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 strict 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 GC Federal #44	Facility Type **Flowline**

Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-025-40237

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	20	17S	32E					Lea

Latitude N 32.81492° **Longitude** W 103.78728°

NATURE OF RELEASE

Type of Release: Oil and Produced water	Volume of Release **2 bbls oil 4 bbls produced water**	Volume Recovered **1 bbls oil 2 bbls produced water**
Source of Release Steel Flowline	Date and Hour of Occurrence 11-10-2013	Date and Hour of Discovery **11-10-2013 2:14p.m.**
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

A steel flowline failed due to corrosion. Replaced the steel flowline.

Describe Area Affected and Cleanup Action Taken.*

Initially 2 bbls of oil and 4 bbls of produced water were released from a steel flowline that developed a hole due to corrosion. 1 bbls of oil and 2 bbls of produced water was recovered with a vacuum truck. All free fluids have been removed. 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~~: Environmental Specialist	
Title: Project Manager, P.G.	Approval Date: 8-14-14	Expiration Date: —
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval: —	Attached ☐ IRP-3240
Date: 7-23-14 Phone: (432) 687-8110		

* Attach Additional Sheets If Necessary

AUG 14 2014

Ogrid 229137
N 701422 631952
P 701422 632058

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - GC Federal #44 Well
Lea County, New Mexico

16 South 31 East

6	5	4	3	2 **290**	1
7	8	9	10	11	12 **288**
18	17	16	15	14 **113** **314**	13 **299**
19	20	21	22	23	24
30	29	28	27	26	25
31 **290**	32	33	34	35	36

16 South 32 East

6	5	4	3 **65**	2 **265**	1 **265**
7	8	9	10	11	12 **215**
18	17	16 **221**	15	14	13 **215**
19 **220**	20	21 **210**	22	23 **210**	24
30	29	28	27	26 **243**	25
31	32	33	34	35	36 **260**

16 South 33 East

6	5 **180**	4 **150**	3 **130**	2 **148**	1 **142**
7	8 **200**	9	10 **182**	11	12 **142**
18	17 **182**	16 **180**	15 **175**	14 **143**	13 **110**
19	20	21	22	23 **120**	24
30 **191**	29	28 **190**	27 **130**	26 **143**	25 **120**
31 **190**	32 **168**	33	34 **160**	35	36

17 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34 **271**	35	36

17 South 32 East

6	5	4 **82** Maljamar	3 **175**	2 **60**	1 **225**
7	8	9	10 **132**	11 **70** **88**	12 **120**
18	17	16	15	14	13
19	20 SITE	21	22	23	24
30 180 dry	29	28	27	26	25
31	32	33	34	35	36

17 South 33 East

6 **90**	5	4 Maljamar	3 **155**	2 **158**	1 **150**
7 **167**	8 **173**	9 **161**	10	11	12
18 **188**	17 **180**	16	15	14	13 **165**
19	20 **190**	21	22	23 **115**	24
30 **69**	29 **60**	28	27	26	25
31	32	33 **120**	34	35 **155**	36

18 South 31 East

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

18 South 32 East

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

18 South 33 East

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

- 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 2, 2014

Work Order: 13121639

Project Location: Lea Co, NM
Project Name: COG/GC Fed #44
Project Number: 112MC05819

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
349162	AH-1 0-1'	soil	2013-12-12	00:00	2013-12-16
349163	AH-1 1-1.5'	soil	2013-12-12	00:00	2013-12-16
349164	AH-1 2-2.5'	soil	2013-12-12	00:00	2013-12-16
349165	AH-2 0-1'	soil	2013-12-12	00:00	2013-12-16
349166	AH-2 1-1.5'	soil	2013-12-12	00:00	2013-12-16
349167	AH-2 2-2.5'	soil	2013-12-12	00:00	2013-12-16
349168	AH-2 3-3.5'	soil	2013-12-12	00:00	2013-12-16
349169	AH-2 4-4.5'	soil	2013-12-12	00:00	2013-12-16
349170	AH-2 5-5.5'	soil	2013-12-12	00:00	2013-12-16

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
349162 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
349165 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

Sample: 349162 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**4450**	mg/Kg	4

Sample: 349163 - AH-1 1-1.5'

