	-	-	-	-	-	-	3,040
	"	6-7	2	X		-	-	-	-	-	-	-	-	2,700
	"	9-10	2	X		-	-	-	-	-	-	-	-	3,090
	"	14-15	2	X		-	-	-	-	-	-	-	-	4,800
	"	19-20	2	X		-	-	-	-	-	-	-	-	11,600
	"	24-25	2	X		-	-	-	-	-	-	-	-	7,350
	"	29-30	2	X		-	-	-	-	-	-	-	-	2,150
	"	39-40	2	X		-	-	-	-	-	-	-	-	500
AH-2	10/29/2013	0-1	0		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,370
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	1,450
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	798
BH-2	5/12/2014	0-1	2		X	-	-	-	-	-	-	-	-	1,920
	"	2-3	2		X	-	-	-	-	-	-	-	-	2,660
	"	4-5	2		X	-	-	-	-	-	-	-	-	246
	"	6-7	2	X		-	-	-	-	-	-	-	-	345
	"	9-10	2	X		-	-	-	-	-	-	-	-	640
	"	14-15	2	X		-	-	-	-	-	-	-	-	1,380
	"	19-20	2	X		-	-	-	-	-	-	-	-	739
	"	24-25	2	X		-	-	-	-	-	-	-	-	588
	"	29-30	2	X		-	-	-	-	-	-	-	-	2,210
	"	39-40	2	X		-	-	-	-	-	-	-	-	1,370
	"	49-50	2	X		-	-	-	-	-	-	-	-	294

Table 1
COG Operating LLC.
Prohibition Federal #2 Salt Water Disposal
Lea County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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	10/29/2013	0-1	0	X		101	1,920	2,021	<0.100	<0.100	<0.100	0.722	0.722	1,840
	"	1-1.5	"	X			-							6,640
	"	2-2.5	"	X			-							3,460
BH-1	5/12/2014	0-1	2		X		-							4,140
	"	2-3	2		X		-							4,240
	"	4-5	2		X		-							3,700
	"	6-7	2	X		-	-	-	-	-	-	-	-	3,200
	"	9-10	2	X		-	-	-	-	-	-	-	-	13,200
	"	14-15	2	X		-	-	-	-	-	-	-	-	8,720
	"	19-20	2	X		-	-	-	-	-	-	-	-	4,240
	"	24-25	2	X		-	-	-	-	-	-	-	-	4,680
	"	29-30	2	X		-	-	-	-	-	-	-	-	6,900
	"	39-40	2	X		-	-	-	-	-	-	-	-	18,200
	"	49-50	2	X		-	-	-	-	-	-	-	-	7,000
	"	59-60	2	X		-	-	-	-	-	-	-	-	246
	"	69-70	2	X		-	-	-	-	-	-	-	-	148

