SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	Down South State Com #4H					
Company:	COG Operating LLC					
Section, Township and Range	Sec 19	T 26S	R 28E			
Lease Number:	API-30-015-37256					
County:	Eddy County					
GPS:	32.02223° N			104.11917° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	From the intersection of Hwy 285 and Whites City Road, travel WEST on Whites City Rd. for apx. 3.0 miles, turn SOUTH and continue for 2.7 miles to location on West side of the lease road.					

Release Data:	
Date Released:	12/8/2013
Type Release:	Oil and Produced water
Source of Contamination:	Failed FWKO Gasket
Fluid Released:	40 bbls
Fluids Recovered:	0 bbls

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 29 2014
RECEIVED

Official Communication:			
Name:	Robert McNeil		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rmcneil@conchoresources.com		Ike.Tavarez@tetratech.com

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

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	100

TETRA TECH

August 19, 2014

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., Down South State Com #4H Tank Battery, Unit p, Section 19, 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 Down South State Com #4H Tank Battery, Unit P, Section 19, Township 26 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.02223°, W 104.11917°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 8, 2013, and released approximately fifteen (15) barrels of oil and twenty five (25) barrels of produced water from a gasket on a free water knock out. To alleviate the problem, COG personnel replaced the gasket. Zero (0) barrels of standing fluids were recovered. The spill affected an area on the pad measuring approximately 100'x 100' and overspray initiated north of the pad affecting an area 125' X 75' in the pasture. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 19. According to the NMOCD groundwater map, the average depth to groundwater in this area is less than 50' below surface. The groundwater data is shown in Appendix B.

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

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 100 mg/kg.

Soil Assessment and Analytical Results

On January 20, 2014, Tetra Tech personnel inspected and sampled the spill area. Five (5) auger holes (AH-1 through AH-5) 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, none of the samples exceeded the BTEX RRAL; however all of the samples exceeded the total TPH RRAL of 100 mg/kg and were not vertically defined.

Chloride concentrations were detected in auger holes (AH-4 and AH-5) with chloride highs of 1,320 mg/kg at 0'-1' below surface and 1,740 mg/kg at 0'-1' below surface, respectively.

Based on previous assessment, the Way South Tank Battery is located approximately 1,000 feet south of the Down South Tank Battery. Tetra Tech had installed two background trenches to evaluate the natural chloride concentrations in the area and detected a chloride high of 3,650 mg/kg in the soils. The background results are summarized in Table 2. Based on background chlorides, the chloride concentrations detected at the site do not appear to be an environmental concern.

Remediation Activities

On April 23, 2014, Tetra Tech supervised the removal impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of auger holes (AH-1 through AH-5) were excavated to depths of approximately 0.5' below surface. Once the area was excavated to the appropriate depths, the excavations were backfilled with clean soil to grade, and approximately 460 cubic yards of excavated material was hauled to proper disposal. In addition, Tetra tech collected confirmation samples for TPH. The sampling results are presented in Table 1. Referring to Table 1, the TPH concentrations were all below the RRAL.

TETRA TECH

Conclusion

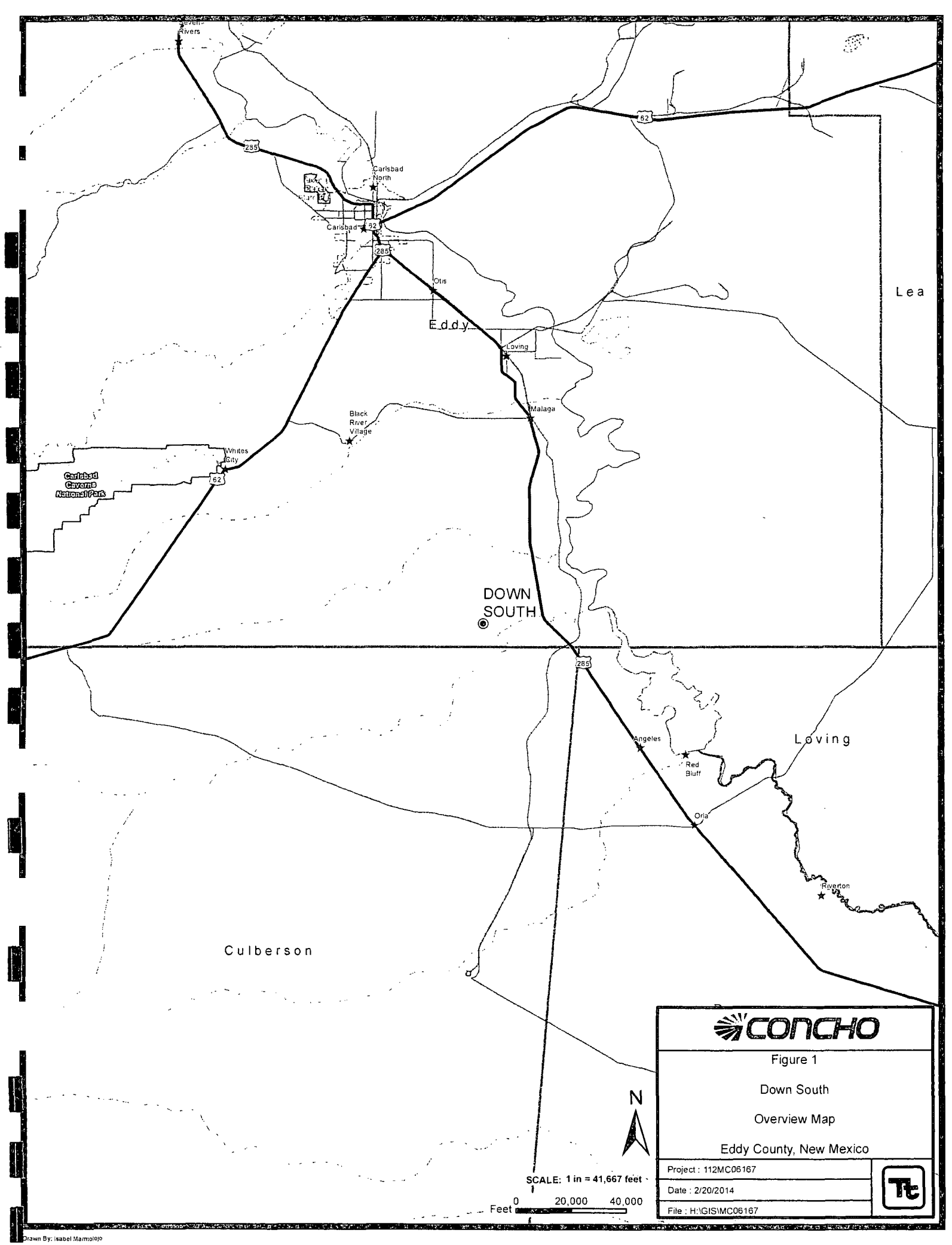
Based on the assessment and remedial work performed at this site, COG requests closure of this spill issue. A final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

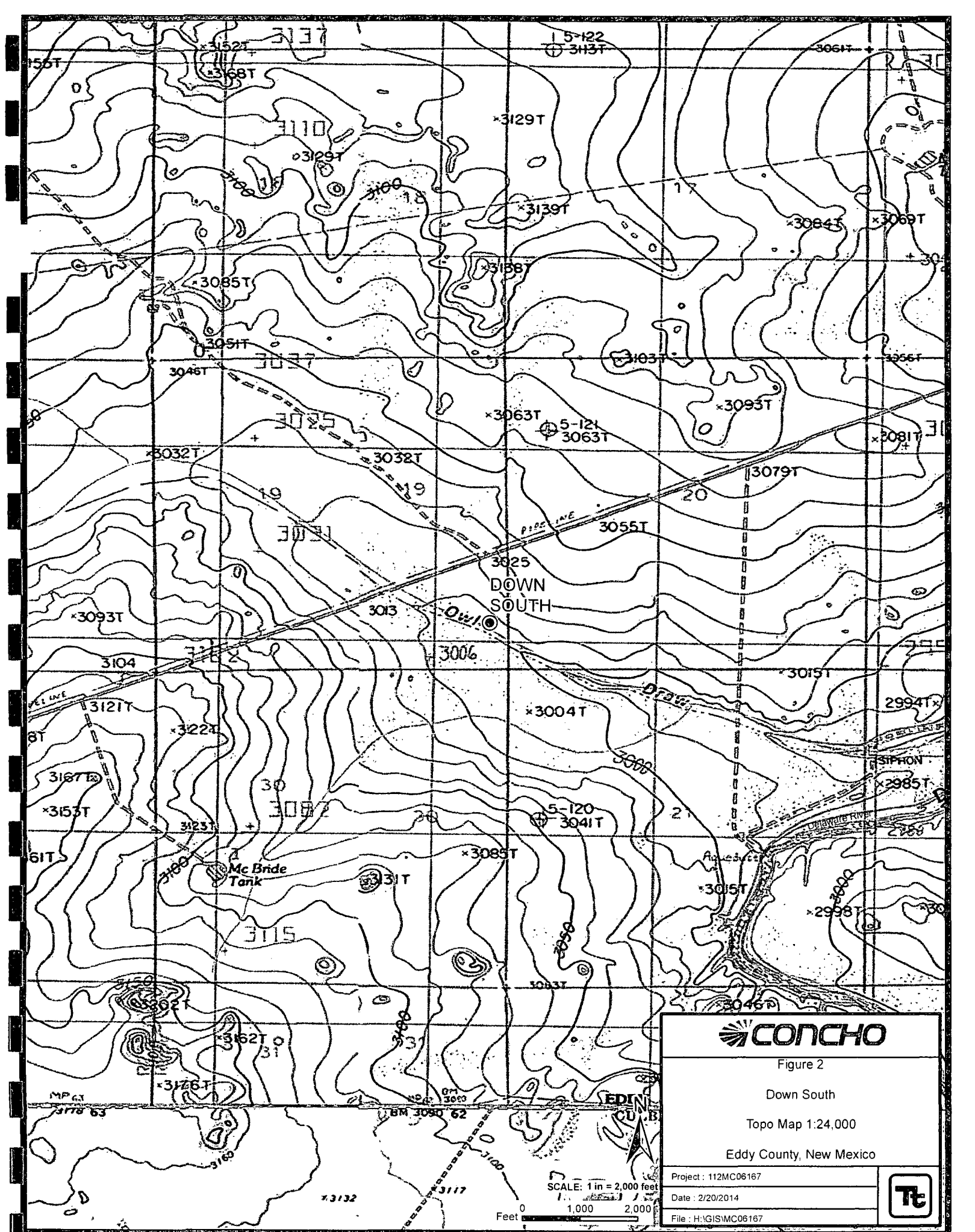
Respectfully submitted,
TETRA TECH

Ike Tavarez PG
Senior Project Manager

cc: Robert McNeil – COG

FIGURES


Rivers
285
Carlsbad North
Carlsbad
62
285
Otis
Eddy
Lea
Loving
Malaga
Black River Village
Whites City
62
Carlsbad Caverns National Park
DOWN SOUTH
285
Loving
Angeles
Red Bluff
Orla
Riverton
Culberson
N
SCALE: 1 in = 41,667 feet
Feet 0 20,000 40,000
CONCHO
Figure 1
Down South
Overview Map
Eddy County, New Mexico
Project : 112MC06167
Date : 2/20/2014
File : H:\GIS\MC06167
Drawn By: Isabel Marmolejo



