SITE INFORMATION

Report Type: Closure

General Site Information:						
Site:	SRO 102 SWD					
Company:	COG Operating LLC					
Section, Township and Range	Unit G	Sec 16	T26S	R28E		
Lease Number:	API-30-015-21398					
County:	Eddy County					
GPS:	32.04381° N			104.09047° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	South of Malaga at the intersection of Hwy 285 and CR 274 (White City Rd.) travel west on CR 274 for 2.0 miles, turn left and travel 1.6 miles, turn right and travel 0.1 miles to site.					

Release Data:	
Date Released:	10/21/2012
Type Release:	Produced Water
Source of Contamination:	4" Discharge Line
Fluid Released:	75 bbls
Fluids Recovered:	0 bbls

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Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		1910 N. Big Spring
	600 W. Illinois Ave.		
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	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:	**10**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	1,000

TETRA TECH

March 13, 2013

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Closure Report for the COG Operating LLC., SRO 102 SWD Well Pad, Unit G, Section 16, Township 26 South, Range 28 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the SRO 102 SWD Well Pad, Unit G, Section 16, Township 26 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.04381°, W 104.09047. 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 October 21, 2012, and released approximately seventy five (75) barrels of produced water from a 4" discharge line, with zero (0) barrels of standing fluids recovered. COG personnel have repaired the discharge line and returned the line to service. The spill footprint remained on the pad and measured approximately 10' x 100' and 40' x 55 '. The spill area is shown on Figure 3. The initial C-141 form is enclosed in Appendix A.

Hydrogeology and Groundwater

According to the Geology and Groundwater Resources of Eddy County, New Mexico (Report 3), the Rustler and Castile formation (Ochoa Series) is present west and east of the Pecos River. The Salado formation overlies the Castile formation east of the Pecos River and was removed by solution west of the river. The Rustler and Castile formations consist of anhydrite, gypsum, interbedded sandy clay and beds of dolomite. Groundwater from the Castile and Rustler formations west of the Pecos River is historically high in chloride and sulfate concentrations which increase towards the river.

Tetra Tech
1910 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

According to the USGS, no water wells are listed in Section 16. One water well is reported in Section 18, with a depth to groundwater of 25' bgs. According to the NMOCD groundwater map the reported depth to groundwater in this area is approximately 80.0' below surface. The groundwater data is shown in Appendix B

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 1,000 mg/kg.

Assessment and Remediation

During the time of the release, Tetra Tech was performing a remediation project on a previous spill at the SWD. To remediate the spill, Tetra Tech notified the NMOCD to assess and excavate the spill area. On October 25, 2012, three (3) trenches (T-1, T-2 and T-3) were installed to assess the spill area. Referring to Table 1, none of the samples exceeded the RRAL for TPH, Benzene or Total BTEX. On a previous assessment, Tetra Tech had installed a background trench at the facility. The background results are shown in Table 1. A background chloride high of 1,030 mg/kg was detected at 14-15' below surface.

Trenches (T-1, T-2 and T-3) detected chloride highs at 0-1' of 65,200 mg/kg, 22,500 mg/kg, and 23,500 mg/kg, respectively. T-2 and T-3 chlorides decrease with depth and significantly declined at approximately 8.0' to 10.0' below surface. The trench (T-1) bottom sample at 10.0' showed a chloride of 2,420 mg/kg and was not vertically defined.

According to the field data, the spill area was excavated. The areas of T-2 and T-3 excavation measured approximately 10' x 100' at a depth of 4.0' to 6.0' below surface. The area of T-1 excavation measured 40' x 55' at a depth of 6.0' below surface. In addition, a 40 mil liner was installed in the excavation bottom to cap the remaining impacted soils. The excavated areas and depths are highlighted in Table 1 and shown on Figure 4. Once excavated to the appropriate depths, the areas were backfilled with clean soil to grade. Approximately 740 cubic yards of soil were transported to the R360 facility for proper disposal.

TETRA TECH

On January 17, 2013, Tetra Tech installed one (1) soil boring with an air rotary rig in order to define the chloride in the area of T-1. Referring to Table 1, SB-1 showed no significant chloride impact from 6.0' to 30.0' below surface. Based on the results, the impacted soil encountered in the trench sampling appears to be limited or may have been a localized hot spot in the spill area.

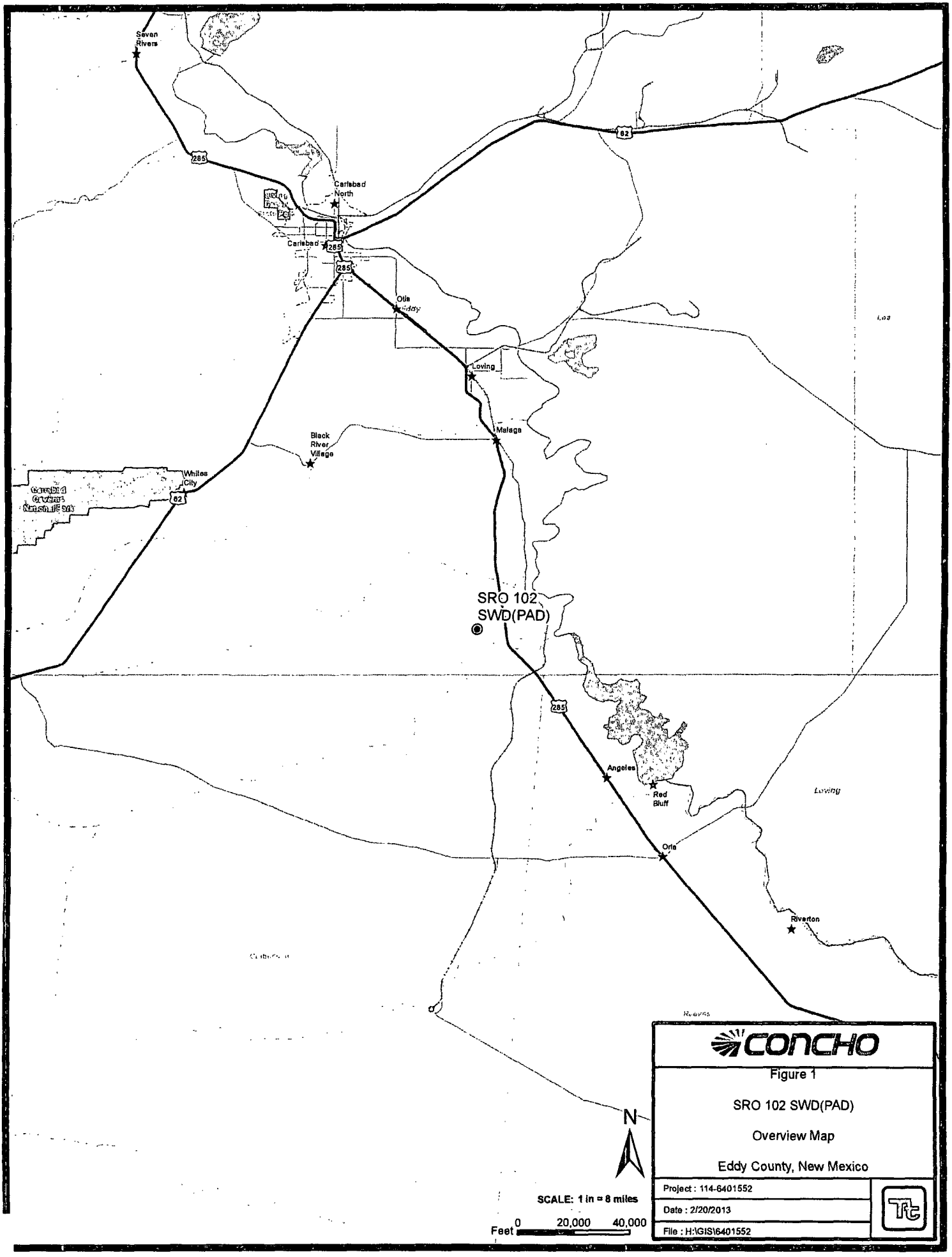
Based on the remediation activities performed at this location, COG requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