(-) Not Analyzed

(BEB) Below Excavation Bottom

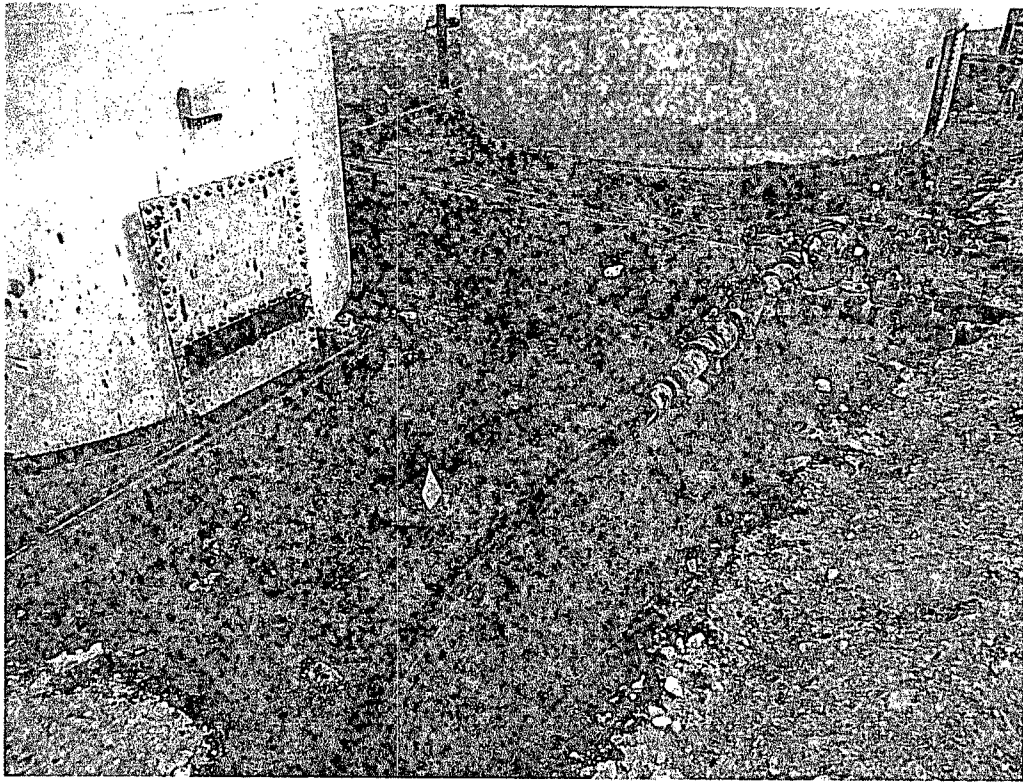
Excavation Depths

Clay Cap

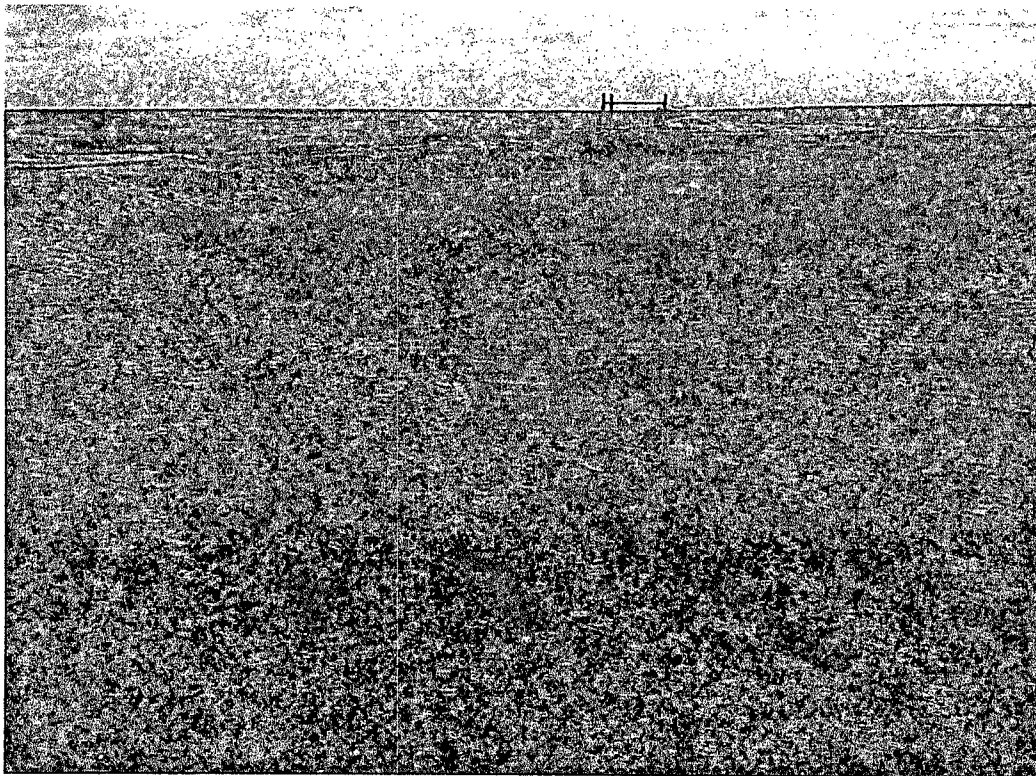
COG Operating LLC
Prohibition Federal Unit
#2 SWD
Eddy County, New Mexico



TETRA TECH



View Northeast – AH-2 and AH-3



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

COG Operating LLC
Prohibition Federal Unit
#2 SWD
Eddy County, New Mexico



TETRA TECH



View West – Backfilling of the areas

Water Well Data
Average Depth to Groundwater (ft)
COG - Prohibition Federal Unit #2 SWD
Lea County, New Mexico

21 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	35	36
		SITE			

22 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	35	36
		448			
		47			
		413			
		444			

23 South			31 East		
6	5	4	3	2	1
85	354	168			
7	8	9	10	11	12
140					
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South			32 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

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

23 South			32 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

21 South			33 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

22 South			33 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

23 South			33 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

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  Field water level
-  New Mexico Water and Infrastructure Data System

Report Date: November 11, 2013

Work Order: 13110110

Page Number: 2 of 2

Sample: 345573 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		3290	mg/Kg	4

Sample: 345574 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		1370	mg/Kg	4

Sample: 345575 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		1450	mg/Kg	4

Sample: 345576 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		798	mg/Kg	4

Sample: 345577 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		1840	mg/Kg	4

Sample: 345578 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		6640	mg/Kg	4

Sample: 345579 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		3460	mg/Kg	4

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296
This is only a summary. Please, refer to the complete report package for quality control data.

Report Date: May 21, 2014

Work Order: 14051609

Page Number: 1 of 6

Summary Report

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

Report Date: May 21, 2014

Work Order: 14051609



Project Location: Lea Co, NM
Project Name: COG/Prohibition Fed #2 SWD
Project Number: 112MC06127

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
363176	BH-1 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363177	BH-1 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363178	BH-1 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363179	BH-1 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363180	BH-1 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363181	BH-1 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363182	BH-1 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363183	BH-1 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363184	BH-1 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363185	BH-1 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363186	BH-1 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363187	BH-1 59-60' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363188	BH-1 69-70' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363189	BH-2 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363190	BH-2 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363191	BH-2 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363192	BH-2 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363193	BH-2 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363194	BH-2 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363195	BH-2 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363196	BH-2 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363197	BH-2 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363198	BH-2 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363199	BH-2 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363200	BH-3 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363201	BH-3 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363202	BH-3 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363203	BH-3 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363204	BH-3 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363205	BH-3 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

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Sample	Description	Matrix	Date Taken	Time Taken	Date Received
363206	BH-3 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363207	BH-3 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363208	BH-3 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363209	BH-3 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

Sample: 363176 - BH-1 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		4140	mg/Kg	4

Sample: 363177 - BH-1 2-3' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		4240	mg/Kg	4

Sample: 363178 - BH-1 4-5' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		3700	mg/Kg	4

Sample: 363179 - BH-1 6-7' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		3200	mg/Kg	4

Sample: 363180 - BH-1 9-10' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		13200	mg/Kg	4

Sample: 363181 - BH-1 14-15' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		8720	mg/Kg	4

Sample: 363182 - BH-1 19-20' (2' BEB)

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Param	Flag	Result	Units	RL
Chloride		4240	mg/Kg	4

Sample: 363183 - BH-1 24-25' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		4680	mg/Kg	4

Sample: 363184 - BH-1 29-30' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		6900	mg/Kg	4

Sample: 363185 - BH-1 39-40' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		18200	mg/Kg	4

Sample: 363186 - BH-1 49-50' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		7000	mg/Kg	4

Sample: 363187 - BH-1 59-60' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		246	mg/Kg	4

Sample: 363188 - BH-1 69-70' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		148	mg/Kg	4

Sample: 363189 - BH-2 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		1920	mg/Kg	4

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Sample: 363190 - BH-2 2-3' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		2660	mg/Kg	4

Sample: 363191 - BH-2 4-5' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		246	mg/Kg	4

Sample: 363192 - BH-2 6-7' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		345	mg/Kg	4

Sample: 363193 - BH-2 9-10' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		640	mg/Kg	4

Sample: 363194 - BH-2 14-15' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		1380	mg/Kg	4

Sample: 363195 - BH-2 19-20' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		739	mg/Kg	4