CONCHO

Figure 2

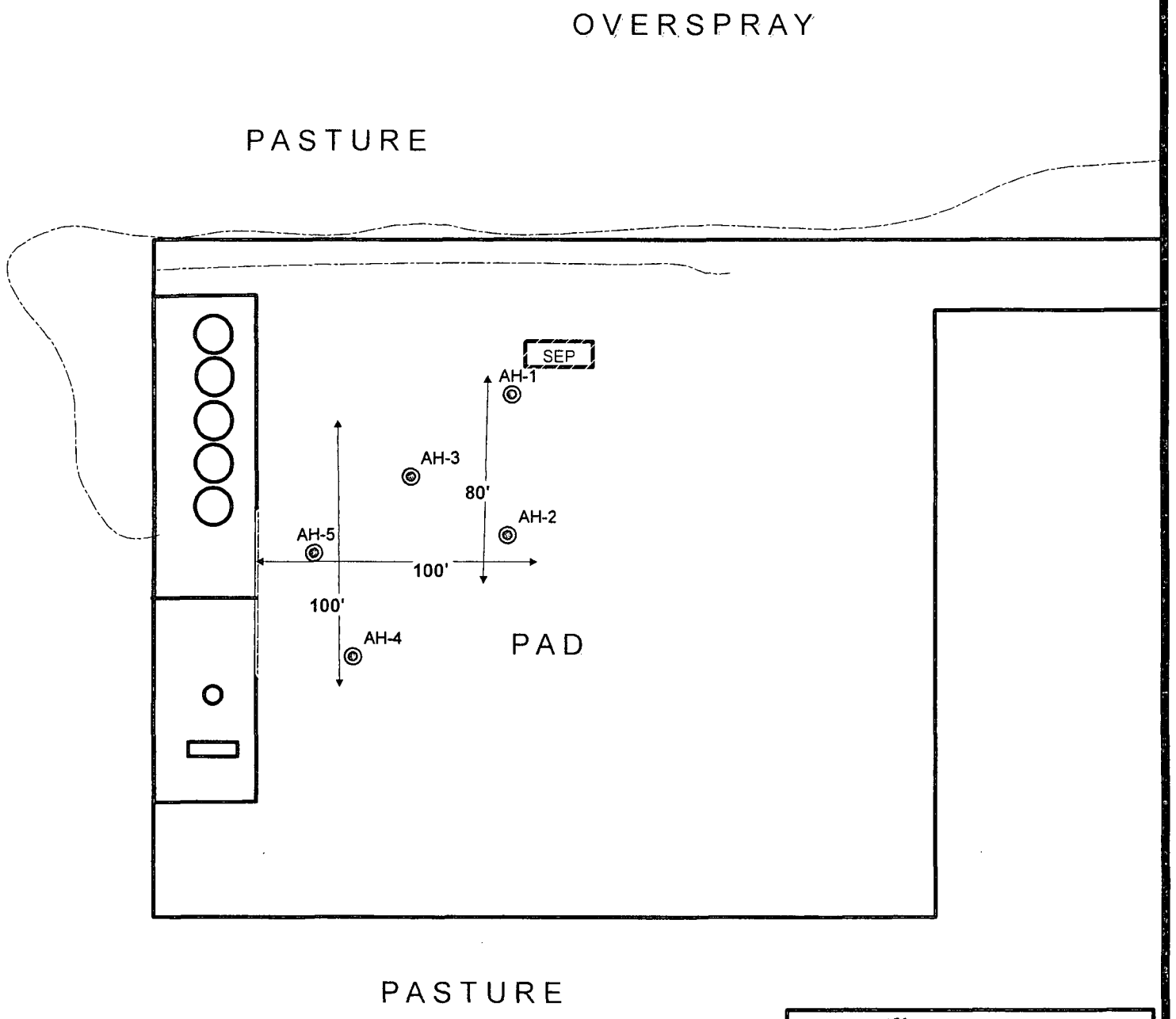
Down South

Topo Map 1:24,000

Eddy County, New Mexico

Project : 112MC06167	
Date : 2/20/2014	
File : H:\GIS\MC06167	

Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA

N

SCALE: 1 IN = 71 FEET

Feet 0 20 40

CONCHO

Figure 3

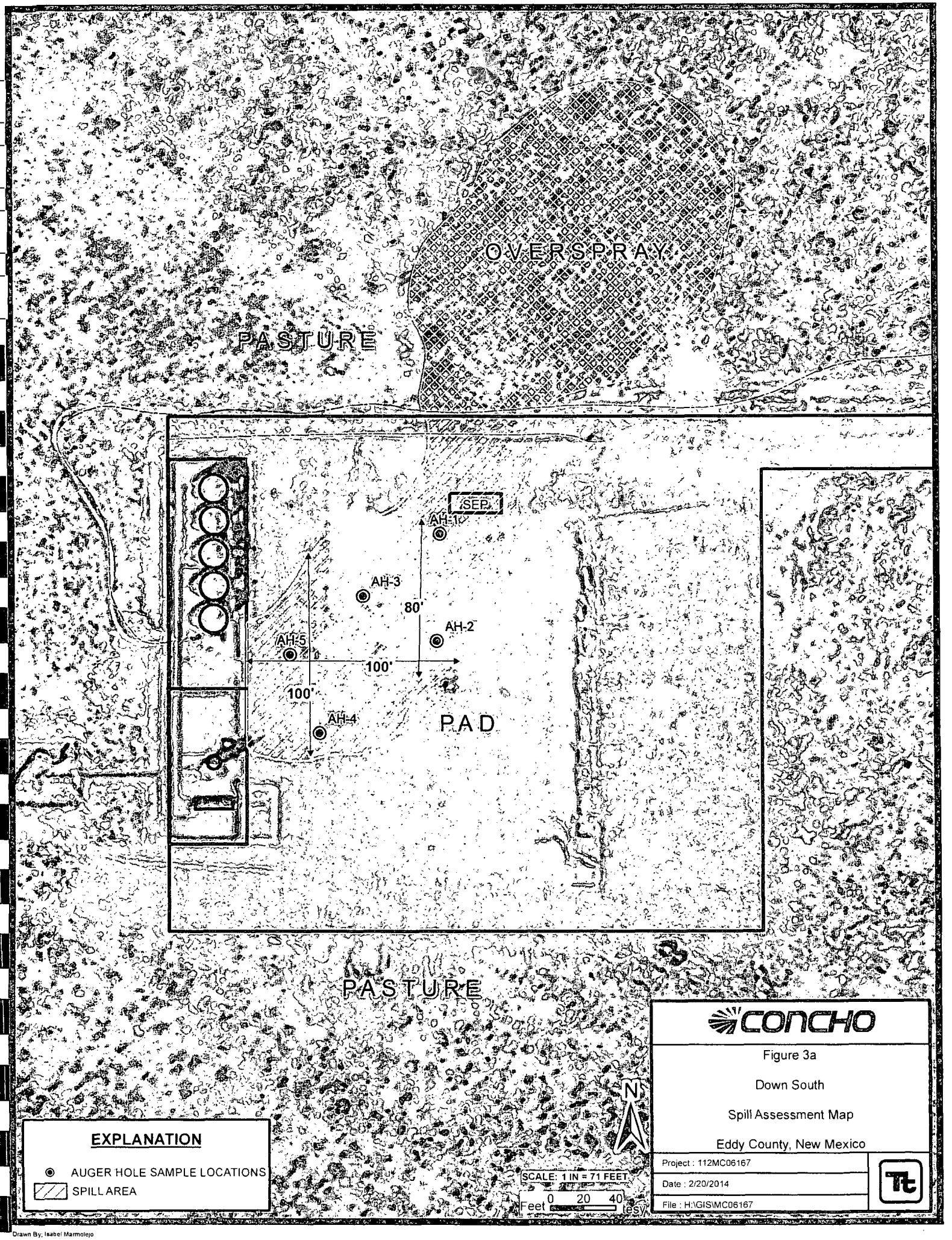
Down South

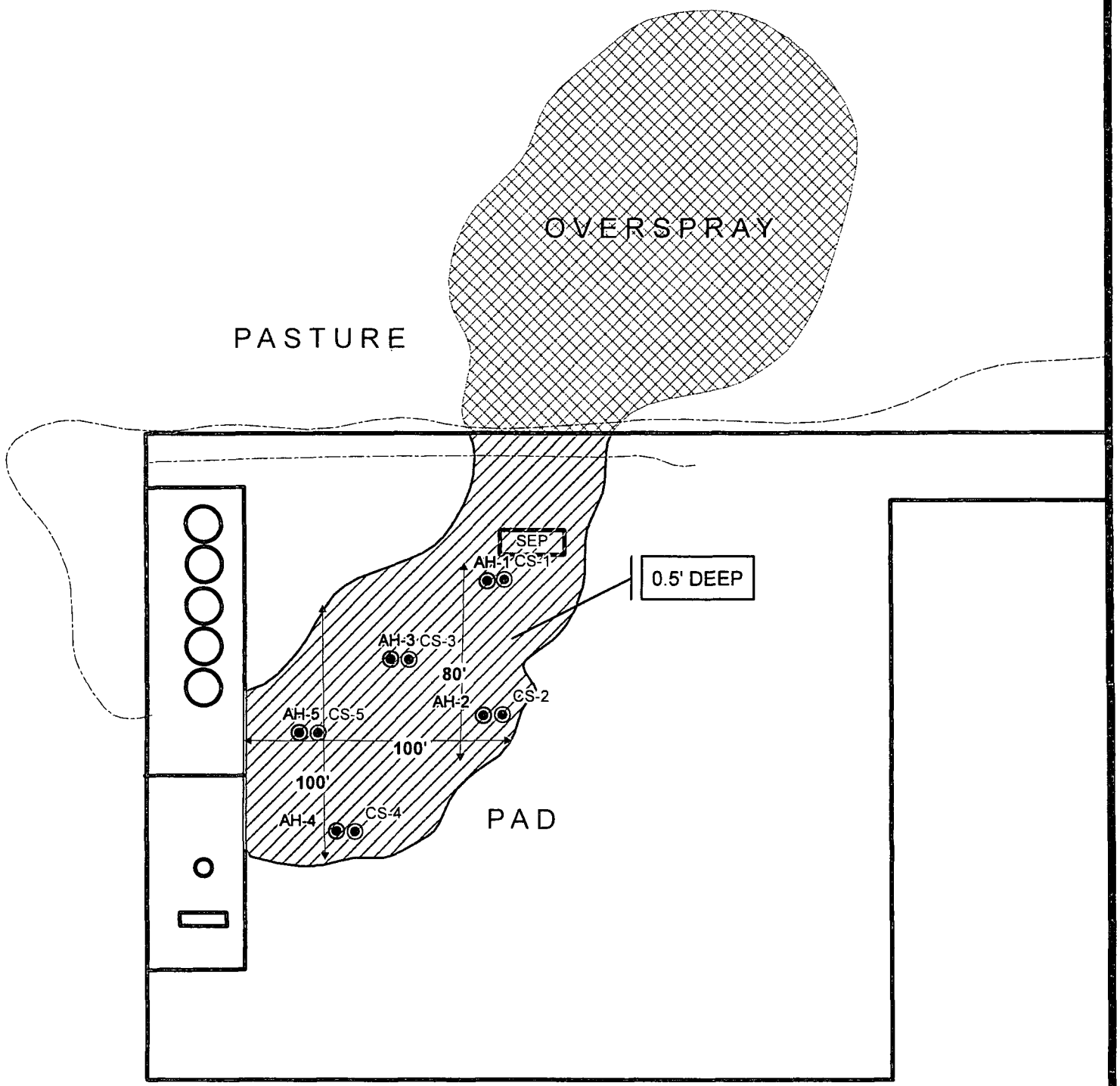
Spill Assessment Map

Eddy County, New Mexico

Project : 112MC06167	
Date : 2/20/2014	
File : H:\GIS\MC06167	

Drawn By: Isabel Marmolejo


OVERSPRAY
PASTURE
SEP.
AH-1
AH-3
80'
AH-2
AH-5
100'
100'
AH-4
PAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
N
SCALE: 1 IN = 71 FEET
Feet 0 20 40
CONCHO
Figure 3a
Down South
Spill Assessment Map
Eddy County, New Mexico
Project : 112MC06167
Date : 2/20/2014
File : H:\GIS\MC06167
Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- CONFIRMATION SAMPLE LOCATIONS
- EXCAVATED AREAS

N

SCALE: 1 IN = 71 FEET

Feet 0 20 40

CONCHO

Figure 4

Down South

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 112MC06167	
Date : 6/13/2014	
File : H:\GIS\MC06167	

Drawn By: Isabel Marmolejo

TABLES

Table 1
COG Operating LLC.
Down South State Commingle #4H
Eddy County, New Mexico

Sample ID	Sample Date	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	1/20/2014	0-1	0.5		X	<20.0	871	**871**	<0.100	<0.100	<0.100	<0.100	<0.100	152