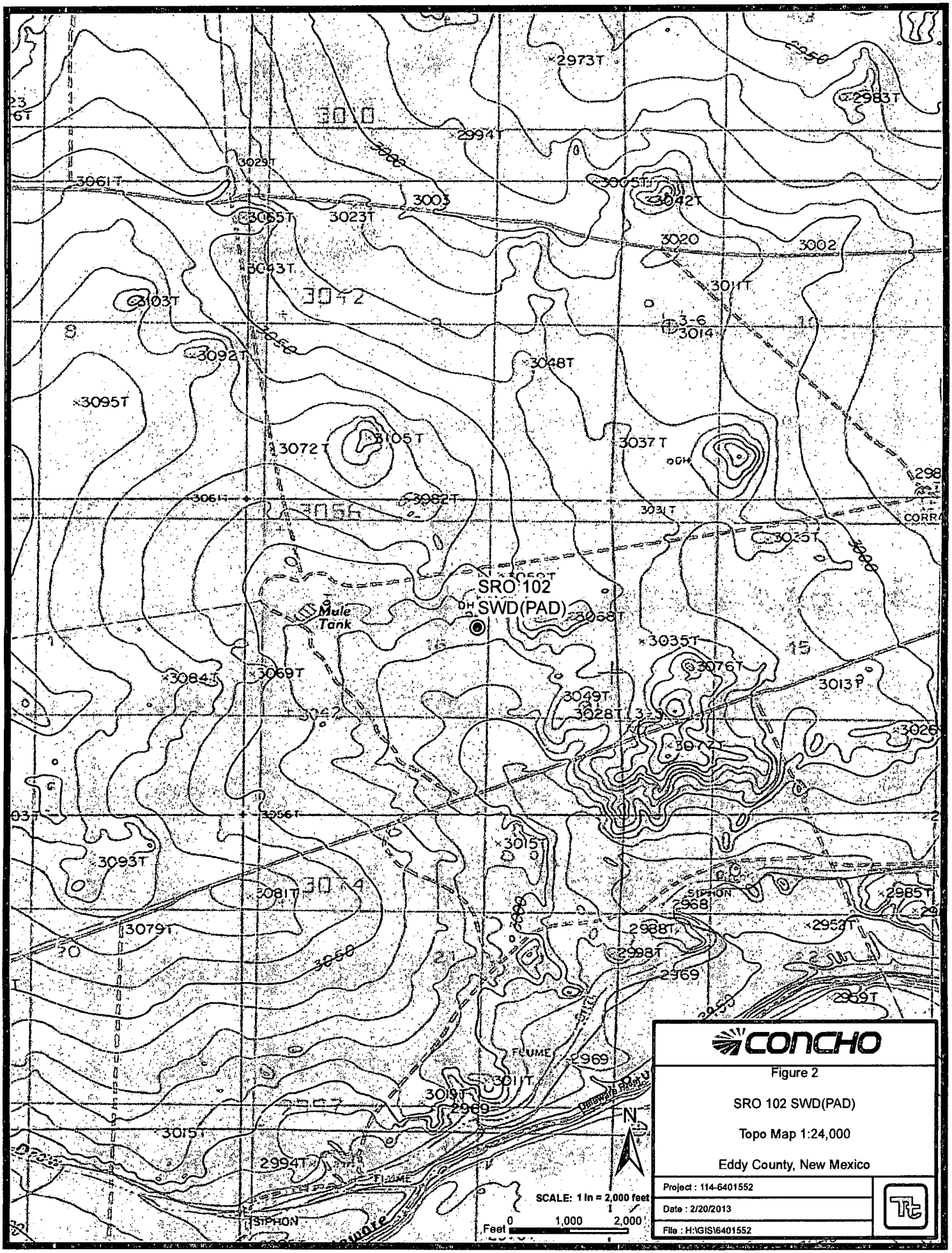
Ike Tavarez, PG
Senior Project Manager

cc: Pat Ellis – COG

Figures



Drawn By: Isabel Mazmolejo



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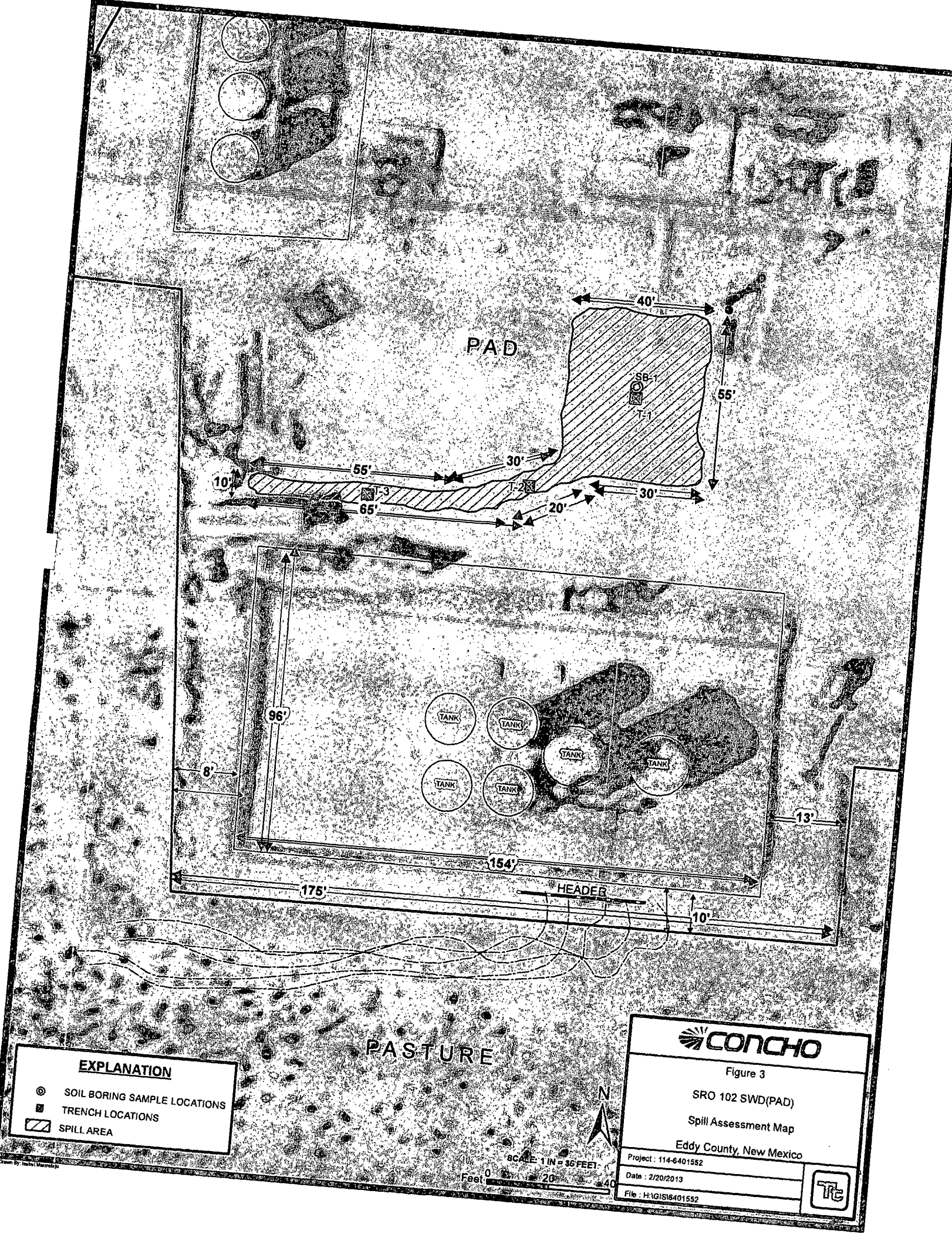
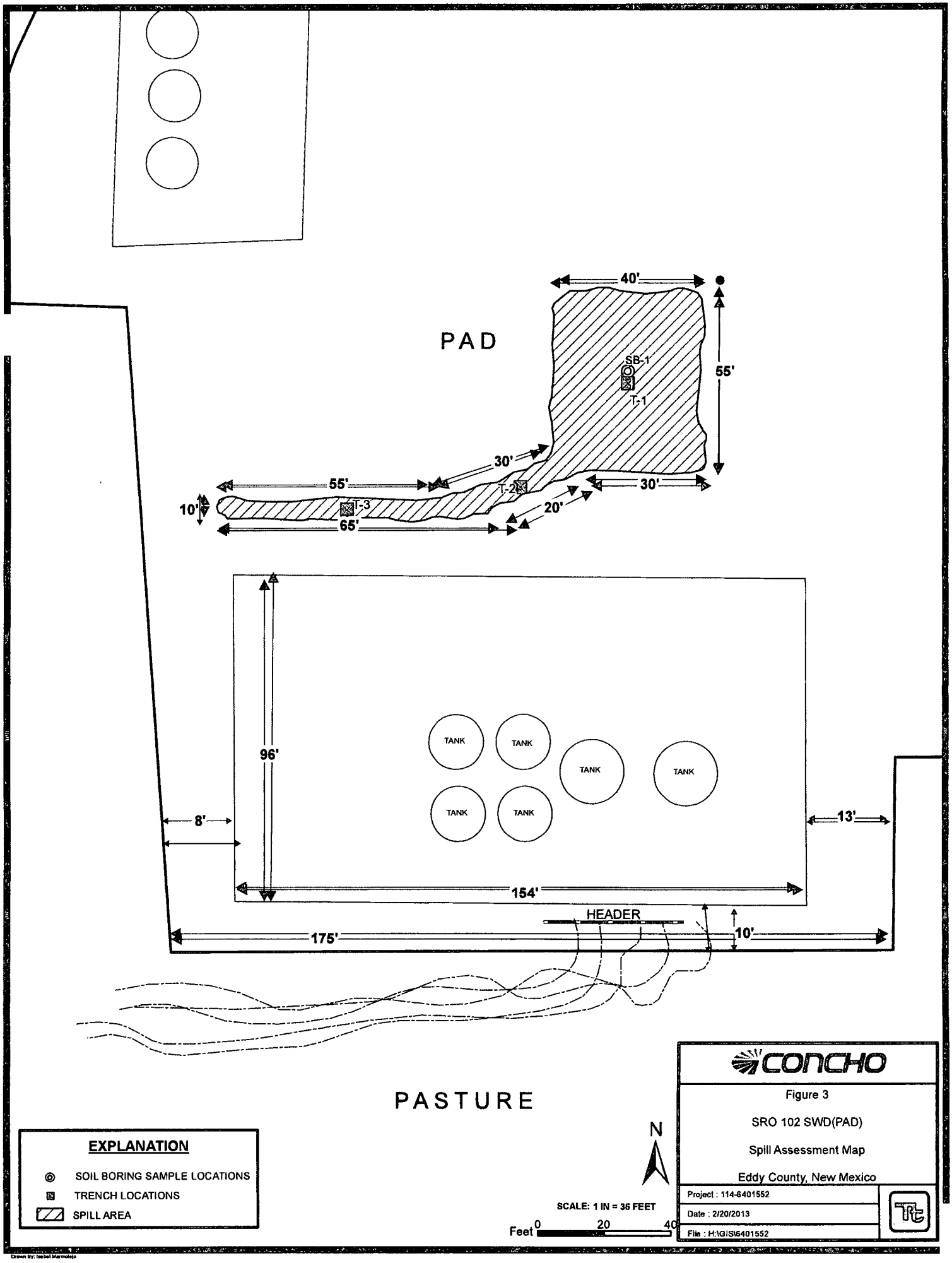
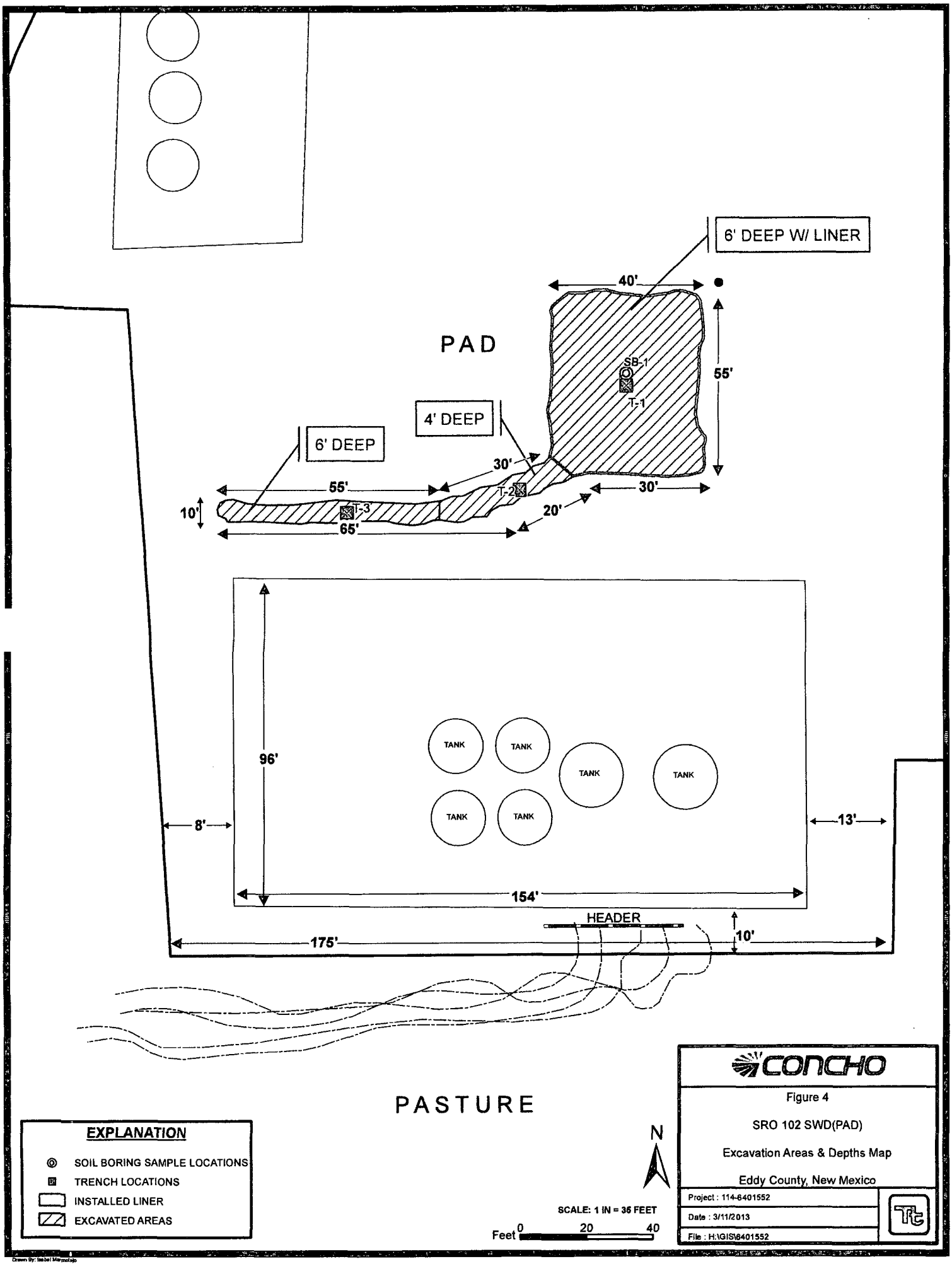