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

Sample: 349164 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**295**	mg/Kg	4

Sample: 349165 - AH-2 0-1'

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

Sample: 349166 - AH-2 1-1.5'

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

Sample: 349167 - AH-2 2-2.5'

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

Sample: 349168 - AH-2 3-3.5'

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

Sample: 349169 - AH-2 4-4.5'

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

Sample: 349170 - AH-2 5-5.5'

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

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 14, 2014

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: MESA VERDE 15 FED #001

Enclosed are the results of analyses for samples received by the laboratory on 05/09/14 13:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	05/09/2014	Sampling Date:	05/06/2014
Reported:	05/14/2014	Sampling Type:	Soil
Project Name:	MESA VERDE 15 FED #001	Sampling Condition:	** (See Notes)
Project Number:	112MC06169	Sample Received By:	Jodi Henson
Project Location:	LEA CO., NM		

Sample ID: NORTH SIDEWALL (H401416-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1440**	16.0	05/14/2014	ND	400	100	400	0.00	

Sample ID: SOUTH SIDEWALL (H401416-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1100**	16.0	05/14/2014	ND	400	100	400	0.00	

Sample ID: EAST SIDEWALL (H401416-03)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4400**	16.0	05/14/2014	ND	400	100	400	0.00	

Sample ID: WEST SIDEWALL (H401416-04)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1640**	16.0	05/14/2014	ND	416	104	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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 2, 2014

Work Order: 13121639

Project Location: Lea Co, NM
Project Name: COG/GC Fed #44
Project Number: 112MC05819

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
349162	AH-1 0-1'	soil	2013-12-12	00:00	2013-12-16
349163	AH-1 1-1.5'	soil	2013-12-12	00:00	2013-12-16
349164	AH-1 2-2.5'	soil	2013-12-12	00:00	2013-12-16
349165	AH-2 0-1'	soil	2013-12-12	00:00	2013-12-16
349166	AH-2 1-1.5'	soil	2013-12-12	00:00	2013-12-16
349167	AH-2 2-2.5'	soil	2013-12-12	00:00	2013-12-16
349168	AH-2 3-3.5'	soil	2013-12-12	00:00	2013-12-16
349169	AH-2 4-4.5'	soil	2013-12-12	00:00	2013-12-16
349170	AH-2 5-5.5'	soil	2013-12-12	00:00	2013-12-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Michael Abel

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

Report Contents

Case Narrative

Samples for project COG/GC Fed #44 were received by TraceAnalysis, Inc. on 2013-12-16 and assigned to work order 13121639. Samples for work order 13121639 were received intact at a temperature of 4.1 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	91111	2013-12-17 at 10:57	107646	2013-12-18 at 03:00
BTEX	S 8021B	91224	2013-12-20 at 12:31	107810	2013-12-23 at 09:48
Chloride (Titration)	SM 4500-Cl B	91351	2013-12-31 at 08:40	107966	2014-01-02 at 14:24
TPH DRO - NEW	S 8015 D	91113	2013-12-17 at 11:15	107650	2013-12-18 at 09:12
TPH GRO	S 8015 D	91149	2013-12-18 at 13:01	107711	2013-12-19 at 01:40

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 13121639 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: 349162 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	107646	Date Analyzed:	2013-12-18	Analyzed By:	AK
Prep Batch:	91111	Sample Preparation:	2013-12-17	Prepared By:	AK

Parameter	Flag	Cert	Result	RL 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)			1.56	mg/Kg	1	2.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70 - 130

Sample: 349162 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**4450**	mg/Kg	10	4.00

Sample: 349162 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	107650	Date Analyzed:	2013-12-18	Analyzed By:	KC
Prep Batch:	91113	Sample Preparation:	2013-12-17	Prepared By:	KC

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

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

Sample: 349162 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	107711	Date Analyzed:	2013-12-19	Analyzed By:	AK
Prep Batch:	91149	Sample Preparation:	2013-12-18	Prepared By:	AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1	2.00	108	70 - 130

Sample: 349163 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 349164 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

continued ...

sample 349164 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**295**	mg/Kg	5	4.00