CS-1	7/9/2014	1-1.5		X		<50.0	<4.0	<50.0	-	-	-	-	-	-
AH-2	1/20/2014	0-0.5	0.5		X	<40.0	869	**869**	<0.200	<0.200	<0.200	<0.200	<0.200	373
CS-2	7/9/2014	1-1.5		X		<50.0	<4.0	<50.0	-	-	-	-	-	-
AH-3	1/20/2014	0-0.5	0.5		X	68.2	865	**933**	<0.100	0.129	0.212	1.64	1.98	757
CS-3	7/9/2014	1-1.5		X		<50.0	<4.0	<50.0	-	-	-	-	-	-
AH-4	1/20/2014	0-0.5	0.5		X	539	1,710	**2,249**	0.108	5.91	3.76	34.5	44.3	1,320
CS-4	7/9/2014	1-1.5		X		<50.0	<4.0	<50.0	-	-	-	-	-	-
AH-5	1/20/2014	0-0.5	0.5		X	440	3,720	**4,160**	<0.800	0.830	<0.800	10.6	11.4	1,740
CS-5	7/9/2014	1-1.5		X		<50.0	<4.0	<50.0	-	-	-	-	-	-

(-) Not Analyzed

(BEB) Below Excavation Bottom

Excavation Depth

Table 2
COG Operating LLC.
Way South State Commingle #1H Tank Battery
Chloride Background Concentrations
Eddy County, New Mexico

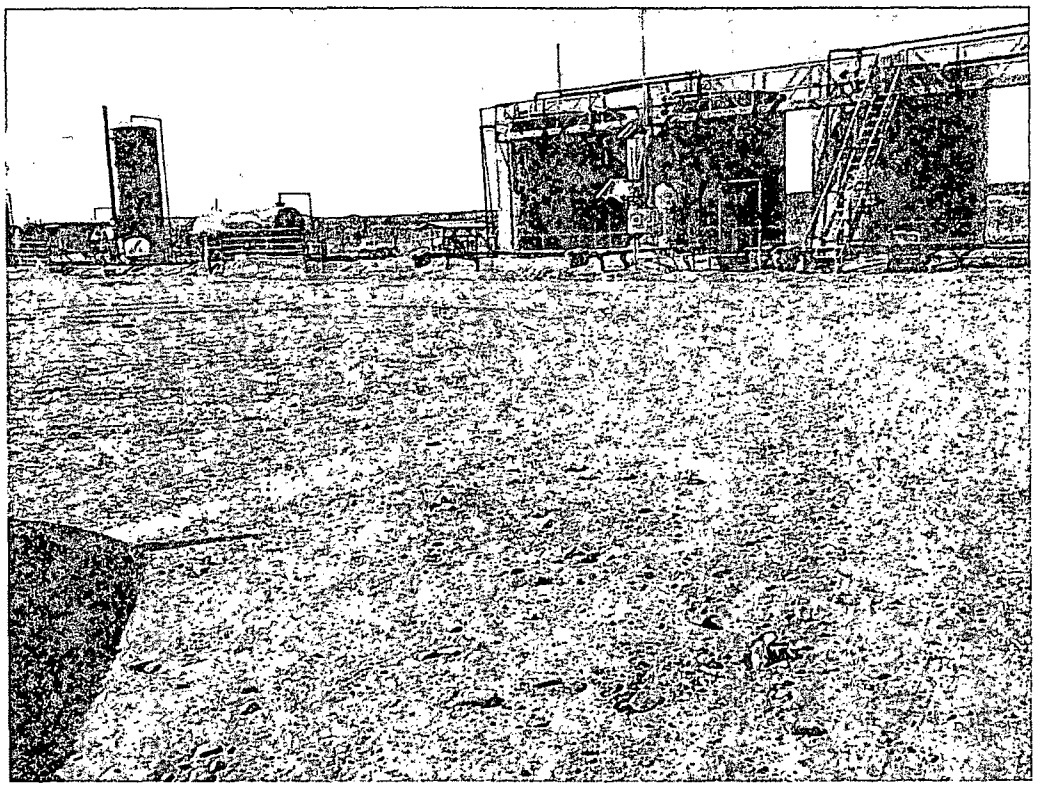
Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
Background Trench-1	1/8/2013	0-1	X		-	-	-	-	-	-	-	-	194
	"	2	X		-	-	-	-	-	-	-	-	995
	"	4	X		-	-	-	-	-	-	-	-	2,160
	"	6	X		-	-	-	-	-	-	-	-	2,170
	"	8	X		-	-	-	-	-	-	-	-	1,080
	"	10	X		-	-	-	-	-	-	-	-	991
Background Trench-2	1/8/2013	0-1	X		-	-	-	-	-	-	-	-	<20.0
	"	2	X		-	-	-	-	-	-	-	-	1,810
	"	4	X		-	-	-	-	-	-	-	-	3,650
	"	6	X		-	-	-	-	-	-	-	-	1,650
	"	8	X		-	-	-	-	-	-	-	-	1,340
	"	10	X		-	-	-	-	-	-	-	-	1,330