PAD
40'
55'
SB-1
T-1
30'
55'
10'
T-3
T-2
65'
20'
30'
96'
8'
TANK
TANK
TANK
TANK
TANK
TANK
13'
154'
175'
HEADER
10'
PASTURE
EXPLANATION
SOIL BORING SAMPLE LOCATIONS
TRENCH LOCATIONS
SPILL AREA
N
SCALE: 1 IN = 35 FEET
Feet 0 20 40
CONCHO
Figure 3
SRO 102 SWD(PAD)
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401552
Date : 2/20/2013
File : H:\GIS\6401552


PAD
40'
55'
SB-1
T-1
30'
55'
T-2
30'
10'
T-3
20'
65'
96'
TANK
TANK
TANK
TANK
TANK
TANK
8'
13'
154'
HEADER
175'
10'
PASTURE
N
SCALE: 1 IN = 36 FEET
Feet 0 20 40
EXPLANATION
SOIL BORING SAMPLE LOCATIONS
TRENCH LOCATIONS
SPILL AREA
CONCHO
Figure 3
SRO 102 SWD(PAD)
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401552
Date : 2/20/2013
File : H:\GIS\6401552
Drawn By: Isabel Marmolejo


6' DEEP W/ LINER
40'
PAD
SB-1
T-1
55'
4' DEEP
6' DEEP
30'
55'
T-2
30'
10'
T-3
20'
65'
96'
TANK
TANK
TANK
TANK
TANK
TANK
8'
13'
154'
HEADER
175'
10'
PASTURE
EXPLANATION
SOIL BORING SAMPLE LOCATIONS
TRENCH LOCATIONS
INSTALLED LINER
EXCAVATED AREAS
N
SCALE: 1 IN = 35 FEET
Feet 0 20 40
CONCHO
Figure 4
SRO 102 SWD(PAD)
Excavation Areas & Depths Map
Eddy County, New Mexico
Project : 114-6401552
Date : 3/11/2013
File : H:\GIS\6401552

Tables

Table 1
COG Operating
SRO 102 SWD (Well Pad)
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
Trench-1	10/25/2012	Surface		X	69.8	79.9	150	0.105	0.342	<0.0200	0.914	1.36	65,200
	"	2		X	-	-	-	-	-	-	-	-	4,270
	"	4		X	-	-	-	-	-	-	-	-	2,310
	"	6		X	-	-	-	-	-	-	-	-	3,680
	"	8	X		-	-	-	-	-	-	-	-	3,080
	"	10	X		-	-	-	-	-	-	-	-	2,420
SB-1	1/17/2013	6-7	X		-	-	-	-	-	-	-	-	767
	"	9-10	X		-	-	-	-	-	-	-	-	546
	"	14-15	X		-	-	-	-	-	-	-	-	527
	"	19-20	X		-	-	-	-	-	-	-	-	419
	"	24-25	X		-	-	-	-	-	-	-	-	301
	"	29-30	X		-	-	-	-	-	-	-	-	247
Trench-2	10/25/2012	Surface		X	67.2	<50.0	67.2	<0.0200	0.164	0.273	0.256	0.693	22,500
	"	2		X	-	-	-	-	-	-	-	-	1,860
	"	4		X	-	-	-	-	-	-	-	-	2,430
	"	6	X		-	-	-	-	-	-	-	-	1,080
	"	8	X		-	-	-	-	-	-	-	-	1,450
	"	10	X		-	-	-	-	-	-	-	-	920

Table 1
COG Operating
SRO 102 SWD (Well Pad)
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
Trench-3	10/25/2012	Surface		X	11.7	<50.0	11.7	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	23,500
	"	2		X	-	-	-	-	-	-	-	-	1,450
	"	4		X	-	-	-	-	-	-	-	-	2,860
	"	6		X	-	-	-	-	-	-	-	-	2,360
	"	8	X		-	-	-	-	-	-	-	-	531
		10	X		-	-	-	-	-	-	-	-	246
BG-1	3/22/2012	0-1	X		-	-	-	-	-	-	-	-	<200
	"	2-3	X		-	-	-	-	-	-	-	-	243
	"	4-5	X		-	-	-	-	-	-	-	-	421
	"	6-7	X		-	-	-	-	-	-	-	-	455
	"	9-10	X		-	-	-	-	-	-	-	-	495
	"	14-15	X		-	-	-	-	-	-	-	-	1,030
	"	19-20	X		-	-	-	-	-	-	-	-	846
	"	24-25	X		-	-	-	-	-	-	-	-	851