Sample: 363196 - BH-2 24-25' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		588	mg/Kg	4

Sample: 363197 - BH-2 29-30' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		2210	mg/Kg	4

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Sample: 363198 - BH-2 39-40' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		1370	mg/Kg	4

Sample: 363199 - BH-2 49-50' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		294	mg/Kg	4

Sample: 363200 - BH-3 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		5290	mg/Kg	4

Sample: 363201 - BH-3 2-3' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		9900	mg/Kg	4

Sample: 363202 - BH-3 4-5' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		3040	mg/Kg	4

Sample: 363203 - BH-3 6-7' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		2700	mg/Kg	4

Sample: 363204 - BH-3 9-10' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		3090	mg/Kg	4

Sample: 363205 - BH-3 14-15' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		4800	mg/Kg	4

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Sample: 363206 - BH-3 19-20' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		11600	mg/Kg	4

Sample: 363207 - BH-3 24-25' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		7350	mg/Kg	4

Sample: 363208 - BH-3 29-30' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		2150	mg/Kg	4

Sample: 363209 - BH-3 39-40' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		500	mg/Kg	4

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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: November 11, 2013

Work Order: 13110110



Project Location: Lea Co, NM
 Project Name: COG/Prohibition Fed #2 SWD
 Project Number: 112MC06127

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
345571	AH-1 0-1'	soil	2013-10-29	00:00	2013-11-01
345572	AH-1 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345573	AH-1 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345574	AH-2 0-1'	soil	2013-10-29	00:00	2013-11-01
345575	AH-2 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345576	AH-2 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345577	AH-3 0-1'	soil	2013-10-29	00:00	2013-11-01
345578	AH-3 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345579	AH-3 2-2.5'	soil	2013-10-29	00:00	2013-11-01

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.

This report consists of a total of 28 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive style with a large, stylized 'M' and 'A'.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

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Case Narrative

Samples for project COG/Prohibition Fed #2 SWD were received by TraceAnalysis, Inc. on 2013-11-01 and assigned to work order 13110110. Samples for work order 13110110 were received intact at a temperature of 2.1 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	90163	2013-11-01 at 13:59	106472	2013-11-03 at 12:51
BTEX	S 8021B	90181	2013-11-04 at 10:21	106510	2013-11-05 at 07:47
Chloride (Titration)	SM 4500-Cl B	90322	2013-11-07 at 10:47	106694	2013-11-11 at 14:30
TPH DRO - NEW	S 8015 D	90216	2013-11-04 at 11:00	106517	2013-11-05 at 09:31
TPH GRO	S 8015 D	90163	2013-11-01 at 13:59	106471	2013-11-03 at 12:50
TPH GRO	S 8015 D	90181	2013-11-04 at 10:21	106511	2013-11-05 at 07:48

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 13110110 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.

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112MC06127

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COG/Prohibition Fed #2 SWD

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Analytical Report

Sample: 345571 - AH-1 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 106472
Prep Batch: 90163

Analytical Method: S 8021B
Date Analyzed: 2013-11-03
Sample Preparation: 2013-11-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene	U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	U	1	<0.100	mg/Kg	5	0.0200
Xylene	U	1	<0.100	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{SR}	Q _{SR}	8.65	mg/Kg	5	2.00	432	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{SR}	Q _{SR}	8.78	mg/Kg	5	2.00	439	70 - 130

Sample: 345571 - AH-1 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 106694
Prep Batch: 90322

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-11-11
Sample Preparation: 2013-11-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11800	mg/Kg	10	4.00

Sample: 345571 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 106517
Prep Batch: 90216

Analytical Method: S 8015 D
Date Analyzed: 2013-11-05
Sample Preparation: 2013-11-04

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	261	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{st}	Q _{st}	158	mg/Kg	1	100	158	70 - 130

Sample: 345571 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 106471
Prep Batch: 90163

Analytical Method: S 8015 D
Date Analyzed: 2013-11-03
Sample Preparation: 2013-11-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q _{st}	1	23.7	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{st}	Q _{st}	9.85	mg/Kg	5	2.00	492	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{st}	Q _{st}	13.6	mg/Kg	5	2.00	680	70 - 130

Sample: 345572 - AH-1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 106694
Prep Batch: 90322

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-11-11
Sample Preparation: 2013-11-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3290	mg/Kg	10	4.00

Sample: 345573 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 106694
Prep Batch: 90322

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-11-11
Sample Preparation: 2013-11-07

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

continued ...

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sample 345573 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3290	mg/Kg	10	4.00

Sample: 345574 - AH-2 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 106510

Prep Batch: 90181

Analytical Method: S 8021B

Date Analyzed: 2013-11-05

Sample Preparation: 2013-11-04

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene	u	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	1	<0.0200	mg/Kg	1	0.0200
Xylene	u	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 345574 - AH-2 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 106694

Prep Batch: 90322

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-11-11

Sample Preparation: 2013-11-07

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1370	mg/Kg	10	4.00

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Sample: 345574 - AH-2 0-1'

Laboratory: Midland	Analytical Method: S 8015 D	Prep Method: N/A
Analysis: TPH DRO - NEW	Date Analyzed: 2013-11-05	Analyzed By: KC
QC Batch: 106517	Sample Preparation: 2013-11-04	Prepared By: KC
Prep Batch: 90216		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	70 - 130

Sample: 345574 - AH-2 0-1'

Laboratory: Midland	Analytical Method: S 8015 D	Prep Method: S 5035
Analysis: TPH GRO	Date Analyzed: 2013-11-05	Analyzed By: AK
QC Batch: 106511	Sample Preparation: 2013-11-04	Prepared By: AK
Prep Batch: 90181		

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.16	mg/Kg	1	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	70 - 130

Sample: 345575 - AH-2 1-1.5'

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2013-11-11	Analyzed By: AR
QC Batch: 106694	Sample Preparation: 2013-11-07	Prepared By: AR
Prep Batch: 90322		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1450	mg/Kg	10	4.00

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Sample: 345576 - AH-2 2-2.5'