(-) Not Analyzed

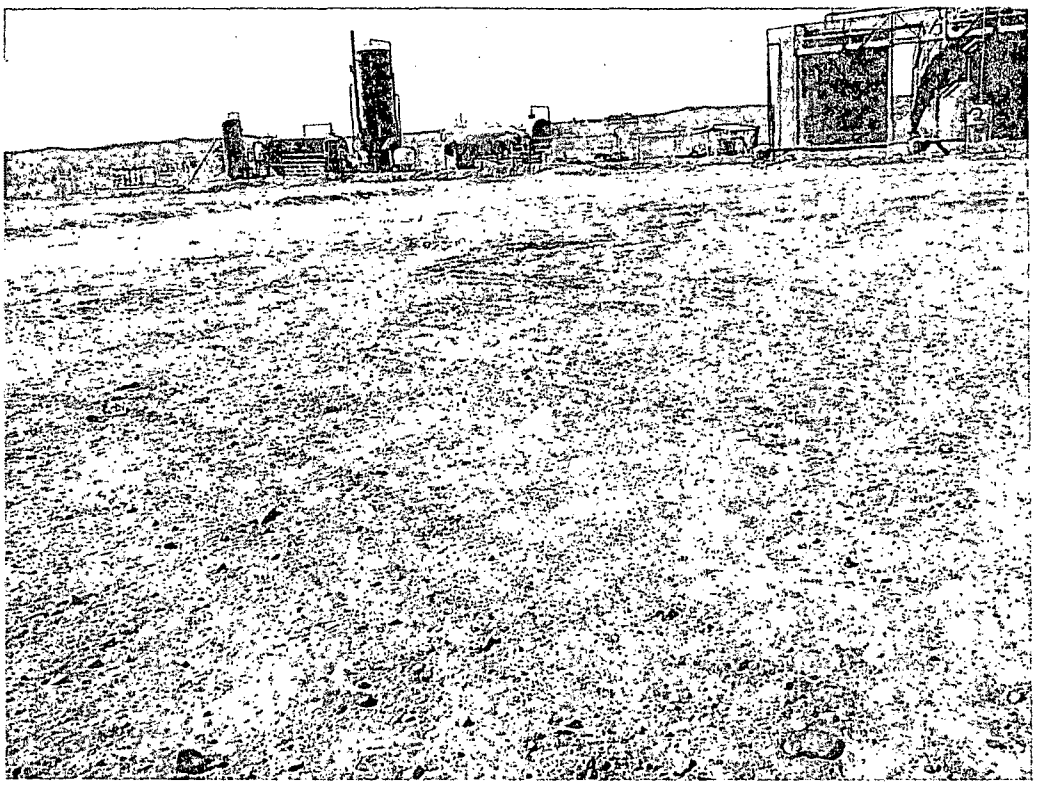
PHOTOGRAPHS

COG Operating LLC
Down South State Com #4
Eddy County, New Mexico

TETRA TECH



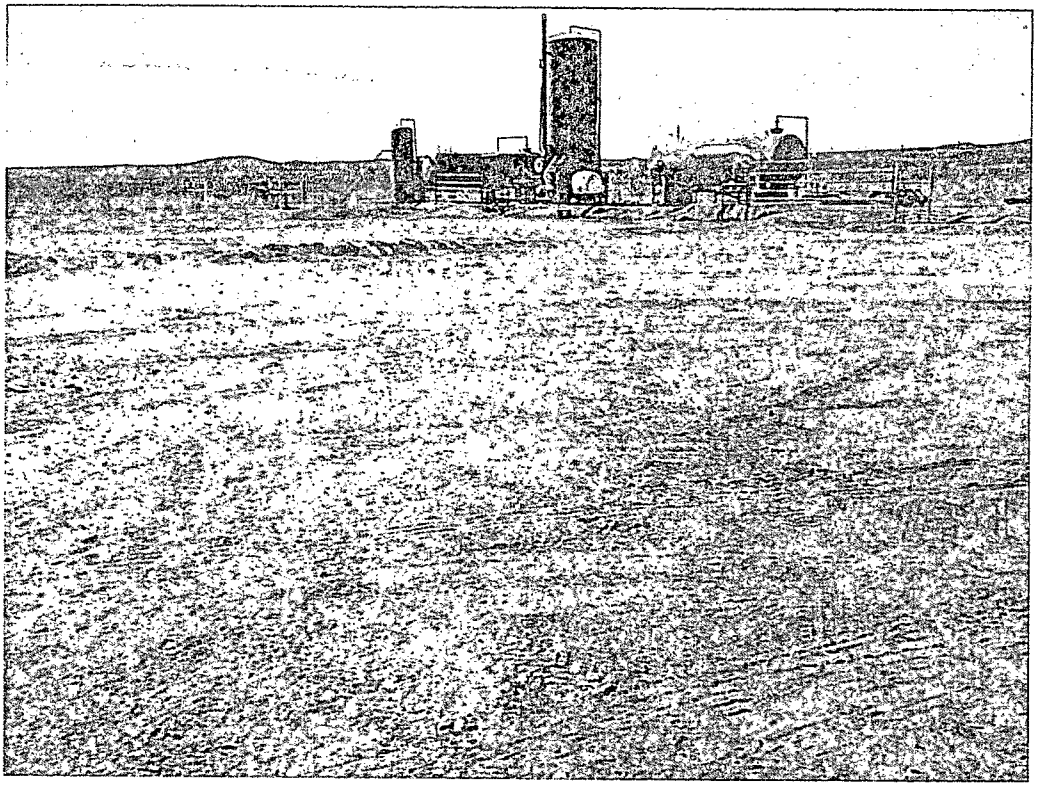
View Southwest – Area of AH-1



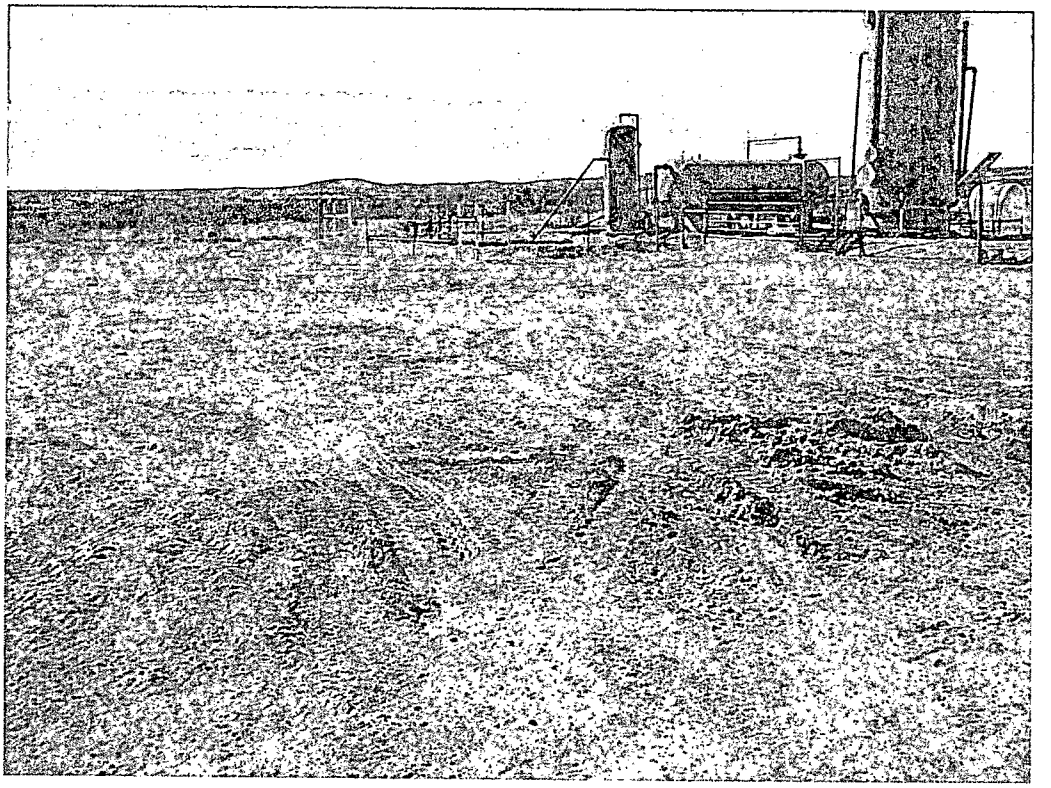
View Southwest – Area of AH-2

COG Operating LLC
Down South State Com #4
Eddy County, New Mexico

TETRA TECH



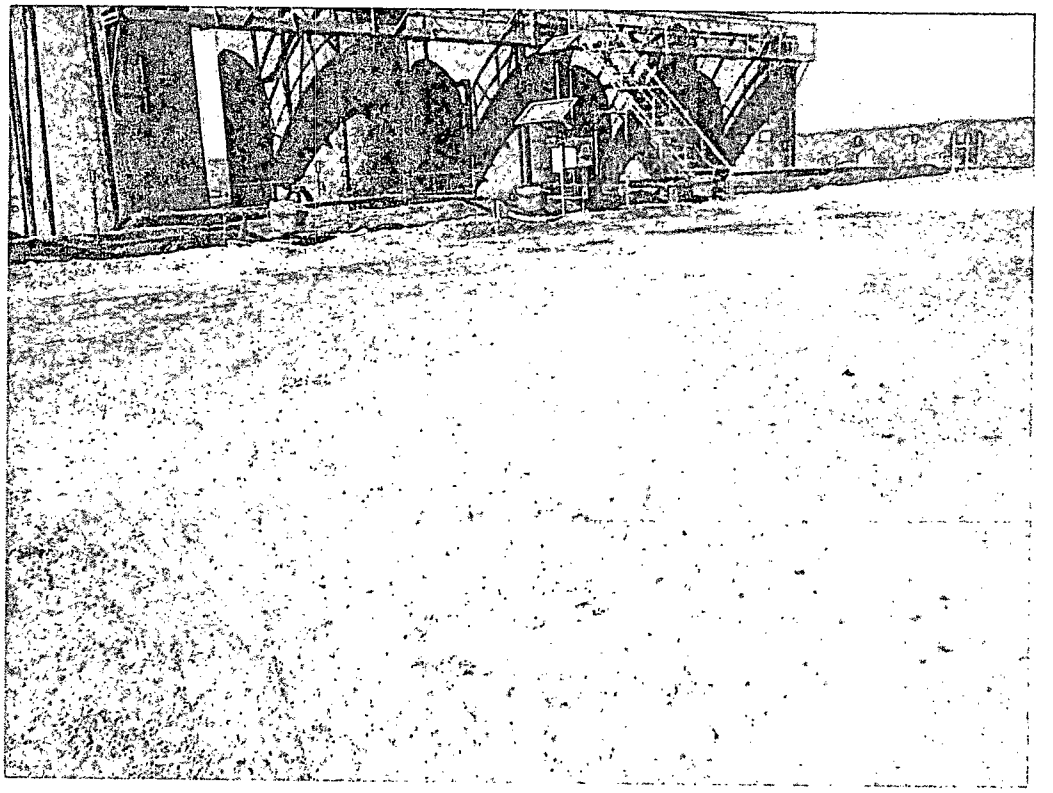
View South – Area of AH-3



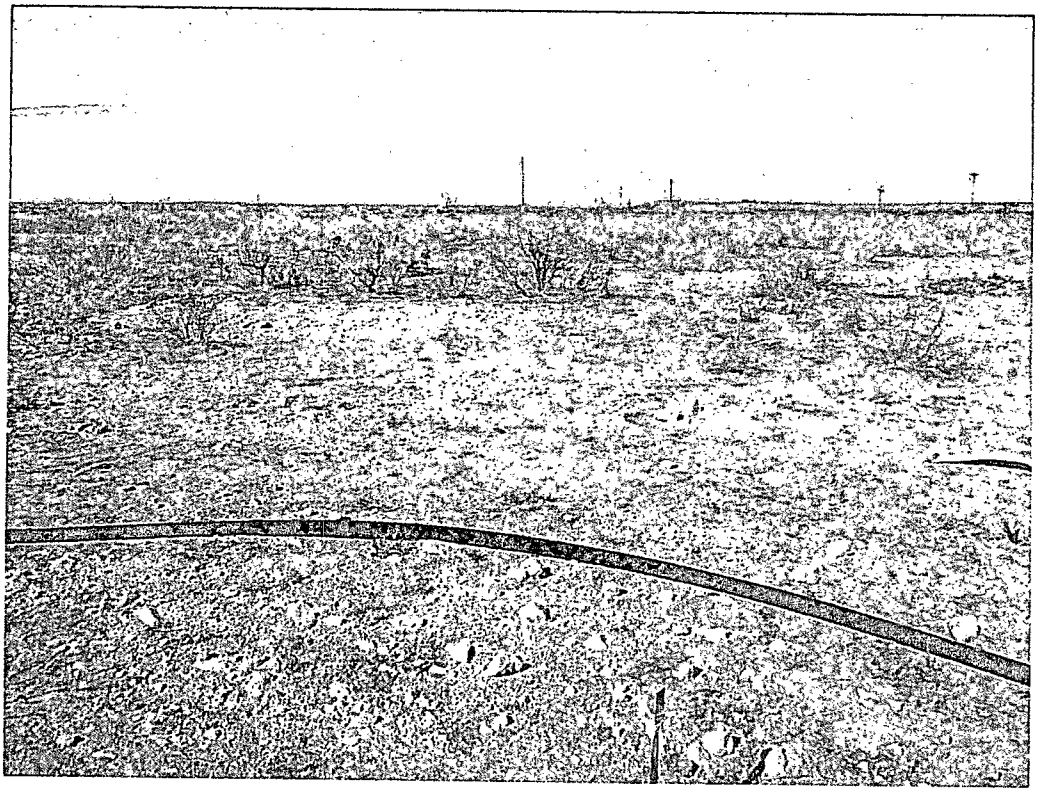
View South – Area of AH-4

COG Operating LLC
Down South State Com #4
Eddy County, New Mexico

TETRA TECH



View Northwest – Area of AH-5

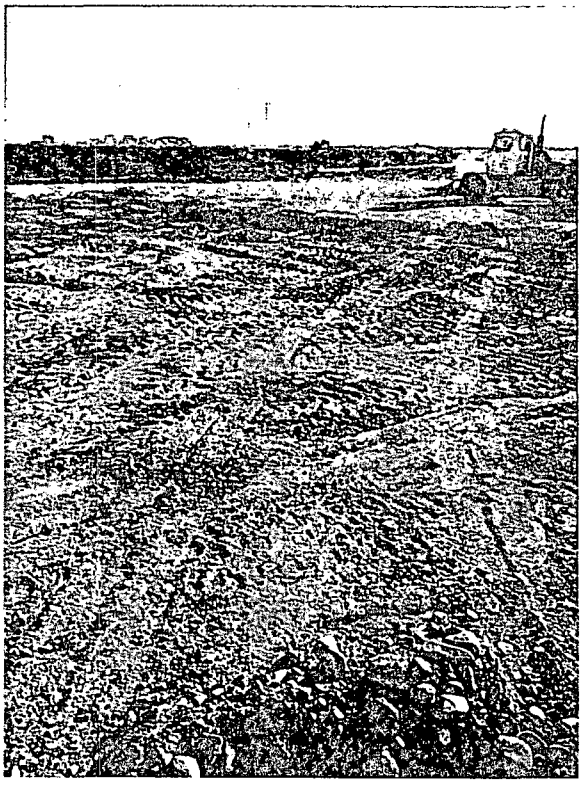


View North – Area affected by overspray

COG Operating LLC
Down South State Com #4
Eddy County, New Mexico

TETRA TECH

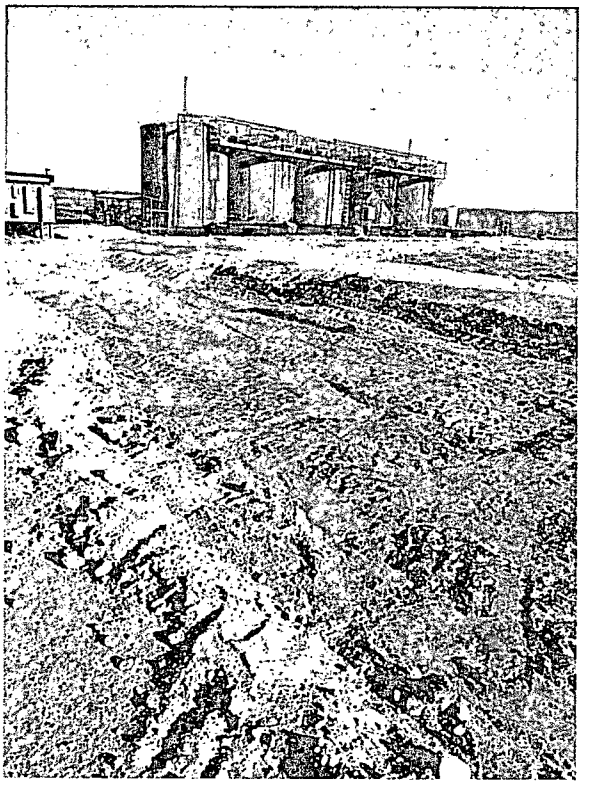
View North – Excavated area of AH-1 and AH-2



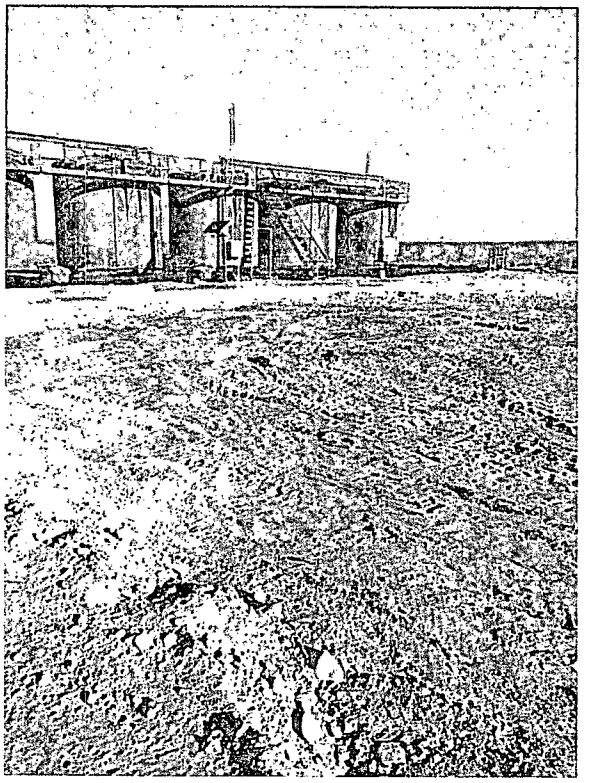
View West – Excavated area of AH-3

COG Operating LLC
Down South State Com #4
Eddy County, New Mexico

TETRA TECH



View West – Excavated area of AH-4



View West – Excavated area of AH-5

APPENDIX A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Robert McNeill
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Down South State Com #004H	Facility Type	Tank Battery

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-37256

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	19	26S	28E					Eddy

Latitude 32.02223 **Longitude** 104.11917

NATURE OF RELEASE

Type of Release Oil and produced water	Volume of Release 15bbls of oil 25bbls of produced water	Volume Recovered 0bbls of oil 0bbls of produced water
Source of Release FWKO	Date and Hour of Occurrence 12-08-2013	Date and Hour of Discovery 12-08-2013 3:30pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Michelle Mullins	Date and Hour 12-10-2013 07:12am	