(--) Not Analyzed

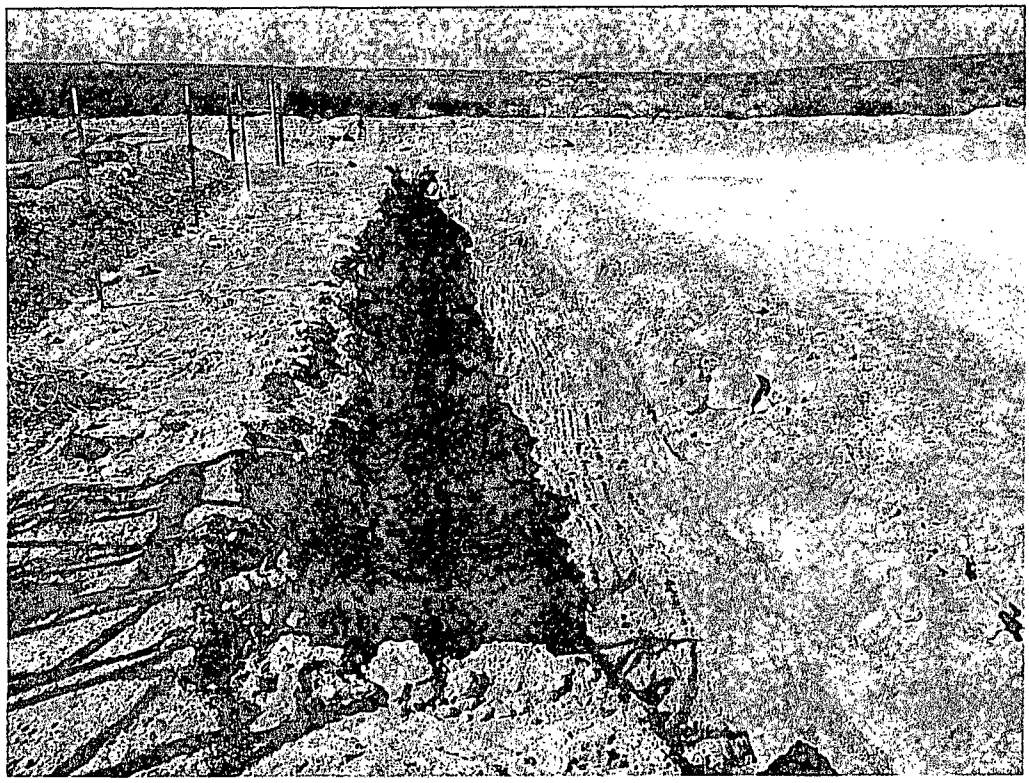
Excavated Depths

Liner Installed

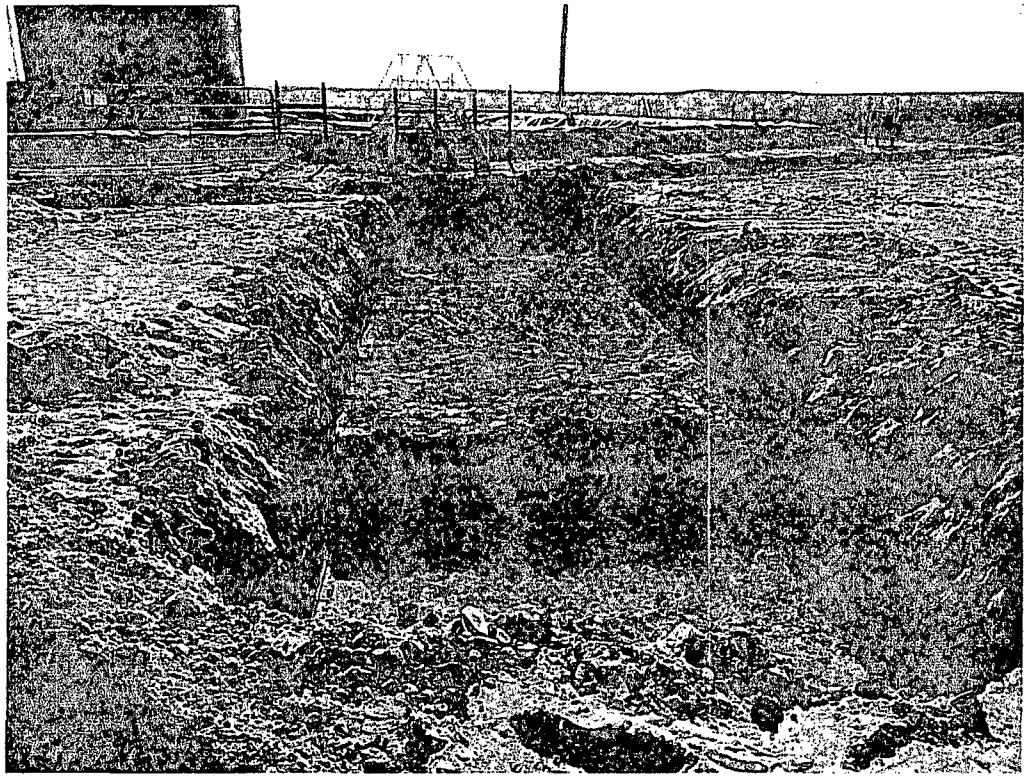
Photos

COG Operating LLC
SRO 102 SWD (Well Pad)
Eddy County, New Mexico

TETRA TECH



View West – Area of Trench-3

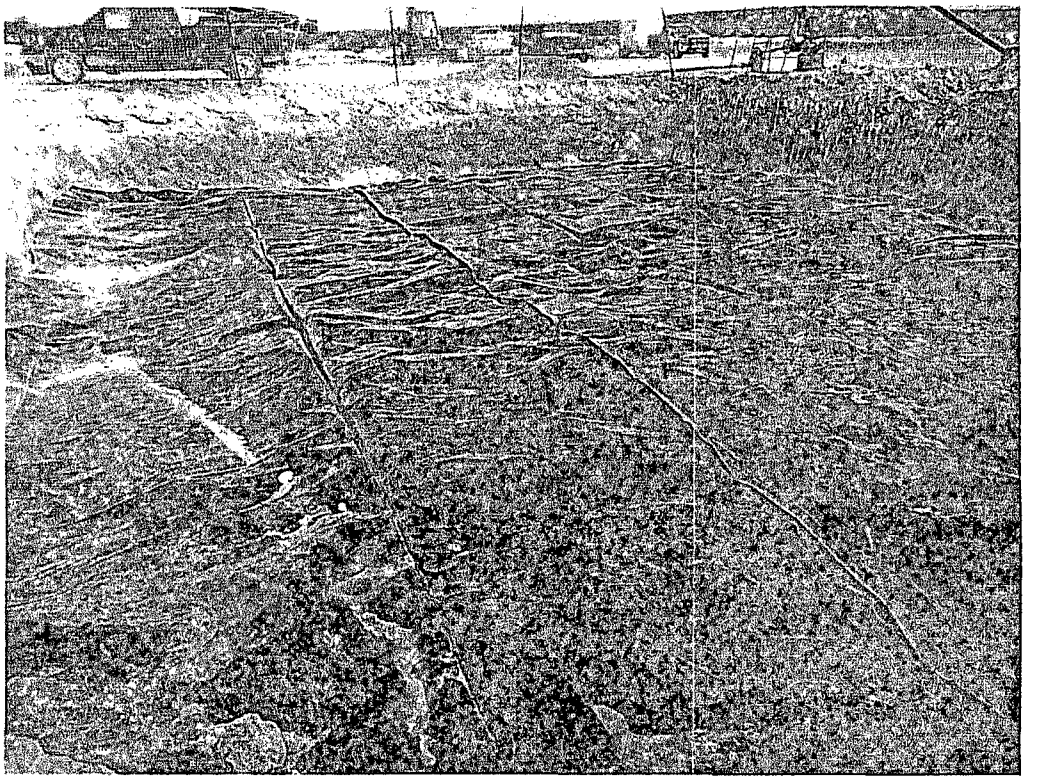


View South – Area of Trench-2

COG Operating LLC
SRO 102 SWD (Well Pad)
Eddy County, New Mexico

TETRA TECH

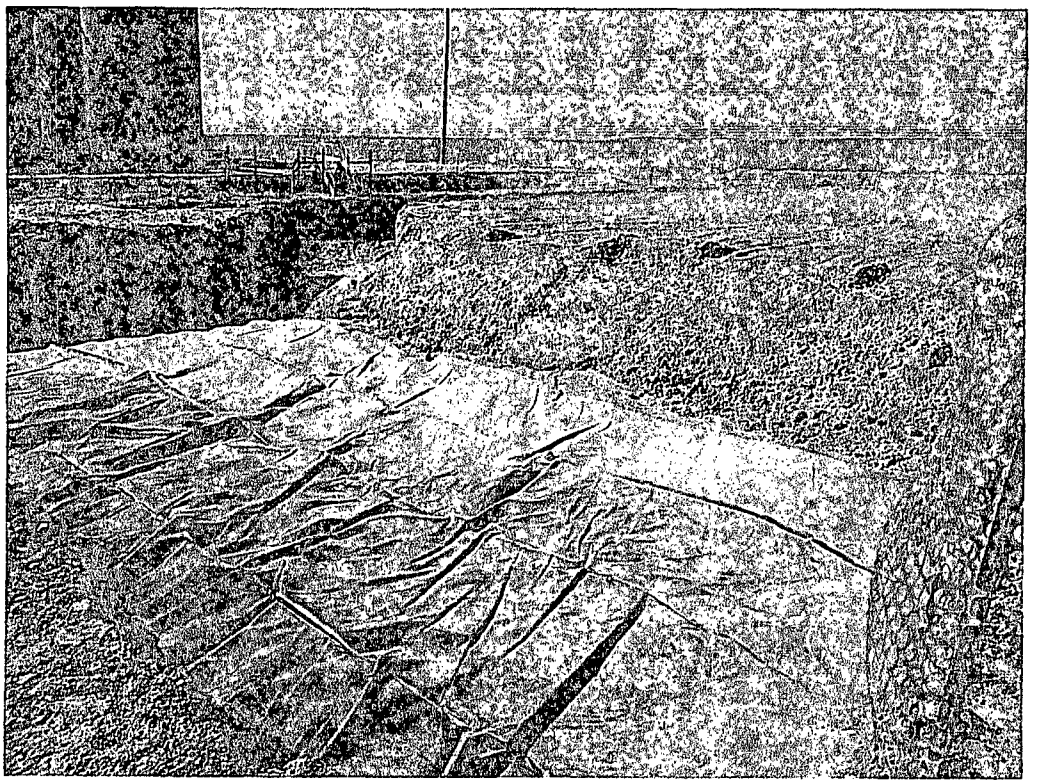
View Southeast – Area of Trench-1



View North - Liner

COG Operating LLC
SRO 102 SWD (Well Pad)
Eddy County, New Mexico

TETRA TECH



View Southwest - Backfill

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

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APR 23 2013
NMOCD ARTESIA

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	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	(432) 230-0077
Facility Name	SRO 102 SWD	Facility Type	SWD

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-21398

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	16	26S	28E					Eddy

Latitude N 32.04381° **Longitude** W 104.09047°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 75 bbls	Volume Recovered 0 bbls
Source of Release: 4" Discharge Line	Date and Hour of Occurrence 10/21/2012	Date and Hour of Discovery 10/21/2012
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD	
By Whom? Michelle Mullins	Date and Hour 10/23/2012 11:17 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Our 4" produced water discharge line corroded and released fluid onto the SRO 102 SWD location. The discharge line has been repaired and returned to service.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected and collected samples to define the spill extents. None of the soil samples exceeded the RRAL for TPH and BTEX. Elevated chloride were excavated and transported to proper disposal. The excavations were backfilled with clean soil and brought up to surface grade. Tetra Tech prepared a closure report for the NMOCD to 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: Project Manager

E-mail Address: Ike.Tavarez@TetraTech.com

Date: 3-14-13 Phone: (432) 682-4559

OIL CONSERVATION DIVISION

Approved by District Supervisor:

Approval Date: Expiration Date:

Conditions of Approval: Attached ☐

Attach Additional Sheets If Necessary

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	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	SRO 102 SWD	Facility Type	SWD

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-21398

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	16	26S	28E					Eddy

Latitude 32 02.657 **Longitude** 104 05.431

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 75bbls	Volume Recovered 0bbls
Source of Release 4" discharge line	Date and Hour of Occurrence 10/21/2012	Date and Hour of Discovery 10/21/2012
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD	
By Whom? Michelle Mullins	Date and Hour 10/23/2012 11:17 a.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.*

Our 4" produced water discharge line corroded and released fluid onto the SRO 102 SWD location. The discharge line has been repaired and returned to service.

Describe Area Affected and Cleanup Action Taken.*

Initially approximately 75bbls were released onto the pad location at the SRO 102 SWD. We were unable to recover any of the fluid with vacuum trucks. 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 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: Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: jrusso@concho.com	Conditions of Approval:	Attached ☐