Laboratory: Midland			
Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A	
QC Batch: 106694	Date Analyzed: 2013-11-11	Analyzed By: AR	
Prep Batch: 90322	Sample Preparation: 2013-11-07	Prepared By: AR	

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			798	mg/Kg	5	4.00

Sample: 345577 - AH-3 0-1'

Laboratory: Midland			
Analysis: BTEX	Analytical Method: S 8021B	Prep Method: S 5035	
QC Batch: 106472	Date Analyzed: 2013-11-03	Analyzed By: AK	
Prep Batch: 90163	Sample Preparation: 2013-11-01	Prepared By: AK	

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.100	mg/Kg	5	0.0200
Toluene	u	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	u	1	<0.100	mg/Kg	5	0.0200
Xylene		1	0.722	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.51	mg/Kg	5	2.00	76	70 - 130
4-Bromofluorobenzene (4-BFB)			2.52	mg/Kg	5	2.00	126	70 - 130

Sample: 345577 - AH-3 0-1'

Laboratory: Midland			
Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A	
QC Batch: 106694	Date Analyzed: 2013-11-11	Analyzed By: AR	
Prep Batch: 90322	Sample Preparation: 2013-11-07	Prepared By: AR	

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1840	mg/Kg	10	4.00

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Sample: 345577 - AH-3 0-1'

Laboratory: Midland	Analytical Method: S 8015 D	Prep Method: N/A
Analysis: TPH DRO - NEW	Date Analyzed: 2013-11-05	Analyzed By: KC
QC Batch: 106517	Sample Preparation: 2013-11-04	Prepared By: KC
Prep Batch: 90216		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1920	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{nt}	Q _{nt}	353	mg/Kg	5	100	353	70 - 130

Sample: 345577 - AH-3 0-1'

Laboratory: Midland	Analytical Method: S 8015 D	Prep Method: S 5035
Analysis: TPH GRO	Date Analyzed: 2013-11-03	Analyzed By: AK
QC Batch: 106471	Sample Preparation: 2013-11-01	Prepared By: AK
Prep Batch: 90163		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q _{nt}	1	101	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.69	mg/Kg	5	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{nt}	Q _{nt}	8.09	mg/Kg	5	2.00	404	70 - 130

Sample: 345578 - AH-3 1-1.5'

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2013-11-11	Analyzed By: AR
QC Batch: 106694	Sample Preparation: 2013-11-07	Prepared By: AR
Prep Batch: 90322		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6640	mg/Kg	10	4.00

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Sample: 345579 - AH-3 2-2.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 106694

Prep Batch: 90322

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-11-11

Sample Preparation: 2013-11-07

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3460	mg/Kg	10	4.00

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Method Blanks

Method Blank (1) QC Batch: 106471

QC Batch: 106471
Prep Batch: 90163

Date Analyzed: 2013-11-03
QC Preparation: 2013-11-01

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

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

Method Blank (1) QC Batch: 106472

QC Batch: 106472
Prep Batch: 90163

Date Analyzed: 2013-11-03
QC Preparation: 2013-11-01

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00810	mg/Kg	0.02
Toluene		1	<0.00750	mg/Kg	0.02
Ethylbenzene		1	<0.00730	mg/Kg	0.02
Xylene		1	<0.00700	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.67	mg/Kg	1	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	1	2.00	82	70 - 130

Method Blank (1) QC Batch: 106510

QC Batch: 106510
Prep Batch: 90181

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: AK
Prepared By: AK

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Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00810	mg/Kg	0.02
Toluene		1	<0.00750	mg/Kg	0.02
Ethylbenzene		1	<0.00730	mg/Kg	0.02
Xylene		1	<0.00700	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.14	mg/Kg	1	2.00	107	70 - 130
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	70 - 130

Method Blank (1) QC Batch: 106511

QC Batch: 106511
Prep Batch: 90181

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.40	mg/Kg	1	2.00	120	70 - 130
4-Bromofluorobenzene (4-BFB)			2.56	mg/Kg	1	2.00	128	70 - 130

Method Blank (1) QC Batch: 106517

QC Batch: 106517
Prep Batch: 90216

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	11.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	88.3 - 126.1

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Method Blank (1) QC Batch: 106694

QC Batch: 106694
Prep Batch: 90322

Date Analyzed: 2013-11-11
QC Preparation: 2013-11-07

Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 106471
Prep Batch: 90163

Date Analyzed: 2013-11-03
QC Preparation: 2013-11-01

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.7	mg/Kg	1	20.0	<2.32	78	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		1	15.4	mg/Kg	1	20.0	<2.32	77	70 - 130	2	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 (TF* ^T)	2.15	2.22	mg/Kg	1	2.00	108	111	70 - 130
4-Bromofluorobenzene (4-BFB)	2.36	2.42	mg/Kg	1	2.00	118	121	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106472
Prep Batch: 90163

Date Analyzed: 2013-11-03
QC Preparation: 2013-11-01

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.00	mg/Kg	1	2.00	<0.00810	100	70 - 130
Toluene		1	2.02	mg/Kg	1	2.00	<0.00750	101	70 - 130
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00730	104	70 - 130
Xylene		1	6.30	mg/Kg	1	6.00	<0.00700	105	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
Benzene		1	1.89	mg/Kg	1	2.00	<0.00810	94	70 - 130	6	20
Toluene		1	1.92	mg/Kg	1	2.00	<0.00750	96	70 - 130	5	20
Ethylbenzene		1	2.00	mg/Kg	1	2.00	<0.00730	100	70 - 130	4	20

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Xylene		1	6.02	mg/Kg	1	6.00	<0.00700	100	70 - 130	4	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.02	1.92	mg/Kg	1	2.00	101	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.12	1.91	mg/Kg	1	2.00	106	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106510
Prep Batch: 90181

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.93	mg/Kg	1	2.00	<0.00810	96	70 - 130
Toluene		1	1.96	mg/Kg	1	2.00	<0.00750	98	70 - 130
Ethylbenzene		1	2.02	mg/Kg	1	2.00	<0.00730	101	70 - 130
Xylene		1	6.19	mg/Kg	1	6.00	<0.00700	103	70 - 130