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.*

A gasket on a FWKO failed. Replaced the gasket to prevent a reoccurrence.

Describe Area Affected and Cleanup Action Taken.*

Initially an estimated 15bbls of oil and 25bbls of produced water were released from a gasket failure on a FWKO. We were unable to recover any fluids. The spill area is located on the location and the adjacent pasture. Concho will have the spill area sampled to delineate any possible contamination from the release and we will present a 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: Robert Grubbs Jr.	Approved by District Supervisor:
Title: Senior Environmental Coordinator	Approval Date: / Expiration Date:
E-mail Address: rgrubbs@concho.com	Conditions of Approval: / Attached ☐
Date: 12-19-2013 Phone: 432-661-6601	

* 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 **Robert McNeil**
Address **600 West Illinois Avenue, Midland, Texas 79701**	Telephone No. **(432) 230-0077**
Facility Name **Down South State Com #4H**	Facility Type **Tank Battery**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-37256

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	19	26S	28E					Eddy

Latitude N 32.02223° **Longitude** W 104.11917°

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release 15 bbls oil 25 bbls produced water	Volume Recovered 0 bbls oil 0 bbls produced water
Source of Release FWKO	Date and Hour of Occurrence 12-08-2013	Date and Hour of Discovery 12-08-2013 3:30 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher – NMOCD	
By Whom?	Date and Hour 12-10-2013 07:12 am	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 29 2014
RECEIVED

Describe Cause of Problem and Remedial Action Taken.*

A gasket on a FWKO failed. Replaced the gasket to prevent reoccurrence.