Date: 10/25/2012 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - SRO 102 SWD
Eddy County, New Mexico

24 South 27 East

6	5	4	3	2	1
7	8 **26**	9 **43**	10	11	12 **27**
18 **34**	17	16	15	14	13 **31**
19	20	21	22 **70**	23	24
30	29	28	27	26	25
31	32	33	34	35	36

24 South 28 East

6 **70**	5 **30**	4 **30**	3	2 **55**	1 **60**
7	8 **50**	9	10 **17**	11 **20**	12 **73**
18	17 **42**	16 **29**	15 **18**	14 **52**	13 **34**
19	20 **48**	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

24 South 29 East

6	5	4	3	2	1
7 **160**	8	9	10	11	12
18	17	16 **18**	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

25 South 27 East

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

25 South 28 East

6	5 **59**	4 **35**	3 **32**	2	1
7	8	9	10	11	12
18 **67**	17	16	15 **48** **49**	14	13
19	20 **96**	21	22	23	24
30	29 **15**	28 **90**	27	26 **30**	25
31	32	33	34	35	36 **40**

25 South 29 East

6 **40**	5	4	3	2	1
7	8	9	10 **40**	11	12
18	17	16	15 **60**	14	13
19	20	21	22	23	24
30 **30**	29	28	27	26	25
31	32	33	34	35	36

26 South 27 East

6	5 **12**	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 **35**
19	20	21	22 **50**	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South 28 East

6	5	4	3	2 **120**	1
7	8	9	10	11	12 **100**
18 **25**	17	16 SITE	15	14 **120**	13 **66**
19	20	21	22 **120**	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 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 **57** **69**	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

Appendix C

Summary Report

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

Report Date: January 25, 2013

Work Order: 13012203

Project Location: Eddy Co., NM
Project Name: COG/SRO 102 (Well Pad)
Project Number: 114-6401552

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
318918	Soil Bore 1 6-7'	soil	2013-01-17	00:00	2013-01-21
318919	Soil Bore 1 9-10'	soil	2013-01-17	00:00	2013-01-21
318920	Soil Bore 1 14-15'	soil	2013-01-17	00:00	2013-01-21
318921	Soil Bore 1 19-20'	soil	2013-01-17	00:00	2013-01-21
318922	Soil Bore 1 24-25'	soil	2013-01-17	00:00	2013-01-21
318923	Soil Bore 1 29-30'	soil	2013-01-17	00:00	2013-01-21

Sample: 318918 - Soil Bore 1 6-7'

Param	Flag	Result	Units	RL
Chloride		**767**	mg/Kg	4

Sample: 318919 - Soil Bore 1 9-10'

Param	Flag	Result	Units	RL
Chloride		**546**	mg/Kg	4

Sample: 318920 - Soil Bore 1 14-15'

Param	Flag	Result	Units	RL
Chloride		**527**	mg/Kg	4

Sample: 318921 - Soil Bore 1 19-20'

Param	Flag	Result	Units	RL
Chloride		**419**	mg/Kg	4

Sample: 318922 - Soil Bore 1 24-25'

Param	Flag	Result	Units	RL
Chloride		**301**	mg/Kg	4

Sample: 318923 - Soil Bore 1 29-30'

Param	Flag	Result	Units	RL
Chloride		**247**	mg/Kg	4

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
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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 Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: January 25, 2013

Work Order: 13012203

Project Location: Eddy Co., NM
Project Name: COG/SRO 102 (Well Pad)
Project Number: 114-6401552

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
318918	Soil Bore 1 6-7'	soil	2013-01-17	00:00	2013-01-21
318919	Soil Bore 1 9-10'	soil	2013-01-17	00:00	2013-01-21
318920	Soil Bore 1 14-15'	soil	2013-01-17	00:00	2013-01-21
318921	Soil Bore 1 19-20'	soil	2013-01-17	00:00	2013-01-21
318922	Soil Bore 1 24-25'	soil	2013-01-17	00:00	2013-01-21
318923	Soil Bore 1 29-30'	soil	2013-01-17	00:00	2013-01-21

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.