Sample: 349165 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	107810	Date Analyzed:	2013-12-23	Analyzed By:	AK
Prep Batch:	91224	Sample Preparation:	2013-12-20	Prepared By:	AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.52	mg/Kg	1	2.00	76	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	1	2.00	82	70 - 130

Sample: 349165 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 349165 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	107650	Date Analyzed:	2013-12-18	Analyzed By:	KC
Prep Batch:	91113	Sample Preparation:	2013-12-17	Prepared By:	KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			107	mg/Kg	1	100	107	70 - 130

Sample: 349165 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	107711	Date Analyzed:	2013-12-19	Analyzed By:	AK
Prep Batch:	91149	Sample Preparation:	2013-12-18	Prepared By:	AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.01	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Sample: 349166 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 349167 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 349168 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 349169 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 349170 - AH-2 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	107966	Date Analyzed:	2014-01-02	Analyzed By:	AR
Prep Batch:	91351	Sample Preparation:	2013-12-31	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 107646

QC Batch: 107646 | Date Analyzed: 2013-12-18 | Analyzed By: AK
Prep Batch: 91111 | QC Preparation: 2013-12-17 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00533	mg/Kg	0.02
Toluene		1	<0.00645	mg/Kg	0.02
Ethylbenzene		1	<0.0116	mg/Kg	0.02
Xylene		1	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70 - 130

Method Blank (1) QC Batch: 107650

QC Batch: 107650 | Date Analyzed: 2013-12-18 | Analyzed By: KC
Prep Batch: 91113 | QC Preparation: 2013-12-17 | Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.88	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			107	mg/Kg	1	100	107	88.3 - 126.1

Method Blank (1) QC Batch: 107711

QC Batch: 107711 | Date Analyzed: 2013-12-19 | Analyzed By: AK
Prep Batch: 91149 | QC Preparation: 2013-12-18 | Prepared By: AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.19	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Method Blank (1) QC Batch: 107810

QC Batch: 107810 | Date Analyzed: 2013-12-23 | Analyzed By: AK
Prep Batch: 91224 | QC Preparation: 2013-12-20 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00533	mg/Kg	0.02
Toluene		1	<0.00645	mg/Kg	0.02
Ethylbenzene		1	<0.0116	mg/Kg	0.02
Xylene		1	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.45	mg/Kg	1	2.00	72	70 - 130
4-Bromofluorobenzene (4-BFB)			1.47	mg/Kg	1	2.00	74	70 - 130

Method Blank (1) QC Batch: 107966

QC Batch: 107966 | Date Analyzed: 2014-01-02 | Analyzed By: AR
Prep Batch: 91351 | QC Preparation: 2013-12-31 | 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: 107646 | Date Analyzed: 2013-12-18 | Analyzed By: AK
Prep Batch: 91111 | QC Preparation: 2013-12-17 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene			1.55	mg/Kg	1	2.00	<0.00533	78	70 - 130
Toluene			1.57	mg/Kg	1	2.00	<0.00645	78	70 - 130
Ethylbenzene			1.62	mg/Kg	1	2.00	<0.0116	81	70 - 130
Xylene			4.94	mg/Kg	1	6.00	<0.00874	82	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			1.56	mg/Kg	1	2.00	<0.00533	78	70 - 130	1	20
Toluene			1.59	mg/Kg	1	2.00	<0.00645	80	70 - 130	1	20
Ethylbenzene			1.63	mg/Kg	1	2.00	<0.0116	82	70 - 130	1	20
Xylene			4.96	mg/Kg	1	6.00	<0.00874	83	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)	1.53	1.56	mg/Kg	1	2.00	76	78	70 - 130
4-Bromofluorobenzene (4-BFB)	1.70	1.56	mg/Kg	1	2.00	85	78	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107650 | Date Analyzed: 2013-12-18 | Analyzed By: KC
Prep Batch: 91113 | QC Preparation: 2013-12-17 | Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO			264	mg/Kg	1	250	<6.88	106	79.4 - 120.1

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
DRO		1	265	mg/Kg	1	250	<6.88	106	79.4 - 120.1	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	115	113	mg/Kg	1	100	115	113	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 107711 | Date Analyzed: 2013-12-19 | Analyzed By: AK
Prep Batch: 91149 | QC Preparation: 2013-12-18 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	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	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	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	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.24	2.15	mg/Kg	1	2.00	112	108	70 - 130
4-Bromofluorobenzene (4-BFB)	2.32	2.45	mg/Kg	1	2.00	116	122	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107810 | Date Analyzed: 2013-12-23 | Analyzed By: AK
Prep Batch: 91224 | QC Preparation: 2013-12-20 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.56	mg/Kg	1	2.00	<0.00533	78	70 - 130

continued ...