Describe Area Affected and Cleanup Action Taken.*

Initially an estimated 15 bbls of oil and 25 bbls of produced water were released from a failed gasket on a FWKO. None of the fluids were recovered. The spill area is on the location and overspray on the adjacent pasture. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:
Title: Senior Project Manager, P.G.	Approval Date: / Expiration Date:
E-mail Address: Ike.Tavarez@tetratech.com	Conditions of Approval: / Attached ☐
Date: 8-18-14 Phone: (432) 687-8110	

Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
COG - Down South State Com #4H
Eddy County, New Mexico

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

Carlsbad

6	5 **59**	4 **35**	3 **32**	2	1 Site
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 **40**	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 **115**	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** **21**	1
7	8	9	10	11	12 **100**
18	17	16	15	14 **120**	13 **56**
19 SITE	20	21	22 **120**	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South 29 East

6	5 **78**	4	3	2	1
7	8	9	10	11	12
18	17	16 **125**	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 29, 2014

Work Order: 14012136

Project Location: Eddy Co, NM
Project Name: COG/Down South State Com #4H
Project Number: 112MC06167

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
352054	AH-1 0-1'	soil	2014-01-20	00:00	2014-01-21
352055	AH-2 0-0.5'	soil	2014-01-20	00:00	2014-01-21
352056	AH-3 0-0.5'	soil	2014-01-20	00:00	2014-01-21
352057	AH-4 0-0.5'	soil	2014-01-20	00:00	2014-01-21
352058	AH-5 0-0.5'	soil	2014-01-20	00:00	2014-01-21

	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)
352054 - AH-1 0-1'	<0.100 [1] Qr	<0.100 Qr	<0.100 Qr	<0.100 Qr	**871** Qs	<20.0 [2]
352055 - AH-2 0-0.5'	<0.200 [3] Qr	<0.200 Qr	<0.200 Qr	<0.200 Qr	**869** Qs	<40.0 [4]
352056 - AH-3 0-0.5'	<0.100 [5] Qr	**0.129** Qr	**0.212** Qr	**1.64** Qr	**865** Qr,Qs	**68.2**
352057 - AH-4 0-0.5'	**0.108** Qr	**5.91** Qr	**3.76** Qr	**34.5** Qr	**1710** Qr,Qs	**539**
352058 - AH-5 0-0.5'	<0.800 [6] Qr	**0.830** Qr	<0.800 Qr	**10.6** Qr	**3720** Qr,Qs	**440**

Sample: 352054 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**152**	mg/Kg	4

Sample: 352055 - AH-2 0-0.5'

[1] Dilution due to surfactants.
[2] Dilution due to surfactants.
[3] Dilution due to surfactants.
[4] Dilution due to surfactants.
[5] Dilution due to hydrocarons.
[6] Dilution due to hydrocarons.

Param	Flag	Result	Units	RL
Chloride		**373**	mg/Kg	4

Sample: 352056 - AH-3 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**757**	mg/Kg	4

Sample: 352057 - AH-4 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**1320**	mg/Kg	4

Sample: 352058 - AH-5 0-0.5'

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

TRACEANALYSIS, INC.

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

Report Date: January 29, 2014

Work Order: 14012136

Project Location: Eddy Co, NM
Project Name: COG/Down South State Com #4H
Project Number: 112MC06167

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
352054	AH-1 0-1'	soil	2014-01-20	00:00	2014-01-21
352055	AH-2 0-0.5'	soil	2014-01-20	00:00	2014-01-21
352056	AH-3 0-0.5'	soil	2014-01-20	00:00	2014-01-21
352057	AH-4 0-0.5'	soil	2014-01-20	00:00	2014-01-21
352058	AH-5 0-0.5'	soil	2014-01-20	00:00	2014-01-21

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.

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/Down South State Com #4H were received by TraceAnalysis, Inc. on 2014-01-21 and assigned to work order 14012136. Samples for work order 14012136 were received intact at a temperature of 6.8 C. Samples on ice.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	91798	2014-01-22 at 14:44	108575	2014-01-23 at 14:57
Chloride (Titration)	SM 4500-Cl B	91894	2014-01-27 at 08:22	108697	2014-01-28 at 14:23
TPH DRO - NEW	S 8015 D	91896	2014-01-24 at 16:00	108640	2014-01-27 at 06:20
TPH DRO - NEW	S 8015 D	91898	2014-01-24 at 16:30	108641	2014-01-27 at 10:35
TPH GRO	S 8015 D	91798	2014-01-22 at 14:44	108577	2014-01-23 at 15:01

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 14012136 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: 352054 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	108575	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qr,U	2	<0.100	mg/Kg	5	0.0200
Toluene	Qr	2	<0.100	mg/Kg	5	0.0200
Ethylbenzene	Qr,U	2	<0.100	mg/Kg	5	0.0200
Xylene	Qr	2	<0.100	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	5	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.27	mg/Kg	5	2.00	114	70 - 130

Sample: 352054 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108697	Date Analyzed:	2014-01-28	Analyzed By:	AR
Prep Batch:	91894	Sample Preparation:	2014-01-27	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**152**	mg/Kg	5	4.00

Sample: 352054 - AH-1 0-1'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	108640	Date Analyzed:	2014-01-27	Analyzed By:	CM
Prep Batch:	91896	Sample Preparation:	2014-01-24	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**871**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	155	mg/Kg	1	100	155	70 - 130

Sample: 352054 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	108577	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [2]	U	2	<20.0	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	5	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.58	mg/Kg	5	2.00	129	70 - 130

Sample: 352055 - AH-2 0-0.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	108575	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene [3]	Qr,U	2	<0.200	mg/Kg	10	0.0200
Toluene	Qr,U	2	<0.200	mg/Kg	10	0.0200
Ethylbenzene	Qr,U	2	<0.200	mg/Kg	10	0.0200
Xylene	Qr	2	<0.200	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	10	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.30	mg/Kg	10	2.00	115	70 - 130

Sample: 352055 - AH-2 0-0.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108697	Date Analyzed:	2014-01-28	Analyzed By:	AR
Prep Batch:	91894	Sample Preparation:	2014-01-27	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**373**	mg/Kg	5	4.00

Sample: 352055 - AH-2 0-0.5'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	108640	Date Analyzed:	2014-01-27	Analyzed By:	CM
Prep Batch:	91896	Sample Preparation:	2014-01-24	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**869**	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	70 - 130

Sample: 352055 - AH-2 0-0.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	108577	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter		Flag	Cert	Result	RL Units	Dilution	RL
GRO	4	U	2	<40.0	mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	10	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			2.58	mg/Kg	10	2.00	129	70 - 130

Sample: 352056 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	108575	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [5]	Qr,U	2	<0.100	mg/Kg	5	0.0200
Toluene	Qr	2	**0.129**	mg/Kg	5	0.0200
Ethylbenzene	Qr	2	**0.212**	mg/Kg	5	0.0200
Xylene	Qr	2	**1.64**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	5	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.91	mg/Kg	5	2.00	146	70 - 130

Sample: 352056 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108697	Date Analyzed:	2014-01-28	Analyzed By:	AR
Prep Batch:	91894	Sample Preparation:	2014-01-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**757**	mg/Kg	5	4.00

Sample: 352056 - AH-3 0-0.5'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	108641	Date Analyzed:	2014-01-27	Analyzed By:	DS
Prep Batch:	91898	Sample Preparation:	2014-01-24	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**865**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			125	mg/Kg	1	100	125	70 - 130

Sample: 352056 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	108577	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		2	**68.2**	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	5	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	4.07	mg/Kg	5	2.00	204	70 - 130

Sample: 352057 - AH-4 0-0.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	108575	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qr	2	**0.108**	mg/Kg	5	0.0200
Toluene	Qr	2	**5.91**	mg/Kg	5	0.0200
Ethylbenzene	Qr	2	**3.76**	mg/Kg	5	0.0200
Xylene	Qr	2	**34.5**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.63	mg/Kg	5	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	5.78	mg/Kg	5	2.00	289	70 - 130

Sample: 352057 - AH-4 0-0.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108697	Date Analyzed:	2014-01-28	Analyzed By:	AR
Prep Batch:	91894	Sample Preparation:	2014-01-27	Prepared By:	AR

continued ...

sample 352057 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1320**	mg/Kg	10	4.00

Sample: 352057 - AH-4 0-0.5'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	108641	Date Analyzed:	2014-01-27	Analyzed By:	DS
Prep Batch:	91898	Sample Preparation:	2014-01-24	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**1710**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	184	mg/Kg	1	100	184	70 - 130

Sample: 352057 - AH-4 0-0.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	108577	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	**539**	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.66	mg/Kg	5	2.00	83	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	11.4	mg/Kg	5	2.00	570	70 - 130

Sample: 352058 - AH-5 0-0.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	108575	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [6]	Qr,U	2	<0.800	mg/Kg	40	0.0200
Toluene	Qr	2	**0.830**	mg/Kg	40	0.0200
Ethylbenzene	Qr,U	2	<0.800	mg/Kg	40	0.0200
Xylene	Qr	2	**10.6**	mg/Kg	40	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	40	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	7.87	mg/Kg	40	2.00	394	70 - 130

Sample: 352058 - AH-5 0-0.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108697	Date Analyzed:	2014-01-28	Analyzed By:	AR
Prep Batch:	91894	Sample Preparation:	2014-01-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1740**	mg/Kg	10	4.00

Sample: 352058 - AH-5 0-0.5'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	108641	Date Analyzed:	2014-01-27	Analyzed By:	DS
Prep Batch:	91898	Sample Preparation:	2014-01-24	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**3720**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	226	mg/Kg	1	100	226	70 - 130

Sample: 352058 - AH-5 0-0.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	108577	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	Sample Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		2	**440**	mg/Kg	40	4.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr		0.00	mg/Kg	40	2.00	0	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		12.7	mg/Kg	40	2.00	635	70 - 130

Method Blanks

Method Blank (1) QC Batch: 108575

QC Batch:	108575	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	QC Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		2	<0.00533	mg/Kg	0.02
Toluene		2	<0.00645	mg/Kg	0.02
Ethylbenzene		2	<0.0116	mg/Kg	0.02
Xylene		2	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70 - 130

Method Blank (1) QC Batch: 108577

QC Batch:	108577	Date Analyzed:	2014-01-23	Analyzed By:	AK
Prep Batch:	91798	QC Preparation:	2014-01-22	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		2	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	70 - 130
4-Bromofluorobenzene (4-BFB)			2.15	mg/Kg	1	2.00	108	70 - 130