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

Report Contents

Case Narrative

Samples for project COG/SRO 102 (Well Pad) were received by TraceAnalysis, Inc. on 2013-01-21 and assigned to work order 13012203. Samples for work order 13012203 were received intact at a temperature of 5.8 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	83284	2013-01-22 at 09:31	98319	2013-01-23 at 15:12
Chloride (Titration)	SM 4500-Cl B	83284	2013-01-22 at 09:31	98381	2013-01-24 at 15:55

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 13012203 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 318918 - Soil Bore 1 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	98319	Date Analyzed:	2013-01-23	Analyzed By:	AR
Prep Batch:	83284	Sample Preparation:	2013-01-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**767**		mg/Kg	5	4.00

Sample: 318919 - Soil Bore 1 9-10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	98319	Date Analyzed:	2013-01-23	Analyzed By:	AR
Prep Batch:	83284	Sample Preparation:	2013-01-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**546**		mg/Kg	5	4.00

Sample: 318920 - Soil Bore 1 14-15'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	98319	Date Analyzed:	2013-01-23	Analyzed By:	AR
Prep Batch:	83284	Sample Preparation:	2013-01-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**527**		mg/Kg	5	4.00

Sample: 318921 - Soil Bore 1 19-20'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	98319	Date Analyzed:	2013-01-23	Analyzed By:	AR
Prep Batch:	83284	Sample Preparation:	2013-01-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**419**	mg/Kg	5	4.00

Sample: 318922 - Soil Bore 1 24-25'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	98319	Date Analyzed:	2013-01-23	Analyzed By:	AR
Prep Batch:	83284	Sample Preparation:	2013-01-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**301**	mg/Kg	5	4.00

Sample: 318923 - Soil Bore 1 29-30'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	98381	Date Analyzed:	2013-01-24	Analyzed By:	AR
Prep Batch:	83284	Sample Preparation:	2013-01-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**247**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 98319

QC Batch:	98319	Date Analyzed:	2013-01-23	Analyzed By:	AR
Prep Batch:	83284	QC Preparation:	2013-01-22	Prepared By:	AR

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

Method Blank (1) QC Batch: 98381

QC Batch:	98381	Date Analyzed:	2013-01-24	Analyzed By:	AR
Prep Batch:	83284	QC Preparation:	2013-01-22	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 98319 | Date Analyzed: 2013-01-23 | Analyzed By: AR
Prep Batch: 83284 | QC Preparation: 2013-01-22 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2570	mg/Kg	1	2500	<3.85	103	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			2660	mg/Kg	1	2500	<3.85	106	85 - 115	3	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: 98381 | Date Analyzed: 2013-01-24 | Analyzed By: AR
Prep Batch: 83284 | QC Preparation: 2013-01-22 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2630	mg/Kg	1	2500	<3.85	105	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	1	2500	<3.85	100	85 - 115	5	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: 318922

QC Batch: 98319 | Date Analyzed: 2013-01-23 | Analyzed By: AR
Prep Batch: 83284 | QC Preparation: 2013-01-22 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2780	mg/Kg	5	2500	301	99	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			2610	mg/Kg	5	2500	301	92	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: 318934

QC Batch: 98381 | Date Analyzed: 2013-01-24 | Analyzed By: AR
Prep Batch: 83284 | QC Preparation: 2013-01-22 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2770	mg/Kg	5	2500	72.5	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			2880	mg/Kg	5	2500	72.5	112	78.9 - 121	4	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 98319 | Date Analyzed: 2013-01-23 | 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	101	101	85 - 115	2013-01-23

Standard (CCV-2)

QC Batch: 98319 | Date Analyzed: 2013-01-23 | 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	98.8	99	85 - 115	2013-01-23

Standard (CCV-1)

QC Batch: 98381 | Date Analyzed: 2013-01-24 | 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	101	101	85 - 115	2013-01-24

Standard (CCV-2)

QC Batch: 98381 | Date Analyzed: 2013-01-24 | 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	99.3	99	85 - 115	2013-01-24

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 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

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

130122O3

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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 Tavarez

PROJECT NO.: 114-6401552

PROJECT NAME: SRO State Unit Com 102 SWD (Pad)
Eddy Co NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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. 8240/8260/624	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
318915	1/17		S		X	Sal Bore 1 0-1'	1																	X				
916						2-3'																		X				
917						4-5'																		X				
918						6-7'																		X				
919						9-10'																		X				
920						14-15'																		X				
921						19-20'																		X				
922						24-25'																		X				
923						29-30'																		X				

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Jeanne Fitch Date: 01-21-13 Time: 1600
SAMPLED BY: (Print & Initial) Thomas Franklin Date: Time:

RELINQUISHED BY: (Signature) Jeanne Fitch Date: 01-21-13 Time: 1647
RECEIVED BY: (Signature) Date: 1/21/13 Time: 16:47
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS
AIRBILL #:
OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
TETRA TECH CONTACT PERSON: IKE Tavarez
Results by:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 58°
REMARKS: Midland lab

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

Summary Report

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

Report Date: November 5, 2012

Work Order: 12102922

Project Location: Eddy Co., NM
Project Name: COG/SRO 102 (Well Pad)
Project Number: 114-6401552

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
312924	Trench-1 Surface	soil	2012-10-25	00:00	2012-10-29
312925	Trench-1 2'	soil	2012-10-25	00:00	2012-10-29
312926	Trench-1 4'	soil	2012-10-25	00:00	2012-10-29
312927	Trench-1 6'	soil	2012-10-25	00:00	2012-10-29
312928	Trench-1 8'	soil	2012-10-25	00:00	2012-10-29
312929	Trench-1 10'	soil	2012-10-25	00:00	2012-10-29
312930	Trench-2 Surface	soil	2012-10-25	00:00	2012-10-29
312931	Trench-2 2'	soil	2012-10-25	00:00	2012-10-29
312932	Trench-2 4'	soil	2012-10-25	00:00	2012-10-29
312933	Trench-2 6'	soil	2012-10-25	00:00	2012-10-29
312934	Trench-2 8'	soil	2012-10-25	00:00	2012-10-29
312935	Trench-2 10'	soil	2012-10-25	00:00	2012-10-29
312936	Trench-3 Surface	soil	2012-10-25	00:00	2012-10-29
312937	Trench-3 2'	soil	2012-10-25	00:00	2012-10-29
312938	Trench-3 4'	soil	2012-10-25	00:00	2012-10-29
312939	Trench-3 6'	soil	2012-10-25	00:00	2012-10-29
312940	Trench-3 8'	soil	2012-10-25	00:00	2012-10-29
312941	Trench-3 10'	soil	2012-10-25	00:00	2012-10-29

	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)
312924 - Trench-1 Surface	**0.105**	**0.342**	<0.0200	**0.914**	**79.9**	**69.8**
312930 - Trench-2 Surface	<0.0200	**0.164**	**0.273**	**0.256**	<50.0	**67.2**
312936 - Trench-3 Surface	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	**11.7**

Sample: 312924 - Trench-1 Surface

Param	Flag	Result	Units	RL
Chloride		**65200**	mg/Kg	4

Sample: 312925 - Trench-1 2'

Param	Flag	Result	Units	RL
Chloride		**4270**	mg/Kg	4

Sample: 312926 - Trench-1 4'

Param	Flag	Result	Units	RL
Chloride		**2310**	mg/Kg	4

Sample: 312927 - Trench-1 6'

Param	Flag	Result	Units	RL
Chloride		**3680**	mg/Kg	4

Sample: 312928 - Trench-1 8'

Param	Flag	Result	Units	RL
Chloride		**3080**	mg/Kg	4

Sample: 312929 - Trench-1 10'

Param	Flag	Result	Units	RL
Chloride		**2420**	mg/Kg	4

Sample: 312930 - Trench-2 Surface

Param	Flag	Result	Units	RL
Chloride		**22500**	mg/Kg	4

Sample: 312931 - Trench-2 2'

Param	Flag	Result	Units	RL
Chloride		**1860**	mg/Kg	4

Sample: 312932 - Trench-2 4'

Param	Flag	Result	Units	RL
Chloride		**2430**	mg/Kg	4

Sample: 312933 - Trench-2 6'

Param	Flag	Result	Units	RL
Chloride		**1080**	mg/Kg	4

Sample: 312934 - Trench-2 8'

Param	Flag	Result	Units	RL
Chloride		**1450**	mg/Kg	4

Sample: 312935 - Trench-2 10'

Param	Flag	Result	Units	RL
Chloride		**920**	mg/Kg	4

Sample: 312936 - Trench-3 Surface

Param	Flag	Result	Units	RL
Chloride		**23500**	mg/Kg	4

Sample: 312937 - Trench-3 2'

Param	Flag	Result	Units	RL
Chloride		**1450**	mg/Kg	4

Sample: 312938 - Trench-3 4'

Param	Flag	Result	Units	RL
Chloride		**2860**	mg/Kg	4

Sample: 312939 - Trench-3 6'

Param	Flag	Result	Units	RL
Chloride		**2360**	mg/Kg	4

Sample: 312940 - Trench-3 8'

Param	Flag	Result	Units	RL
Chloride		**531**	mg/Kg	4

Sample: 312941 - Trench-3 10'

Param	Flag	Result	Units	RL
Chloride		**246**	mg/Kg	4

TRACEANALYSIS, INC.