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		1	1.74	mg/Kg	1	2.00	<0.00645	87	70 - 130
Ethylbenzene		1	1.66	mg/Kg	1	2.00	<0.0116	83	70 - 130
Xylene		1	5.14	mg/Kg	1	6.00	<0.00874	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
Benzene		1	1.60	mg/Kg	1	2.00	<0.00533	80	70 - 130	3	20
Toluene		1	1.60	mg/Kg	1	2.00	<0.00645	80	70 - 130	8	20
Ethylbenzene		1	1.64	mg/Kg	1	2.00	<0.0116	82	70 - 130	1	20
Xylene		1	4.98	mg/Kg	1	6.00	<0.00874	83	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
Trifluorotoluene (TFT)	1.83	1.46	mg/Kg	1	2.00	92	73	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.59	mg/Kg	1	2.00	97	80	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107966 | Date Analyzed: 2014-01-02 | Analyzed By: AR
Prep Batch: 91351 | QC Preparation: 2013-12-31 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	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			2400	mg/Kg	1	2500	<3.85	96	89.7 - 115.9	7	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: 349082

QC Batch: 107646 | Date Analyzed: 2013-12-18 | Analyzed By: AK
Prep Batch: 91111 | QC Preparation: 2013-12-17 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.57	mg/Kg	1	2.00	<0.00533	78	70 - 130
Toluene		1	1.64	mg/Kg	1	2.00	<0.00645	82	70 - 130
Ethylbenzene		1	1.67	mg/Kg	1	2.00	<0.0116	84	70 - 130
Xylene		1	5.04	mg/Kg	1	6.00	<0.00874	84	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	1.56	mg/Kg	1	2.00	<0.00533	78	70 - 130	1	20
Toluene		1	1.63	mg/Kg	1	2.00	<0.00645	82	70 - 130	1	20
Ethylbenzene		1	1.69	mg/Kg	1	2.00	<0.0116	84	70 - 130	1	20
Xylene		1	5.11	mg/Kg	1	6.00	<0.00874	85	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)	1.56	1.54	mg/Kg	1	2	78	77	70 - 130
4-Bromofluorobenzene (4-BFB)	1.60	1.62	mg/Kg	1	2	80	81	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349055

QC Batch: 107650 | Date Analyzed: 2013-12-18 | Analyzed By: KC
Prep Batch: 91113 | QC Preparation: 2013-12-17 | Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	256	mg/Kg	1	250	12.6	97	64.8 - 149.9

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	251	mg/Kg	1	250	12.6	95	64.8 - 149.9	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	111	110	mg/Kg	1	100	111	110	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample:

QC Batch: 107711 | Date Analyzed: 2013-12-19 | Analyzed By: AK
Prep Batch: 91149 | QC Preparation: 2013-12-18 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.2	mg/Kg	1	20.0	<2.32	71	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	14.8	mg/Kg	1	20.0	<2.32	74	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)	2.06	1.92	mg/Kg	1	2	103	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.21	mg/Kg	1	2	107	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349344

QC Batch: 107810 | Date Analyzed: 2013-12-23 | Analyzed By: AK
Prep Batch: 91224 | QC Preparation: 2013-12-20 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.52	mg/Kg	1	2.00	<0.00533	76	70 - 130
Toluene		1	1.54	mg/Kg	1	2.00	<0.00645	77	70 - 130
Ethylbenzene		1	1.57	mg/Kg	1	2.00	<0.0116	78	70 - 130
Xylene		1	4.72	mg/Kg	1	6.00	<0.00874	79	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	1.47	mg/Kg	1	2.00	<0.00533	74	70 - 130	3	20
Toluene		1	1.50	mg/Kg	1	2.00	<0.00645	75	70 - 130	3	20
Ethylbenzene		1	1.50	mg/Kg	1	2.00	<0.0116	75	70 - 130	5	20
Xylene		1	4.57	mg/Kg	1	6.00	<0.00874	76	70 - 130	3	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) Qsr Qsr	1.33	1.28	mg/Kg	1	2	66	64	70 - 130
4-Bromofluorobenzene (4-BFB)	1.55	1.49	mg/Kg	1	2	78	74	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349170