Method Blank (1) QC Batch: 108640

QC Batch:	108640	Date Analyzed:	2014-01-27	Analyzed By:	CM
Prep Batch:	91896	QC Preparation:	2014-01-24	Prepared By:	CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			91.6	mg/Kg	1	100	92	70 - 130

Method Blank (1) QC Batch: 108641

QC Batch: 108641 Date Analyzed: 2014-01-27 Analyzed By: DS
Prep Batch: 91898 QC Preparation: 2014-01-24 Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	70 - 130

Method Blank (1) QC Batch: 108697

QC Batch: 108697 Date Analyzed: 2014-01-28 Analyzed By: AR
Prep Batch: 91894 QC Preparation: 2014-01-27 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: 108575 | Date Analyzed: 2014-01-23 | Analyzed By: AK
Prep Batch: 91798 | QC Preparation: 2014-01-22 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	1.61	mg/Kg	1	2.00	<0.00533	80	70 - 130
Toluene		2	1.72	mg/Kg	1	2.00	<0.00645	86	70 - 130
Ethylbenzene		2	1.85	mg/Kg	1	2.00	<0.0116	92	70 - 130
Xylene		2	5.68	mg/Kg	1	6.00	<0.00874	95	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	Qr	2	2.07	mg/Kg	1	2.00	<0.00533	104	70 - 130	25	20
Toluene	Qr	2	2.28	mg/Kg	1	2.00	<0.00645	114	70 - 130	28	20
Ethylbenzene	Qr	2	2.56	mg/Kg	1	2.00	<0.0116	128	70 - 130	32	20
Xylene	Qr	2	7.79	mg/Kg	1	6.00	<0.00874	130	70 - 130	31	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)	1.68	2.22	mg/Kg	1	2.00	84	111	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	2.45	mg/Kg	1	2.00	97	122	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108577 | Date Analyzed: 2014-01-23 | Analyzed By: AK
Prep Batch: 91798 | QC Preparation: 2014-01-22 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	16.3	mg/Kg	1	20.0	<2.32	82	70 - 130

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

continued ...

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		2	17.2	mg/Kg	1	20.0	<2.32	86	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	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.76	1.87	mg/Kg	1	2.00	88	94	70 - 130
4-Bromofluorobenzene (4-BFB)	2.13	2.17	mg/Kg	1	2.00	106	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108640 | Date Analyzed: 2014-01-27 | Analyzed By: CM
Prep Batch: 91896 | QC Preparation: 2014-01-24 | Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	215	mg/Kg	1	250	<5.22	86	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	213	mg/Kg	1	250	<5.22	85	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	91.4	92.4	mg/Kg	1	100	91	92	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108641 | Date Analyzed: 2014-01-27 | Analyzed By: DS
Prep Batch: 91898 | QC Preparation: 2014-01-24 | Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	202	mg/Kg	1	250	<5.22	81	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	209	mg/Kg	1	250	<5.22	84	70 - 130	3	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	88.7	90.7	mg/Kg	1	100	89	91	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108697 | Date Analyzed: 2014-01-28 | Analyzed By: AR
Prep Batch: 91894 | QC Preparation: 2014-01-27 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2730	mg/Kg	1	2500	<3.85	109	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	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2640	mg/Kg	1	2500	<3.85	106	89.7 - 115.9	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: 352019

QC Batch: 108575 | Date Analyzed: 2014-01-23 | Analyzed By: AK
Prep Batch: 91798 | QC Preparation: 2014-01-22 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	1.64	mg/Kg	1	2.00	<0.00533	82	70 - 130
Toluene		2	1.80	mg/Kg	1	2.00	<0.00645	90	70 - 130
Ethylbenzene		2	1.88	mg/Kg	1	2.00	<0.0116	94	70 - 130
Xylene		2	5.75	mg/Kg	1	6.00	<0.00874	96	70 - 130

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

continued ...

matrix spikes continued ...

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		2	1.70	mg/Kg	1	2.00	<0.00533	85	70 - 130	4	20
Toluene		2	1.84	mg/Kg	1	2.00	<0.00645	92	70 - 130	2	20
Ethylbenzene		2	2.01	mg/Kg	1	2.00	<0.0116	100	70 - 130	7	20
Xylene		2	6.14	mg/Kg	1	6.00	<0.00874	102	70 - 130	7	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)	1.67	1.74	mg/Kg	1	2	84	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.82	1.94	mg/Kg	1	2	91	97	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352019

QC Batch: 108577 | Date Analyzed: 2014-01-23 | Analyzed By: AK
Prep Batch: 91798 | QC Preparation: 2014-01-22 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	16.2	mg/Kg	1	20.0	<2.32	81	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		2	16.1	mg/Kg	1	20.0	<2.32	80	70 - 130	1	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)	1.75	1.68	mg/Kg	1	2	88	84	70 - 130
4-Bromofluorobenzene (4-BFB)	2.04	2.00	mg/Kg	1	2	102	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 351575

QC Batch: 108640 | Date Analyzed: 2014-01-27 | Analyzed By: CM
Prep Batch: 91896 | QC Preparation: 2014-01-24 | Prepared By: CM

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs	1	2370	mg/Kg	1	250	2770	-160	70 - 130

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qs	Qs	1	2880	mg/Kg	1	250	2770	44	70 - 130	19	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	166	187	mg/Kg	1	100	166	187	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352056

QC Batch: 108641 | Date Analyzed: 2014-01-27 | Analyzed By: DS
Prep Batch: 91898 | QC Preparation: 2014-01-24 | Prepared By: CM

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs	1	548	mg/Kg	1	250	865	-125	70 - 130

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qr,Qs	Qr,Qs	1	881	mg/Kg	1	250	865	6	70 - 130	47	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	109	133	mg/Kg	1	100	109	133	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352058

QC Batch: 108697 | Date Analyzed: 2014-01-28 | Analyzed By: AR
Prep Batch: 91894 | QC Preparation: 2014-01-27 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			4390	mg/Kg	10	2500	1740	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			4510	mg/Kg	10	2500	1740	111	78.9 - 121	3	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: 108575 | Date Analyzed: 2014-01-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0961	96	80 - 120	2014-01-23
Toluene		2	mg/kg	0.100	0.103	103	80 - 120	2014-01-23
Ethylbenzene		2	mg/kg	0.100	0.102	102	80 - 120	2014-01-23
Xylene		2	mg/kg	0.300	0.310	103	80 - 120	2014-01-23

Standard (CCV-2)

QC Batch: 108575 | Date Analyzed: 2014-01-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0980	98	80 - 120	2014-01-23
Toluene		2	mg/kg	0.100	0.102	102	80 - 120	2014-01-23
Ethylbenzene		2	mg/kg	0.100	0.102	102	80 - 120	2014-01-23
Xylene		2	mg/kg	0.300	0.311	104	80 - 120	2014-01-23

Standard (CCV-3)

QC Batch: 108575 | Date Analyzed: 2014-01-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0989	99	80 - 120	2014-01-23
Toluene		2	mg/kg	0.100	0.104	104	80 - 120	2014-01-23
Ethylbenzene		2	mg/kg	0.100	0.102	102	80 - 120	2014-01-23
Xylene		2	mg/kg	0.300	0.312	104	80 - 120	2014-01-23

Standard (CCV-1)

QC Batch: 108577 | Date Analyzed: 2014-01-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.03	103	80 - 120	2014-01-23

Standard (CCV-2)

QC Batch: 108577 | Date Analyzed: 2014-01-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	0.943	94	80 - 120	2014-01-23

Standard (CCV-3)

QC Batch: 108577 | Date Analyzed: 2014-01-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	0.976	98	80 - 120	2014-01-23

Standard (CCV-1)

QC Batch: 108640 | Date Analyzed: 2014-01-27 | Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	202	81	80 - 120	2014-01-27

Standard (CCV-2)

QC Batch: 108640 | Date Analyzed: 2014-01-27 | Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	208	83	80 - 120	2014-01-27

Standard (CCV-3)

QC Batch: 108640 Date Analyzed: 2014-01-27 Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	204	82	80 - 120	2014-01-27

Standard (CCV-1)

QC Batch: 108641 Date Analyzed: 2014-01-27 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	204	82	80 - 120	2014-01-27

Standard (CCV-2)

QC Batch: 108641 Date Analyzed: 2014-01-27 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	214	86	80 - 120	2014-01-27

Standard (CCV-3)

QC Batch: 108641 Date Analyzed: 2014-01-27 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	212	85	80 - 120	2014-01-27

Standard (CCV-1)

QC Batch: 108697 Date Analyzed: 2014-01-28 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	100	100	85 - 115	2014-01-28

Standard (CCV-2)

QC Batch: 108697 Date Analyzed: 2014-01-28 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	2014-01-28

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	T104704219-13-9	Lubbock
2	NELAP	T104704392-13-7	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

Result Comments

1 Dilution due to surfactants.
2 Dilution due to surfactants.
3 Dilution due to surfactants.
4 Dilution due to surfactants.
5 Dilution due to hydrocarons.
6 Dilution due to hydrocarons.