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

Report Date: November 5, 2012

Work Order: 12102922

Project Location: Eddy Co., NM
Project Name: COG/SRO 102 (Well Pad)
Project Number: 114-6401552

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
312924	Trench-1 Surface	soil	2012-10-25	00:00	2012-10-29
312925	Trench-1 2'	soil	2012-10-25	00:00	2012-10-29
312926	Trench-1 4'	soil	2012-10-25	00:00	2012-10-29
312927	Trench-1 6'	soil	2012-10-25	00:00	2012-10-29
312928	Trench-1 8'	soil	2012-10-25	00:00	2012-10-29
312929	Trench-1 10'	soil	2012-10-25	00:00	2012-10-29
312930	Trench-2 Surface	soil	2012-10-25	00:00	2012-10-29
312931	Trench-2 2'	soil	2012-10-25	00:00	2012-10-29
312932	Trench-2 4'	soil	2012-10-25	00:00	2012-10-29
312933	Trench-2 6'	soil	2012-10-25	00:00	2012-10-29
312934	Trench-2 8'	soil	2012-10-25	00:00	2012-10-29
312935	Trench-2 10'	soil	2012-10-25	00:00	2012-10-29
312936	Trench-3 Surface	soil	2012-10-25	00:00	2012-10-29
312937	Trench-3 2'	soil	2012-10-25	00:00	2012-10-29
312938	Trench-3 4'	soil	2012-10-25	00:00	2012-10-29
312939	Trench-3 6'	soil	2012-10-25	00:00	2012-10-29
312940	Trench-3 8'	soil	2012-10-25	00:00	2012-10-29
312941	Trench-3 10'	soil	2012-10-25	00:00	2012-10-29

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 27 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

Report Contents

Case Narrative

Samples for project COG/SRO 102 (Well Pad) were received by TraceAnalysis, Inc. on 2012-10-29 and assigned to work order 12102922. Samples for work order 12102922 were received intact at a temperature of 1.3 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	81468	2012-10-30 at 09:30	96136	2012-10-30 at 09:30
Chloride (Titration)	SM 4500-Cl B	81531	2012-10-31 at 12:11	96192	2012-11-01 at 12:12
Chloride (Titration)	SM 4500-Cl B	81531	2012-10-31 at 12:11	96193	2012-11-01 at 12:13
Chloride (Titration)	SM 4500-Cl B	81622	2012-11-02 at 10:30	96310	2012-11-02 at 14:31
TPH DRO - NEW	S 8015 D	81493	2012-10-30 at 08:00	96158	2012-10-31 at 13:16
TPH GRO	S 8015 D	81475	2012-10-30 at 09:30	96141	2012-10-30 at 09:30

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 12102922 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 312924 - Trench-1 Surface

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	96136	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81468	Sample Preparation:	2012-10-30	Prepared By:	YG

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**0.105**	mg/Kg	1	0.0200
Toluene		1	**0.342**	mg/Kg	1	0.0200
Ethylbenzene		1	<0.0200	mg/Kg	1	0.0200
Xylene		1	**0.914**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			2.36	mg/Kg	1	2.00	118	70 - 130

Sample: 312924 - Trench-1 Surface

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96192	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**65200**	mg/Kg	10	4.00

Sample: 312924 - Trench-1 Surface

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	96158	Date Analyzed:	2012-10-31	Analyzed By:	CW
Prep Batch:	81493	Sample Preparation:	2012-10-30	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	B	1	**79.9**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		140	mg/Kg	1	100	140	55.1 - 135.7

Sample: 312924 - Trench-1 Surface

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	96141	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81475	Sample Preparation:	2012-10-30	Prepared By:	YG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**69.8**	mg/Kg	1	1.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.31	mg/Kg	1	2.00	116	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1	2.00	108	70 - 130

Sample: 312925 - Trench-1 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96192	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4270**	mg/Kg	10	4.00

Sample: 312926 - Trench-1 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96192	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

continued ...

sample 312926 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2310**	mg/Kg	10	4.00

Sample: 312927 - Trench-1 6'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96192	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3680**	mg/Kg	10	4.00

Sample: 312928 - Trench-1 8'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96192	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3080**	mg/Kg	10	4.00

Sample: 312929 - Trench-1 10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**2420**		mg/Kg	10	4.00

Sample: 312930 - Trench-2 Surface

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	96136	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81468	Sample Preparation:	2012-10-30	Prepared By:	YG

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Benzene	U	1	<0.0200		mg/Kg	1	0.0200
Toluene		1	**0.164**		mg/Kg	1	0.0200
Ethylbenzene		1	**0.273**		mg/Kg	1	0.0200
Xylene		1	**0.256**		mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			2.29	mg/Kg	1	2.00	114	70 - 130

Sample: 312930 - Trench-2 Surface

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**22500**		mg/Kg	10	4.00

Sample: 312930 - Trench-2 Surface

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	96158	Date Analyzed:	2012-10-31	Analyzed By:	CW
Prep Batch:	81493	Sample Preparation:	2012-10-30	Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			131	mg/Kg	1	100	131	55.1 - 135.7

Sample: 312930 - Trench-2 Surface

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	96141	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81475	Sample Preparation:	2012-10-30	Prepared By:	YG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**67.2**	mg/Kg	1	1.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1	2.00	101	70 - 130

Sample: 312931 - Trench-2 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1860**	mg/Kg	10	4.00

Sample: 312932 - Trench-2 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2430**	mg/Kg	10	4.00

Sample: 312933 - Trench-2 6'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1080**	mg/Kg	10	4.00

Sample: 312934 - Trench-2 8'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

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

Sample: 312935 - Trench-2 10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**920**	mg/Kg	10	4.00

Sample: 312936 - Trench-3 Surface

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	96136	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81468	Sample Preparation:	2012-10-30	Prepared By:	YG

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)			1.81	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 312936 - Trench-3 Surface

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**23500**	mg/Kg	10	4.00

Sample: 312936 - Trench-3 Surface

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	96158	Date Analyzed:	2012-10-31	Analyzed By:	CW
Prep Batch:	81493	Sample Preparation:	2012-10-30	Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			127	mg/Kg	1	100	127	55.1 - 135.7

Sample: 312936 - Trench-3 Surface

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	96141	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81475	Sample Preparation:	2012-10-30	Prepared By:	YG

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		1	**11.7**	mg/Kg	1	1.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.11	mg/Kg	1	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	70 - 130

Sample: 312937 - Trench-3 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

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

Sample: 312938 - Trench-3 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	Sample Preparation:	2012-10-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**2860**	mg/Kg	10	4.00

Sample: 312939 - Trench-3 6'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96310	Date Analyzed:	2012-11-02	Analyzed By:	AH
Prep Batch:	81622	Sample Preparation:	2012-11-02	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2360**	mg/Kg	5	4.00

Sample: 312940 - Trench-3 8'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96310	Date Analyzed:	2012-11-02	Analyzed By:	AH
Prep Batch:	81622	Sample Preparation:	2012-11-02	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**531**	mg/Kg	5	4.00

Sample: 312941 - Trench-3 10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	96310	Date Analyzed:	2012-11-02	Analyzed By:	AH
Prep Batch:	81622	Sample Preparation:	2012-11-02	Prepared By:	AR

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

Method Blanks

Method Blank (1) QC Batch: 96136

QC Batch:	96136	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81468	QC Preparation:	2012-10-30	Prepared By:	YG

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)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Method Blank (1) QC Batch: 96141

QC Batch:	96141	Date Analyzed:	2012-10-30	Analyzed By:	YG
Prep Batch:	81475	QC Preparation:	2012-10-30	Prepared By:	YG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.482	mg/Kg	1

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)			1.70	mg/Kg	1	2.00	85	70 - 130

Method Blank (1) QC Batch: 96158

QC Batch:	96158	Date Analyzed:	2012-10-31	Analyzed By:	CW
Prep Batch:	81493	QC Preparation:	2012-10-30	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	31.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			114	mg/Kg	1	100	114	55.1 - 135.7

Method Blank (1) QC Batch: 96192

QC Batch:	96192	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	QC Preparation:	2012-10-31	Prepared By:	AR

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

Method Blank (1) QC Batch: 96193

QC Batch:	96193	Date Analyzed:	2012-11-01	Analyzed By:	AR
Prep Batch:	81531	QC Preparation:	2012-10-31	Prepared By:	AR

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

Method Blank (1) QC Batch: 96310

QC Batch:	96310	Date Analyzed:	2012-11-02	Analyzed By:	AH
Prep Batch:	81622	QC Preparation:	2012-11-02	Prepared By:	AH

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 96136 | Date Analyzed: 2012-10-30 | Analyzed By: YG
Prep Batch: 81468 | QC Preparation: 2012-10-30 | Prepared By: YG

Param	F	C	LCS 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	1.82	mg/Kg	1	2.00	<0.00750	91	70 - 130
Ethylbenzene		1	1.76	mg/Kg	1	2.00	<0.00730	88	70 - 130
Xylene		1	5.56	mg/Kg	1	6.00	<0.00700	93	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	1.86	mg/Kg	1	2.00	<0.00810	93	70 - 130	3	20
Toluene		1	1.87	mg/Kg	1	2.00	<0.00750	94	70 - 130	3	20
Ethylbenzene		1	1.81	mg/Kg	1	2.00	<0.00730	90	70 - 130	3	20
Xylene		1	5.70	mg/Kg	1	6.00	<0.00700	95	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 (TFT)	1.83	1.85	mg/Kg	1	2.00	92	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.80	mg/Kg	1	2.00	92	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 96141 | Date Analyzed: 2012-10-30 | Analyzed By: YG
Prep Batch: 81475 | QC Preparation: 2012-10-30 | Prepared By: YG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.1	mg/Kg	1	20.0	<0.482	90	70 - 130

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

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control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	16.8	mg/Kg	1	20.0	<0.482	84	70 - 130	7	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)	2.04	1.98	mg/Kg	1	2.00	102	99	70 - 130
4-Bromofluorobenzene (4-BFB)	1.80	1.80	mg/Kg	1	2.00	90	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 96158 | Date Analyzed: 2012-10-31 | Analyzed By: CW
Prep Batch: 81493 | QC Preparation: 2012-10-30 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	267	mg/Kg	1	250	31.6	94	66.9 - 119.9