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.84	mg/Kg	1	2.00	<0.00810	92	70 - 130	5	20
Toluene		1	1.86	mg/Kg	1	2.00	<0.00750	93	70 - 130	5	20
Ethylbenzene		1	1.93	mg/Kg	1	2.00	<0.00730	96	70 - 130	5	20
Xylene		1	5.88	mg/Kg	1	6.00	<0.00700	98	70 - 130	5	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.01	1.98	mg/Kg	1	2.00	100	99	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.00	mg/Kg	1	2.00	107	100	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106511
Prep Batch: 90181

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: AK
Prepared By: AK

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.8	mg/Kg	1	20.0	<2.32	84	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		1	16.3	mg/Kg	1	20.0	<2.32	82	70 - 130	4	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)	2.37	2.21	mg/Kg	1	2.00	118	110	70 - 130
4-Bromofluorobenzene (4-BFB)	2.55	2.53	mg/Kg	1	2.00	128	126	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106517
Prep Batch: 90216

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	269	mg/Kg	1	250	11.6	103	79.4 - 120.1

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		1	272	mg/Kg	1	250	11.6	104	79.4 - 120.1	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	124	126	mg/Kg	1	100	124	126	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 106694
Prep Batch: 90322

Date Analyzed: 2013-11-11
QC Preparation: 2013-11-07

Analyzed By: AR
Prepared By: AR

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2260	mg/Kg	1	2500	<3.85	90	89.7 - 115.9

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2360	mg/Kg	1	2500	<3.85	94	89.7 - 115.9	4	20

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

Matrix Spike (MS-1) Spiked Sample: 344675

QC Batch: 106471
Prep Batch: 90163

Date Analyzed: 2013-11-03
QC Preparation: 2013-11-01

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _{st}	Q _{st}	1	3160	mg/Kg	40	20.0	3550	-1950 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	Q _{st}	Q _{st}	1	3330	mg/Kg	40	20.0	3550	-1100 70 - 130	5	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)	Q _{st}	Q _{st}	3.26	3.40	mg/Kg	40	2	163 170 70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{st}	Q _{st}	95.9	100	mg/Kg	40	2	4795 5000 70 - 130

Matrix Spike (MS-1) Spiked Sample: 345433

QC Batch: 106472
Prep Batch: 90163

Date Analyzed: 2013-11-03
QC Preparation: 2013-11-01

Analyzed By: AK
Prepared By: AK

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matrix spikes continued . . .

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.63	mg/Kg	2	2.00	<0.0162	82	70 - 130
Toluene		1	1.77	mg/Kg	2	2.00	0.0264	87	70 - 130
Ethylbenzene		1	1.83	mg/Kg	2	2.00	0.0314	90	70 - 130
Xylene		1	5.66	mg/Kg	2	6.00	0.313	89	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
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.70	mg/Kg	2	2.00	<0.0162	85	70 - 130	4	20
Toluene		1	1.82	mg/Kg	2	2.00	0.0264	90	70 - 130	3	20
Ethylbenzene		1	1.86	mg/Kg	2	2.00	0.0314	91	70 - 130	2	20
Xylene		1	6.16	mg/Kg	2	6.00	0.313	97	70 - 130	8	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 (TF ³ T)	1.62	1.63	mg/Kg	2	2	81	82	70 - 130
4-Bromofluorobenzene (4-BFB)	2.03	2.10	mg/Kg	2	2	102	105	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345574

QC Batch: 106510
Prep Batch: 90181

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00810	90	70 - 130
Toluene		1	1.83	mg/Kg	1	2.00	<0.00750	92	70 - 130
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00730	94	70 - 130
Xylene		1	5.72	mg/Kg	1	6.00	<0.00700	95	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
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.55	mg/Kg	1	2.00	<0.00810	78	70 - 130	16	20
Toluene		1	1.54	mg/Kg	1	2.00	<0.00750	77	70 - 130	17	20
Ethylbenzene		1	1.60	mg/Kg	1	2.00	<0.00730	80	70 - 130	16	20
Xylene		1	4.84	mg/Kg	1	6.00	<0.00700	81	70 - 130	17	20

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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)	1.89	1.57	mg/Kg	1	2	94	78	70 - 130
4-Bromofluorobenzene (4-BFB)	1.93	1.65	mg/Kg	1	2	96	82	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345574

QC Batch: 106511
Prep Batch: 90181

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.3	mg/Kg	1	20.0	<2.32	76	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		1	15.7	mg/Kg	1	20.0	<2.32	78	70 - 130	3	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)	2.00	2.04	mg/Kg	1	2	100	102	70 - 130
4-Bromofluorobenzene (4-BFB)	2.58	2.24	mg/Kg	1	2	129	112	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345574

QC Batch: 106517
Prep Batch: 90216

Date Analyzed: 2013-11-05
QC Preparation: 2013-11-04

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	329	mg/Kg	1	250	17.8	124	64.8 - 149.9

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		1	305	mg/Kg	1	250	17.8	115	64.8 - 149.9	8	20

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

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	126	122	mg/Kg	1	100	126	122	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 345581

QC Batch: 106694
Prep Batch: 90322

Date Analyzed: 2013-11-11
QC Preparation: 2013-11-07

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			7490	mg/Kg	10	2500	5150	94	78.9 - 121

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
Chloride			7820	mg/Kg	10	2500	5150	107	78.9 - 121	4	20

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

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Calibration Standards

Standard (CCV-1)

QC Batch: 106471

Date Analyzed: 2013-11-03

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.824	82	80 - 120	2013-11-03

Standard (CCV-2)

QC Batch: 106471

Date Analyzed: 2013-11-03

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.889	89	80 - 120	2013-11-03

Standard (CCV-1)

QC Batch: 106472

Date Analyzed: 2013-11-03

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-03
Toluene		1	mg/kg	0.100	0.105	105	80 - 120	2013-11-03
Ethylbenzene		1	mg/kg	0.100	0.103	103	80 - 120	2013-11-03
Xylene		1	mg/kg	0.300	0.309	103	80 - 120	2013-11-03

Standard (CCV-2)