QC Batch: 107966 | Date Analyzed: 2014-01-02 | Analyzed By: AR
Prep Batch: 91351 | QC Preparation: 2013-12-31 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	5	2500	<19.2	104	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			2510	mg/Kg	5	2500	<19.2	100	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: 107646 | Date Analyzed: 2013-12-18 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0908	91	80 - 120	2013-12-18
Toluene		1	mg/kg	0.100	0.0891	89	80 - 120	2013-12-18
Ethylbenzene		1	mg/kg	0.100	0.0883	88	80 - 120	2013-12-18
Xylene		1	mg/kg	0.300	0.264	88	80 - 120	2013-12-18

Standard (CCV-2)

QC Batch: 107646 | Date Analyzed: 2013-12-18 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0909	91	80 - 120	2013-12-18
Toluene		1	mg/kg	0.100	0.0877	88	80 - 120	2013-12-18
Ethylbenzene		1	mg/kg	0.100	0.0860	86	80 - 120	2013-12-18
Xylene		1	mg/kg	0.300	0.262	87	80 - 120	2013-12-18

Standard (CCV-3)

QC Batch: 107646 | Date Analyzed: 2013-12-18 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0889	89	80 - 120	2013-12-18
Toluene		1	mg/kg	0.100	0.0882	88	80 - 120	2013-12-18
Ethylbenzene		1	mg/kg	0.100	0.0853	85	80 - 120	2013-12-18
Xylene		1	mg/kg	0.300	0.257	86	80 - 120	2013-12-18

Standard (CCV-1)

QC Batch: 107650 Date Analyzed: 2013-12-18 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	261	104	80 - 120	2013-12-18

Standard (CCV-2)

QC Batch: 107650 Date Analyzed: 2013-12-18 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	254	102	80 - 120	2013-12-18

Standard (CCV-3)

QC Batch: 107650 Date Analyzed: 2013-12-18 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	267	107	80 - 120	2013-12-18

Standard (CCV-1)

QC Batch: 107711 Date Analyzed: 2013-12-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.933	93	80 - 120	2013-12-19

Standard (CCV-2)

QC Batch: 107711 Date Analyzed: 2013-12-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.851	85	80 - 120	2013-12-19

Standard (CCV-3)

QC Batch: 107711 Date Analyzed: 2013-12-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.851	85	80 - 120	2013-12-19

Standard (CCV-1)

QC Batch: 107810 Date Analyzed: 2013-12-23 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0860	86	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0847	85	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0814	81	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.246	82	80 - 120	2013-12-23

Standard (CCV-2)

QC Batch: 107810 Date Analyzed: 2013-12-23 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0852	85	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0832	83	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0797	80	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.240	80	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107810 | Date Analyzed: 2013-12-23 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0864	86	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0842	84	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0796	80	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.240	80	80 - 120	2013-12-23

Standard (CCV-1)

QC Batch: 107966 | Date Analyzed: 2014-01-02 | 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	2014-01-02

Standard (CCV-2)

QC Batch: 107966 | Date Analyzed: 2014-01-02 | 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	2014-01-02

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	T104704392-13-7	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

Attachments

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

13121639

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

TETRA TECH
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Midland, Texas 79705
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CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC05819

PROJECT NAME: COG / GC Fed # 44

Leg to 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
349162	12/12		S		X	AH 1 (0-1')	1				X	
163			S		X	(1-1.5')	1				X	
164			S		X	(2-2.5')	1				X	
165			S		X	AH 2 (0-1')	1				X	
166			S		X	(1-1.5')	1				X	
167			S		X	(2-2.5')	1				X	
168			S		X	(3-3.5')	1				X	
169			S		X	(4-4.5')	1				X	
170						AH-2 5-5.5'					X	

ANALYSIS REQUEST (Circle or Specify Method No.)