Attachments

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

14.10.15a

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.: 112MC04107

PROJECT NAME: Dagger South State Com #4H

Eddy Co. NM

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	# CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TRH 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
552054	1/20		S		X	AH-1 0-1					X		X	X										X				
055						AH-2 0-.5					X		X	X										X				
056						AH-3 0-.5					X		X	X										X				
057						AH-4 0-.5					X		X	X										X				
058	↓		↓		↓	AH-5 0-.5					X		X	X										X				

RELINQUISHED BY: (Signature) Diana Gonzales — Date: 1/23/14 Time: 1552 — RECEIVED BY: (Signature) — Date: 1/24/14 Time: 15:52

SAMPLED BY: (Print & Initial) RB CG — Date: 1/23/14 Time:

RELINQUISHED BY: (Signature) — Date: 1/22/14 Time: 15:30 — RECEIVED BY: (Signature) — Date: Time:

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: — Results by:

RECEIVING LABORATORY: — RECEIVED BY: (Signature) TA

ADDRESS: — CITY: — STATE: — ZIP: — CONTACT: — PHONE: — DATE: 1/B/14 — TIME: 9:30

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 6.8° #3 3.5/2.3

REMARKS: Midland - BTEX/GRO/Cl Lubbock - DRO LS: EQ 808910

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

AJ

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: 1

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC04107

PROJECT NAME: Dagger South State Com #4H

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION Eddy Co. NM	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TRPH 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
552054	1/20		S		X	AH-1 0-1					X		X	X										X				
055						AH-2 0-.5					X		X	X										X				
056						AH-3 0-.5					X		X	X										X				
057						AH-4 0-.5					X		X	X										X				
058	↓		↓		↓	AH-5 0-.5					X		X	X										X				

RELINQUISHED BY: (Signature) Date: 1/21/14 Time: 1552 — RECEIVED BY: (Signature) Date: 1/21/14 Time: 15:52

RELINQUISHED BY: (Signature) Date: 1/22/14 Time: 15:30 — RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time: — RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) K.P. & C.G. Date: 1/20/14 Time:

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

TETRA TECH CONTACT PERSON: — Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: — ADDRESS: — CITY: — STATE: — ZIP: — CONTACT: — PHONE:

RECEIVED BY: (Signature) TA — DATE: 1/22/14 — TIME: 9:30

SAMPLE CONDITION WHEN RECEIVED: 6.8° 123 3.5/3.3

REMARKS: Midland - BTEX/GRO/CL Lubbock - DRO LS: EQ 808910

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

AJ

Summary Report

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

Report Date: July 16, 2014

Work Order: 14071024

Project Location: NM
Project Name: COG/Down South
Project Number: TBD

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
367977	CS-1 (AH-1) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367978	CS-2 (AH-2) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367979	CS-3 (AH-3) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367980	CS-4 (AH-4) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367981	CS-5 (AH-5) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10

Sample - Field Code	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
367977 - CS-1 (AH-1) 1-1.5' BS	<50.0	<4.00
367978 - CS-2 (AH-2) 1-1.5' BS	<50.0	<4.00
367979 - CS-3 (AH-3) 1-1.5' BS	<50.0	<4.00
367980 - CS-4 (AH-4) 1-1.5' BS	<50.0	<4.00
367981 - CS-5 (AH-5) 1-1.5' BS	<50.0	<4.00

TRACEANALYSIS, INC.

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
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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: July 16, 2014

Work Order: 14071024

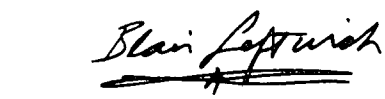
Project Location: NM
Project Name: COG/Down South
Project Number: TBD

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
367977	CS-1 (AH-1) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367978	CS-2 (AH-2) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367979	CS-3 (AH-3) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367980	CS-4 (AH-4) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10
367981	CS-5 (AH-5) 1-1.5' BS	soil	2014-07-09	00:00	2014-07-10

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 14 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director

Report Contents

Case Narrative

Samples for project COG/Down South were received by TraceAnalysis, Inc. on 2014-07-10 and assigned to work order 14071024. Samples for work order 14071024 were received intact at a temperature of 5.2 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO - NEW	S 8015 D	96138	2014-07-15 at 13:30	113663	2014-07-16 at 10:34
TPH GRO	S 8015 D	96024	2014-07-11 at 10:22	113610	2014-07-15 at 07:38

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 14071024 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: 367977 - CS-1 (AH-1) 1-1.5' BS

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	113663	Date Analyzed:	2014-07-16	Analyzed By:	CM
Prep Batch:	96138	Sample Preparation:	2014-07-15	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	J6	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	108	mg/Kg	1	100	108	70 - 130

Sample: 367977 - CS-1 (AH-1) 1-1.5' BS

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	113610	Date Analyzed:	2014-07-15	Analyzed By:	AK
Prep Batch:	96024	Sample Preparation:	2014-07-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.20	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 367978 - CS-2 (AH-2) 1-1.5' BS

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	113663	Date Analyzed:	2014-07-16	Analyzed By:	CM
Prep Batch:	96138	Sample Preparation:	2014-07-15	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	110	mg/Kg	1	100	110	70 - 130

Sample: 367978 - CS-2 (AH-2) 1-1.5' BS

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	113610	Date Analyzed:	2014-07-15	Analyzed By:	AK
Prep Batch:	96024	Sample Preparation:	2014-07-11	Prepared By:	AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			1.65	mg/Kg	1	2.00	82	70 - 130

Sample: 367979 - CS-3 (AH-3) 1-1.5' BS

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	113663	Date Analyzed:	2014-07-16	Analyzed By:	CM
Prep Batch:	96138	Sample Preparation:	2014-07-15	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	110	mg/Kg	1	100	110	70 - 130

Sample: 367979 - CS-3 (AH-3) 1-1.5' BS

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	113610	Date Analyzed:	2014-07-15	Analyzed By:	AK
Prep Batch:	96024	Sample Preparation:	2014-07-11	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.24	mg/Kg	1	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 367980 - CS-4 (AH-4) 1-1.5' BS

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	113663	Date Analyzed:	2014-07-16	Analyzed By:	CM
Prep Batch:	96138	Sample Preparation:	2014-07-15	Prepared By:	CM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	109	mg/Kg	1	100	109	70 - 130

Sample: 367980 - CS-4 (AH-4) 1-1.5' BS

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	113610	Date Analyzed:	2014-07-15	Analyzed By:	AK
Prep Batch:	96024	Sample Preparation:	2014-07-11	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.60	mg/Kg	1	2.00	80	70 - 130
4-Bromofluorobenzene (4-BFB)			1.40	mg/Kg	1	2.00	70	70 - 130

Sample: 367981 - CS-5 (AH-5) 1-1.5' BS

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	113663	Date Analyzed:	2014-07-16	Analyzed By:	CM
Prep Batch:	96138	Sample Preparation:	2014-07-15	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	108	mg/Kg	1	100	108	70 - 130

Sample: 367981 - CS-5 (AH-5) 1-1.5' BS

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	113610	Date Analyzed:	2014-07-15	Analyzed By:	AK
Prep Batch:	96024	Sample Preparation:	2014-07-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.55	mg/Kg	1	2.00	78	70 - 130

Method Blanks

Method Blank (1) QC Batch: 113610

QC Batch: 113610 | Date Analyzed: 2014-07-15 | Analyzed By: AK
Prep Batch: 96024 | QC Preparation: 2014-07-11 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<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)			1.50	mg/Kg	1	2.00	75	70 - 130

Method Blank (1) QC Batch: 113663

QC Batch: 113663 | Date Analyzed: 2014-07-16 | Analyzed By: CM
Prep Batch: 96138 | QC Preparation: 2014-07-15 | Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	5.43	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	108	mg/Kg	1	100	108	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 113610 | Date Analyzed: 2014-07-15 | Analyzed By: AK
Prep Batch: 96024 | QC Preparation: 2014-07-11 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	17.0	mg/Kg	1	20.0	<2.32	85	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		5	17.0	mg/Kg	1	20.0	<2.32	85	70 - 130	0	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)	2.06	1.99	mg/Kg	1	2.00	103	100	70 - 130
4-Bromofluorobenzene (4-BFB)	1.89	1.80	mg/Kg	1	2.00	94	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 113663 | Date Analyzed: 2014-07-16 | Analyzed By: CM
Prep Batch: 96138 | QC Preparation: 2014-07-15 | Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	241	mg/Kg	1	250	5.43	94	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	241	mg/Kg	1	250	5.43	94	70 - 130	0	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	3	105	106	mg/Kg	1	100	105	106	70 - 130

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 367977

QC Batch: 113610 | Date Analyzed: 2014-07-15 | Analyzed By: AK
Prep Batch: 96024 | QC Preparation: 2014-07-11 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	15.6	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	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	15.8	mg/Kg	1	20.0	<2.32	79	70 - 130	1	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)	2.05	1.93	mg/Kg	1	2	102	96	70 - 130
4-Bromofluorobenzene (4-BFB)	1.86	1.81	mg/Kg	1	2	93	90	70 - 130

Matrix Spike (MS-1) Spiked Sample: 368067

QC Batch: 113663 | Date Analyzed: 2014-07-16 | Analyzed By: CM
Prep Batch: 96138 | QC Preparation: 2014-07-15 | Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	257	mg/Kg	1	250	8.26	99	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	262	mg/Kg	1	250	8.26	101	70 - 130	2	20

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

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	3	106	108	mg/Kg	1	100	106	108	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 113610 | Date Analyzed: 2014-07-15 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.916	92	80 - 120	2014-07-15

Standard (CCV-2)

QC Batch: 113610 | Date Analyzed: 2014-07-15 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.972	97	80 - 120	2014-07-15

Standard (CCV-1)

QC Batch: 113663 | Date Analyzed: 2014-07-16 | Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	250	239	96	80 - 120	2014-07-16

Standard (CCV-2)

QC Batch: 113663 | Date Analyzed: 2014-07-16 | Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	250	247	99	80 - 120	2014-07-16

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	PJLA	L14-93	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2013-083	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Jc	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.

F	Description
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.

140714

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: 1

CLIENT NAME: CEG

SITE MANAGER: IKE TAVAREZ

PROJECT NO.:

PROJECT NAME: DOWN SOUTH

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
36977	7/9		S		X	CS-1 (AH-1) - 1-1.5' BS	1	N			X	
978						CS-2 (AH-2 1-1.5' BS						
979						CS-3 (AH-3) 1-1.5' BS						
980						CS-4 (AH-4) 1-1.5' BS						
981						CS-5 (AH-5) 1-1.5' BS						

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH TX1005 MOD. (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. 8210/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 8081/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
	X															

RELINQUISHED BY: (Signature) — Date: 7/10/14 Time: 13:03

RECEIVED BY: (Signature) Allison Johnson — Date: 7-10-14 Time: 13:04

SAMPLED BY: (Print & Initial) RYAN/ALAN — Date: 7/9/14 Time:

RELINQUISHED BY: (Signature) — Date: Time:

RECEIVED BY: (Signature) — Date: Time:

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: TRACE

ADDRESS:

CITY: MIDLAND STATE: ZIP:

CONTACT: PHONE: DATE: TIME:

RECEIVED BY: (Signature)

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 5.2°C

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.