QC Batch: 106472

Date Analyzed: 2013-11-03

Analyzed By: AK

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.120	120	80 - 120	2013-11-03
Toluene		1	mg/kg	0.100	0.120	120	80 - 120	2013-11-03
Ethylbenzene		1	mg/kg	0.100	0.116	116	80 - 120	2013-11-03
Xylene		1	mg/kg	0.300	0.349	116	80 - 120	2013-11-03

Standard (CCV-1)

QC Batch: 106510

Date Analyzed: 2013-11-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.111	111	80 - 120	2013-11-05
Toluene		1	mg/kg	0.100	0.109	109	80 - 120	2013-11-05
Ethylbenzene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-05
Xylene		1	mg/kg	0.300	0.318	106	80 - 120	2013-11-05

Standard (CCV-2)

QC Batch: 106510

Date Analyzed: 2013-11-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0976	98	80 - 120	2013-11-05
Toluene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-05
Ethylbenzene		1	mg/kg	0.100	0.0954	95	80 - 120	2013-11-05
Xylene		1	mg/kg	0.300	0.298	99	80 - 120	2013-11-05

Standard (CCV-1)

QC Batch: 106511

Date Analyzed: 2013-11-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.937	94	80 - 120	2013-11-05

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Standard (CCV-2)

QC Batch: 106511

Date Analyzed: 2013-11-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.887	89	80 - 120	2013-11-05

Standard (CCV-1)

QC Batch: 106517

Date Analyzed: 2013-11-05

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	248	99	80 - 120	2013-11-05

Standard (CCV-2)

QC Batch: 106517

Date Analyzed: 2013-11-05

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	263	105	80 - 120	2013-11-05

Standard (CCV-1)

QC Batch: 106694

Date Analyzed: 2013-11-11

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2013-11-11

Standard (CCV-2)

QC Batch: 106694

Date Analyzed: 2013-11-11

Analyzed By: AR

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-11-11

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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	NELAP	T104704392-12-4	Midland

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 then 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

Report Date: November 11, 2013
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The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

13110110

Analysis Request of Chain of Custody Record										PAGE: / OF: /																					
TETRA TECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946										ANALYSIS REQUEST (Circle or Specify Method No.)																					
										CLIENT NAME: COG SITE MANAGER: Ike Tavaréz PROJECT NO.: 112MCO61287 PROJECT NAME: COG - Prohibition Fed #2 SWD Lea Co. NM																					
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	PRESERVATIVE METHOD				ANALYSIS METHODS																			
								FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC-MS Vol. 8240/8260/624	GC-MS Semi. Vol. 8270/625	PCBs 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS		
345511	10/29		S	X		AH 1 (0-1)	1				X		X	X												X					
572						(1-1.5)																									
573						(2-2.5)																									
574						AH 2 (0-1)							X	X																	
575						(1-1.5)																									
576						(2-2.5)																									
577						AH 3 (0-1)							X	X																	
578						(1-1.5)																									
579						(2-2.5)																									

RELINQUISHED BY: (Signature) 	Date: 11/1/13 Time: 9:49	RECEIVED BY: (Signature) 	Date: 11/1/13 Time: 9:49	SAMPLED BY: (Print & Initial) Adrian Garcia / Marcus Kujawa	Date: 10/29/13
RELINQUISHED BY: (Signature) 	Date: 11/1/13 Time: 9:49	RECEIVED BY: (Signature) 	Date: 11/1/13 Time: 9:49	SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #: HAND DELIVERED UPS OTHER:	RESULTS BY: Ike Tavaréz
RECEIVING LABORATORY: Trace ADDRESS: Midland STATE: TX ZIP: CITY: CONTACT: PHONE: DATE: TIME:				TETRA TECH CONTACT PERSON: Ike Tavaréz	
SAMPLE CONDITION WHEN RECEIVED: 2.1°		REMARKS: Run deeper samples if Benzene exceeds 10 mg/kg or Total BTX exceeds 50 mg/kg Run deeper samples if TPH exceeds 5,000 mg/kg			

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Mediak - all



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

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

Report Date: May 21, 2014

Work Order: 14051609



Project Location: Lea Co, NM
 Project Name: COG/Prohibition Fed #2 SWD
 Project Number: 112MC06127

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
363176	BH-1 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363177	BH-1 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363178	BH-1 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363179	BH-1 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363180	BH-1 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363181	BH-1 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363182	BH-1 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363183	BH-1 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363184	BH-1 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363185	BH-1 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363186	BH-1 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363187	BH-1 59-60' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363188	BH-1 69-70' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363189	BH-2 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363190	BH-2 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363191	BH-2 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363192	BH-2 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363193	BH-2 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
363194	BH-2 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363195	BH-2 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363196	BH-2 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363197	BH-2 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363198	BH-2 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363199	BH-2 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363200	BH-3 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363201	BH-3 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363202	BH-3 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363203	BH-3 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363204	BH-3 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363205	BH-3 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363206	BH-3 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363207	BH-3 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363208	BH-3 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363209	BH-3 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

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.

This report consists of a total of 24 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

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Case Narrative

Samples for project COG/Prohibition Fed #2 SWD were received by TraceAnalysis, Inc. on 2014-05-16 and assigned to work order 14051609. Samples for work order 14051609 were received intact at a temperature of 2.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	94754	2014-05-16 at 16:05	112067	2014-05-19 at 14:04
Chloride (Titration)	SM 4500-Cl B	94754	2014-05-16 at 16:05	112068	2014-05-19 at 14:06
Chloride (Titration)	SM 4500-Cl B	94755	2014-05-19 at 11:30	112069	2014-05-19 at 14:13
Chloride (Titration)	SM 4500-Cl B	94755	2014-05-19 at 11:30	112070	2014-05-19 at 14:19

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 14051609 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.