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	290	mg/Kg	1	250	31.6	103	66.9 - 119.9	8	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	128	mg/Kg	1	100	124	128	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 96192 | Date Analyzed: 2012-11-01 | Analyzed By: AR
Prep Batch: 81531 | QC Preparation: 2012-10-31 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2690	mg/Kg	1	2500	<3.85	108	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			2550	mg/Kg	1	2500	<3.85	102	85 - 115	5	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: 96193 | Date Analyzed: 2012-11-01 | Analyzed By: AR
Prep Batch: 81531 | QC Preparation: 2012-10-31 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	1	2500	<3.85	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			2700	mg/Kg	1	2500	<3.85	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: 96310 | Date Analyzed: 2012-11-02 | Analyzed By: AH
Prep Batch: 81622 | QC Preparation: 2012-11-02 | Prepared By: AH

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2460	mg/Kg	1	2500	<3.85	98	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			2560	mg/Kg	1	2500	<3.85	102	85 - 115	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: 312930

QC Batch: 96136 | Date Analyzed: 2012-10-30 | Analyzed By: YG
Prep Batch: 81468 | QC Preparation: 2012-10-30 | Prepared By: YG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.88	mg/Kg	1	2.00	<0.00810	94	70 - 130
Toluene		1	2.04	mg/Kg	1	2.00	0.164	94	70 - 130
Ethylbenzene		1	2.02	mg/Kg	1	2.00	0.273	87	70 - 130
Xylene		1	5.97	mg/Kg	1	6.00	0.256	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
Benzene		1	1.95	mg/Kg	1	2.00	<0.00810	98	70 - 130	4	20
Toluene		1	2.09	mg/Kg	1	2.00	0.164	96	70 - 130	2	20
Ethylbenzene		1	2.01	mg/Kg	1	2.00	0.273	87	70 - 130	0	20
Xylene		1	6.20	mg/Kg	1	6.00	0.256	99	70 - 130	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.81	mg/Kg	1	2	90	90	70 - 130
4-Bromofluorobenzene (4-BFB)	2.03	2.01	mg/Kg	1	2	102	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 312930

QC Batch: 96141 | Date Analyzed: 2012-10-30 | Analyzed By: YG
Prep Batch: 81475 | QC Preparation: 2012-10-30 | Prepared By: YG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	39.0	mg/Kg	1	40.0	<0.482	98	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	31.9	mg/Kg	1	40.0	<0.482	80	70 - 130	20	20

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

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.43	2.01	mg/Kg	1	2	122	100	70 - 130
4-Bromofluorobenzene (4-BFB)	2.08	2.10	mg/Kg	1	2	104	105	70 - 130

Matrix Spike (MS-1) Spiked Sample: 312924

QC Batch: 96158 | Date Analyzed: 2012-10-31 | Analyzed By: CW
Prep Batch: 81493 | QC Preparation: 2012-10-30 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	423	mg/Kg	1	250	79.9	137	36.1 - 147.2

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	425	mg/Kg	1	250	79.9	138	36.1 - 147.2	0	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	156	156	mg/Kg	1	100	156	156	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 312928

QC Batch: 96192 | Date Analyzed: 2012-11-01 | Analyzed By: AR
Prep Batch: 81531 | QC Preparation: 2012-10-31 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5720	mg/Kg	10	2500	3080	106	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			5950	mg/Kg	10	2500	3080	115	78.9 - 121	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: 312938

QC Batch: 96193 | Date Analyzed: 2012-11-01 | Analyzed By: AR
Prep Batch: 81531 | QC Preparation: 2012-10-31 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5270	mg/Kg	10	2500	2860	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			5520	mg/Kg	10	2500	2860	106	78.9 - 121	5	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: 312948

QC Batch: 96310 | Date Analyzed: 2012-11-02 | Analyzed By: AH
Prep Batch: 81622 | QC Preparation: 2012-11-02 | Prepared By: AH

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2610	mg/Kg	5	2500	579	81	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			2900	mg/Kg	5	2500	579	93	78.9 - 121	10	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 96136 | Date Analyzed: 2012-10-30 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0947	95	80 - 120	2012-10-30
Toluene		1	mg/kg	0.100	0.0933	93	80 - 120	2012-10-30
Ethylbenzene		1	mg/kg	0.100	0.0863	86	80 - 120	2012-10-30
Xylene		1	mg/kg	0.300	0.271	90	80 - 120	2012-10-30

Standard (CCV-2)

QC Batch: 96136 | Date Analyzed: 2012-10-30 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0912	91	80 - 120	2012-10-30
Toluene		1	mg/kg	0.100	0.0915	92	80 - 120	2012-10-30
Ethylbenzene		1	mg/kg	0.100	0.0862	86	80 - 120	2012-10-30
Xylene		1	mg/kg	0.300	0.272	91	80 - 120	2012-10-30

Standard (CCV-3)

QC Batch: 96136 | Date Analyzed: 2012-10-30 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0912	91	80 - 120	2012-10-30
Toluene		1	mg/kg	0.100	0.0915	92	80 - 120	2012-10-30
Ethylbenzene		1	mg/kg	0.100	0.0862	86	80 - 120	2012-10-30
Xylene		1	mg/kg	0.300	0.272	91	80 - 120	2012-10-30

Standard (CCV-1)

QC Batch: 96141 | Date Analyzed: 2012-10-30 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.879	88	80 - 120	2012-10-30

Standard (CCV-2)

QC Batch: 96141 | Date Analyzed: 2012-10-30 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.963	96	80 - 120	2012-10-30

Standard (CCV-3)

QC Batch: 96141 | Date Analyzed: 2012-10-30 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.07	107	80 - 120	2012-10-30

Standard (CCV-1)

QC Batch: 96158 | Date Analyzed: 2012-10-31 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	294	118	80 - 120	2012-10-31

Standard (CCV-2)

QC Batch: 96158 | Date Analyzed: 2012-10-31 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	242	97	80 - 120	2012-10-31

Standard (CCV-1)

QC Batch: 96192 Date Analyzed: 2012-11-01 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	98.6	99	85 - 115	2012-11-01

Standard (CCV-2)

QC Batch: 96192 Date Analyzed: 2012-11-01 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	101	101	85 - 115	2012-11-01

Standard (CCV-1)

QC Batch: 96193 Date Analyzed: 2012-11-01 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	101	101	85 - 115	2012-11-01

Standard (CCV-2)

QC Batch: 96193 Date Analyzed: 2012-11-01 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	99.1	99	85 - 115	2012-11-01

Standard (CCV-1)

QC Batch: 96310 Date Analyzed: 2012-11-02 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	97.7	98	85 - 115	2012-11-02

Standard (CCV-2)

QC Batch: 96310 Date Analyzed: 2012-11-02 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2012-11-02

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.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

1210222 2932

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 : 2

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6401552

PROJECT NAME: COG / SRO 102 (Cusill Pad) Eddy Co, NM

LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorides	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
512924	10-25		S		X	Trench-1 Surface	1				X		X	X											X				
925						Trench-1 2'																							
926						Trench-1 4'																							
927						Trench-1 6'																							
928						Trench-1 8'																							
929						Trench-1 10'																							
930						Trench-2 Surface							X	X															
931						Trench-2 2'																							
932						Trench-2 4'																							
933						Trench-2 6'																							

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 10-26-12 Time: 1810	RECEIVED BY: (Signature)	Date: 10/29/12 Time: 0815
RELINQUISHED BY: (Signature)	Date: 10/29/12 Time: 0815	RECEIVED BY: (Signature)	Date: 10/29/12 Time: 0815
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) Robert Gubbs Jr. Date: 10-26-12 Time: 1810

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #: OTHER:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: Jessica PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 1.3°

REMARKS: RUH deeper sample if TPH exceed 1,000 mg/kg. Midland all

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

RUH deeper sample if benzene exceed 10 mg/kg & Total BTEX exceed 50 mg/kg.

1210322932

Analysis Request of Chain of Custody Record

PAGE: 2 : 2

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 Tavarez

PROJECT NO.: 114-6401552

PROJECT NAME: COG/SRO 102 (Well Pad) Eddy Co NM

LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorides	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
934	10-25		S		X	Trench-2 8'	1				X														X			
935						Trench-2 10'																						
936						Trench-3 Surface							X	X														
937						Trench-3 2'																						
938						Trench-3 4'																						
939						Trench-3 6'																						
940						Trench-3 8'																						
941						Trench-3 10'																						

RELINQUISHED BY: (Signature)	Date: 8-26-12 Time: 1810	RECEIVED BY: (Signature)	Date: 10/29/12 Time: 0815
RELINQUISHED BY: (Signature)	Date: 10/29/12 Time: 0815	RECEIVED BY: (Signature)	Date: 10/29/12 Time: 9:15
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RECEIVING LABORATORY: Trace	RECEIVED BY: (Signature)		
ADDRESS:			
CITY: Midland STATE: TX ZIP:			
CONTACT: Mike PHONE:	DATE: TIME:		

SAMPLED BY: (Print & Initial) Robert Tavarez Date: 10-26-12 Time: 1810

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #: OTHER:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 1.3° On Ice

REMARKS:

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