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
X	X												X				
													X				
													X				
X	X												X				
													X				
													X				
													X				
													X				
													X				

RELINQUISHED BY: (Signature) Date: 12/16/13 Time: 0835

RECEIVED BY: (Signature) Date: 12/16/13 Time: 8:53

SAMPLED BY (Print & Initial) RR/AG Date: 12/16/13 Time: 0830

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

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 4 | 5

REMARKS: Run deeper samples if TPH exceeds 1,000 mg/Kg or if total BTEX exceeds 50 mg/Kg or

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

Received 2 jars for AH-2 4-4.5' & 2 jars for AH-2 3-3.5' - per R.R. - AH-2 3-3.5' is not clay AH-2 4-4.5' has more clay - Rec AH-2 5-5.5' not listed benzene exceeds 10 mg/kg added 12/16

Analysis Request of Chain of Custody Record

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

H4014116

CLIENT NAME: COG ~~Mesa Verde 15 Fed~~

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112NC06169

PROJECT NAME: COG - Mesa Verde 15 Fed #001

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE 2014	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
1	5/6		S		X	North Sidewall	1					X												X				
2	5/6					South Sidewall	1					X												X				
3	5/6					East sidewall	1					X												X				
4	5/6					West sidewall	1					X												X				

RELINQUISHED BY: (Signature) Adrian Garcia — Date: 5/9/14 Time: 1345

RECEIVED BY: (Signature) Kristin Henson — Date: 5/9/14 Time: 13:45

SAMPLED BY: (Print & Initial) Adrian Garcia — Date: 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:

RECEIVING LABORATORY: Cardinal Labs
ADDRESS:
CITY: ~~Hobbs~~ STATE: NM ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez
Adrian.garcia@tetratech.com

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 21.8°c #54

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.

SITE INFORMATION

Report Type: Closure Report

General Site Information:					
Site:	**GC Federal #44 Well**				
Company:	**COG Operating LLC**				
Section, Township and Range	**Sec 20**	**T17S**	**R32E**		
Lease Number:	**API-30-025-40237**				
County:	**Lea County**				
GPS:	**32.822267° N**			**104.069467° W**	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	From the intersection of HWY 82 and HWY 529 east of Loco Hills, travel Southeast on Hwy 529 for approximately 6.0 miles; turn North onto 126-A and continue for approximatley 1.8 miles, turn West onto lease road and continue for approximately 1.2 miles, turn Southwest and continue for approximately 500 yards to the location.				

Release Data:	
Date Released:	11/10/2013
Type Release:	Oil and produced water
Source of Contamination:	Flowline failure
Fluid Released:	6bbls
Fluids Recovered:	3 bbls

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:	**0**	

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

TETRA TECH

July 23, 2014

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

Re: Closure Report for the COG Operating LLC., GC Federal #44 Well, Unit O, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the GC Federal #44 Well, Unit O, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81492°, W 103.78728°. 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 November 10, 2013, and released approximately two (2) barrels of oil and four (4) barrels of produced water from a corroded steel flow line with one (1) barrels of oil and two (2) barrels of produced water recovered. The spill is initiated on the pad and measured approximately 50' x 50', then flowed south of the pad into the pasture and measured approximately 20' x 50'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 20. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 100' below surface. The average depth to groundwater map is shown in Appendix B.

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

Regulatory

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

Soil Assessment and Analytical Results

On December 12, 2013, Tetra Tech personnel inspected and sampled the spill area. Two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Select soil 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 results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the TPH or BTEX RRAL. Elevated chloride concentrations were detected in auger hole (AH-1) with a chloride concentration of 4,450 mg/kg at 0'-1' below surface, but declined to <20.0 mg/kg at 1'-1.5' below surface. The area of auger hole (AH-2) did not show any chloride impact to the soils.

Remediation Activities

On May 7, 2014, Tetra Tech supervised the removal impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of auger hole (AH-1) was excavated to depths of approximately 1.0' below surface. Once excavated, confirmation samples were taken at the West, East, and South sidewalls as well as a bottom hole sample. The North wall was excavated to an area with a lower surface elevation; therefore no confirmation sample was taken for this area. The bottom hole sample showed a chloride concentration of 128 mg/kg, the West Sidewall showed 64.0 mg/kg, the East Sidewall showed a 48.0 mg/kg, and the South Side wall showed 128 mg/kg.