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Analytical Report

Sample: 363176 - BH-1 0-1' (2' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-05-19	Analyzed By:	AK
QC Batch:	112067	Sample Preparation:	2014-05-16	Prepared By:	AK
Prep Batch:	94754				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4140	mg/Kg	5	4.00

Sample: 363177 - BH-1 2-3' (2' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-05-19	Analyzed By:	AK
QC Batch:	112067	Sample Preparation:	2014-05-16	Prepared By:	AK
Prep Batch:	94754				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4240	mg/Kg	5	4.00

Sample: 363178 - BH-1 4-5' (2' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-05-19	Analyzed By:	AK
QC Batch:	112067	Sample Preparation:	2014-05-16	Prepared By:	AK
Prep Batch:	94754				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3700	mg/Kg	5	4.00

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Sample: 363179 - BH-1 6-7' (2' BEB)

Laboratory: Midland			
Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A	
QC Batch: 112067	Date Analyzed: 2014-05-19	Analyzed By: AK	
Prep Batch: 94754	Sample Preparation: 2014-05-16	Prepared By: AK	

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3200	mg/Kg	5	4.00

Sample: 363180 - BH-1 9-10' (2' BEB)

Laboratory: Midland			
Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A	
QC Batch: 112067	Date Analyzed: 2014-05-19	Analyzed By: AK	
Prep Batch: 94754	Sample Preparation: 2014-05-16	Prepared By: AK	

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			13200	mg/Kg	5	4.00

Sample: 363181 - BH-1 14-15' (2' BEB)

Laboratory: Midland			
Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A	
QC Batch: 112067	Date Analyzed: 2014-05-19	Analyzed By: AK	
Prep Batch: 94754	Sample Preparation: 2014-05-16	Prepared By: AK	

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8720	mg/Kg	5	4.00

Sample: 363182 - BH-1 19-20' (2' BEB)

Laboratory: Midland			
Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A	
QC Batch: 112067	Date Analyzed: 2014-05-19	Analyzed By: AK	
Prep Batch: 94754	Sample Preparation: 2014-05-16	Prepared By: AK	

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4240	mg/Kg	5	4.00

Sample: 363183 - BH-1 24-25' (2' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 112067 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94754 Sample Preparation: 2014-05-16 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4680	mg/Kg	5	4.00

Sample: 363184 - BH-1 29-30' (2' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 112067 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94754 Sample Preparation: 2014-05-16 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6900	mg/Kg	5	4.00

Sample: 363185 - BH-1 39-40' (2' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 112067 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94754 Sample Preparation: 2014-05-16 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			18200	mg/Kg	5	4.00

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Sample: 363186 - BH-1 49-50' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7000	mg/Kg	5	4.00

Sample: 363187 - BH-1 59-60' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			246	mg/Kg	5	4.00

Sample: 363188 - BH-1 69-70' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			148	mg/Kg	5	4.00

Sample: 363189 - BH-2 0-1' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By: AK

Report Date: May 21, 2014
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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1920	mg/Kg	5	4.00

Sample: 363190 - BH-2 2-3' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112068	Sample Preparation: 2014-05-16	Prepared By: AK
Prep Batch: 94754		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2660	mg/Kg	5	4.00

Sample: 363191 - BH-2 4-5' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112068	Sample Preparation: 2014-05-16	Prepared By: AK
Prep Batch: 94754		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			246	mg/Kg	5	4.00

Sample: 363192 - BH-2 6-7' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112068	Sample Preparation: 2014-05-16	Prepared By: AK
Prep Batch: 94754		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			345	mg/Kg	5	4.00

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Sample: 363193 - BH-2 9-10' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112068	Date Analyzed:	2014-05-19
Prep Batch:	94754	Sample Preparation:	2014-05-16
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			640	mg/Kg	5	4.00

Sample: 363194 - BH-2 14-15' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112068	Date Analyzed:	2014-05-19
Prep Batch:	94754	Sample Preparation:	2014-05-16
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1380	mg/Kg	5	4.00

Sample: 363195 - BH-2 19-20' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112068	Date Analyzed:	2014-05-19
Prep Batch:	94754	Sample Preparation:	2014-05-16
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			739	mg/Kg	5	4.00

Sample: 363196 - BH-2 24-25' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112069	Date Analyzed:	2014-05-19
Prep Batch:	94755	Sample Preparation:	2014-05-19
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			588	mg/Kg	5	4.00

Sample: 363197 - BH-2 29-30' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112069	Sample Preparation: 2014-05-19	Prepared By: AK
Prep Batch: 94755		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2210	mg/Kg	5	4.00

Sample: 363198 - BH-2 39-40' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112069	Sample Preparation: 2014-05-19	Prepared By: AK
Prep Batch: 94755		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1370	mg/Kg	5	4.00

Sample: 363199 - BH-2 49-50' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112069	Sample Preparation: 2014-05-19	Prepared By: AK
Prep Batch: 94755		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			294	mg/Kg	5	4.00

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Sample: 363200 - BH-3 0-1' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112069	Date Analyzed:	2014-05-19
Prep Batch:	94755	Sample Preparation:	2014-05-19
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5290	mg/Kg	5	4.00

Sample: 363201 - BH-3 2-3' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112069	Date Analyzed:	2014-05-19
Prep Batch:	94755	Sample Preparation:	2014-05-19
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			9900	mg/Kg	5	4.00

Sample: 363202 - BH-3 4-5' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112069	Date Analyzed:	2014-05-19
Prep Batch:	94755	Sample Preparation:	2014-05-19
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3040	mg/Kg	5	4.00

Sample: 363203 - BH-3 6-7' (2' BEB)

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	112069	Date Analyzed:	2014-05-19
Prep Batch:	94755	Sample Preparation:	2014-05-19
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2700	mg/Kg	5	4.00

Sample: 363204 - BH-3 9-10' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112069	Sample Preparation: 2014-05-19	Prepared By: AK
Prep Batch: 94755		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3090	mg/Kg	5	4.00

Sample: 363205 - BH-3 14-15' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112069	Sample Preparation: 2014-05-19	Prepared By: AK
Prep Batch: 94755		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4800	mg/Kg	5	4.00

Sample: 363206 - BH-3 19-20' (2' BEB)

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2014-05-19	Analyzed By: AK
QC Batch: 112070	Sample Preparation: 2014-05-19	Prepared By: AK
Prep Batch: 94755		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11600	mg/Kg	5	4.00

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Sample: 363207 - BH-3 24-25' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7350	mg/Kg	5	4.00

Sample: 363208 - BH-3 29-30' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2150	mg/Kg	5	4.00

Sample: 363209 - BH-3 39-40' (2' BEB)

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By: AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			500	mg/Kg	5	4.00

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Method Blanks

Method Blank (1) QC Batch: 112067

QC Batch: 112067 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94754 QC Preparation: 2014-05-16 Prepared By: SS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 112068

QC Batch: 112068 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94754 QC Preparation: 2014-05-16 Prepared By: SS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 112069

QC Batch: 112069 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94755 QC Preparation: 2014-05-19 Prepared By: SS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 112070

QC Batch: 112070 Date Analyzed: 2014-05-19 Analyzed By: AK
Prep Batch: 94755 QC Preparation: 2014-05-19 Prepared By: SS

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Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 112067
Prep Batch: 94754

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-16

Analyzed By: AK
Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2610	mg/Kg	5	2500	<19.2	104	85 - 115

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			2710	mg/Kg	5	2500	<19.2	108	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 112068
Prep Batch: 94754

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-16

Analyzed By: AK
Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2560	mg/Kg	5	2500	<19.2	102	85 - 115

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			2510	mg/Kg	5	2500	<19.2	100	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 112069
Prep Batch: 94755

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-19

Analyzed By: AK
Prepared By: SS

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2650	mg/Kg	5	2500	<19.2	106	85 - 115

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			2600	mg/Kg	5	2500	<19.2	104	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 112070
Prep Batch: 94755

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-19

Analyzed By: AK
Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	5	2500	<19.2	104	85 - 115

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			2500	mg/Kg	5	2500	<19.2	100	85 - 115	4	20

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

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 363185

QC Batch: 112067
Prep Batch: 94754

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-16

Analyzed By: AK
Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			20600	mg/Kg	5	2500	18200	96	78.9 - 121

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
Chloride			20900	mg/Kg	5	2500	18200	108	78.9 - 121	1	20

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

Matrix Spike (MS-1) Spiked Sample: 363195

QC Batch: 112068
Prep Batch: 94754

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-16

Analyzed By: AK
Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3300	mg/Kg	5	2500	739	102	78.9 - 121

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
Chloride			3100	mg/Kg	5	2500	739	94	78.9 - 121	6	20

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

Matrix Spike (MS-1) Spiked Sample: 363205

QC Batch: 112069
Prep Batch: 94755

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-19

Analyzed By: AK
Prepared By: SS

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			7500	mg/Kg	5	2500	4800	108	78.9 - 121

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
Chloride			7260	mg/Kg	5	2500	4800	98	78.9 - 121	3	20

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

Matrix Spike (MS-1) Spiked Sample: 363215

QC Batch: 112070
Prep Batch: 94755

Date Analyzed: 2014-05-19
QC Preparation: 2014-05-19

Analyzed By: AK
Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			4550	mg/Kg	5	2500	2200	94	78.9 - 121

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
Chloride			4750	mg/Kg	5	2500	2200	102	78.9 - 121	4	20

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

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Calibration Standards

Standard (CCV-1)

QC Batch: 112067

Date Analyzed: 2014-05-19

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-05-19

Standard (CCV-1)

QC Batch: 112068

Date Analyzed: 2014-05-19

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-05-19

Standard (CCV-1)

QC Batch: 112069

Date Analyzed: 2014-05-19

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-05-19

Standard (CCV-1)

QC Batch: 112070

Date Analyzed: 2014-05-19

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-05-19

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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

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

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

14051609

Analysis Request of Chain of Custody Record

**TETRA TECH**

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

PAGE: 1

OF: 4

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

SITE MANAGER:

PRESERVATIVE
METHOD

PROJECT NO.:

PROJECT NAME:

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

BTX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC-MS Vol. 8240/8260/624

GC-MS Semi. Vol. 8270/625

PCBs 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date: 3/16/14

Time: 10:56

RECEIVED BY: (Signature)

Date: 3/16/14

Time: 10:56

SAMPLED BY: (Print & Initial)

Date: 3/16/14

Time: 10:56

RELINQUISHED BY: (Signature)

Date: _____

Time: _____

RECEIVED BY: (Signature)

Date: _____

Time: _____

SAMPLE SHIPPED BY: (Circle)

AIRBILL #: _____

FEDEX BUS

HAND DELIVERED UPS

OTHER: _____

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

2.60

Midland - all

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges

Authorized:

Yes

No

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

14051609

Analysis Request of Chain of Custody Record

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**TETRA TECH**
 1910 N. Big Spring St.
 Midland, Texas 79705
 (432) 682-4559 • Fax (432) 682-3946

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

SITE MANAGER:

PROJECT NO.:

PROJECT NAME:

LAB I.D.
NUMBER

DATE

TIME

MATRIX
COMPR.
GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

BTEX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

ROHA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCL

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chloride

Gamma-Bpoc.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

HAND DELIVERED

UPS

OTHER:

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges
Authorized:

Yes No

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

14051605

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 4

**TETRA TECH**

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavares

PROJECT NO.:

112MCOLE127

PROJECT NAME:

Prohibition #2 SWD

LAB I.D.
NUMBER

DATE

TIME

MATRIX
COMP.
GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

BTX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

ROHA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

3/16/14

Time:

10:54

RECEIVED BY: (Signature)

Date:

3/16/14

Time:

10:56

SAMPLED BY: (Print & Initial)

Date:

3/16/14

Time:

10:56

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

HAND DELIVERED

UPS

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

260

RUSH Charges

Authorized:

Yes No

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14051609

Analysis Request of Chain of Custody Record

PAGE: 4 OF: 4

**TETRA TECH**

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

SITE MANAGER:

PROJECT NO.:

PROJECT NAME:

LAB I.D.
NUMBERDATE
2014

TIME

MATRIX

COMP.

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

BTEX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Vr Pd Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8250/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

OTHER:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Results by:

RUSH Charges
Authorized:

Yes

No

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 205996

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 205996
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
bhall	Historic documentation found in OCD files. Closure was approved in 2017. Site status will be updated accordingly.	4/11/2023