Once the area was excavated to the appropriate depth, the excavations were backfilled with clean soil to grade and approximately 140 cubic yards of excavated material was hauled to proper disposal.

Conclusion

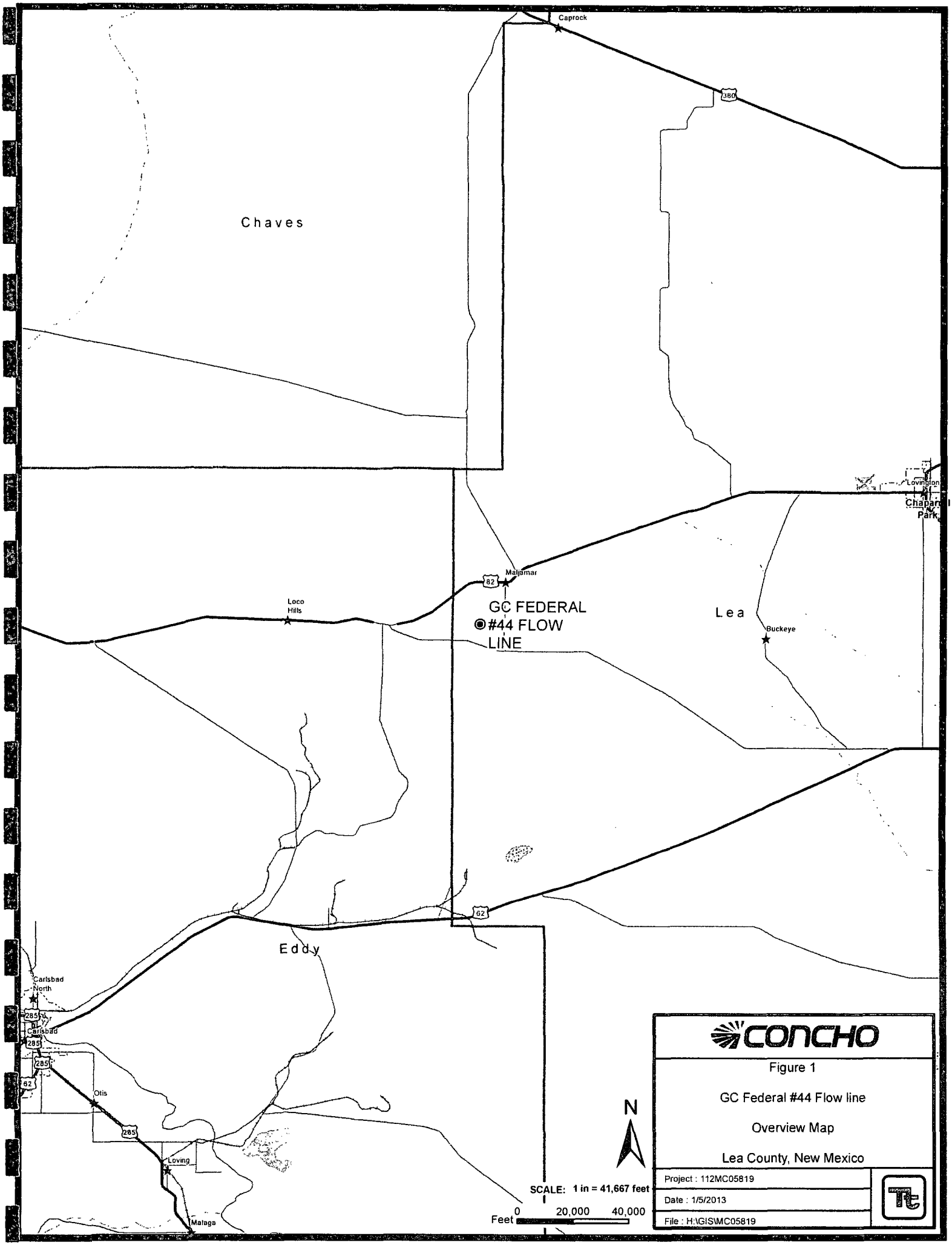
Based on the assessment and work performed at this site, COG requests closure of this spill issue. A final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

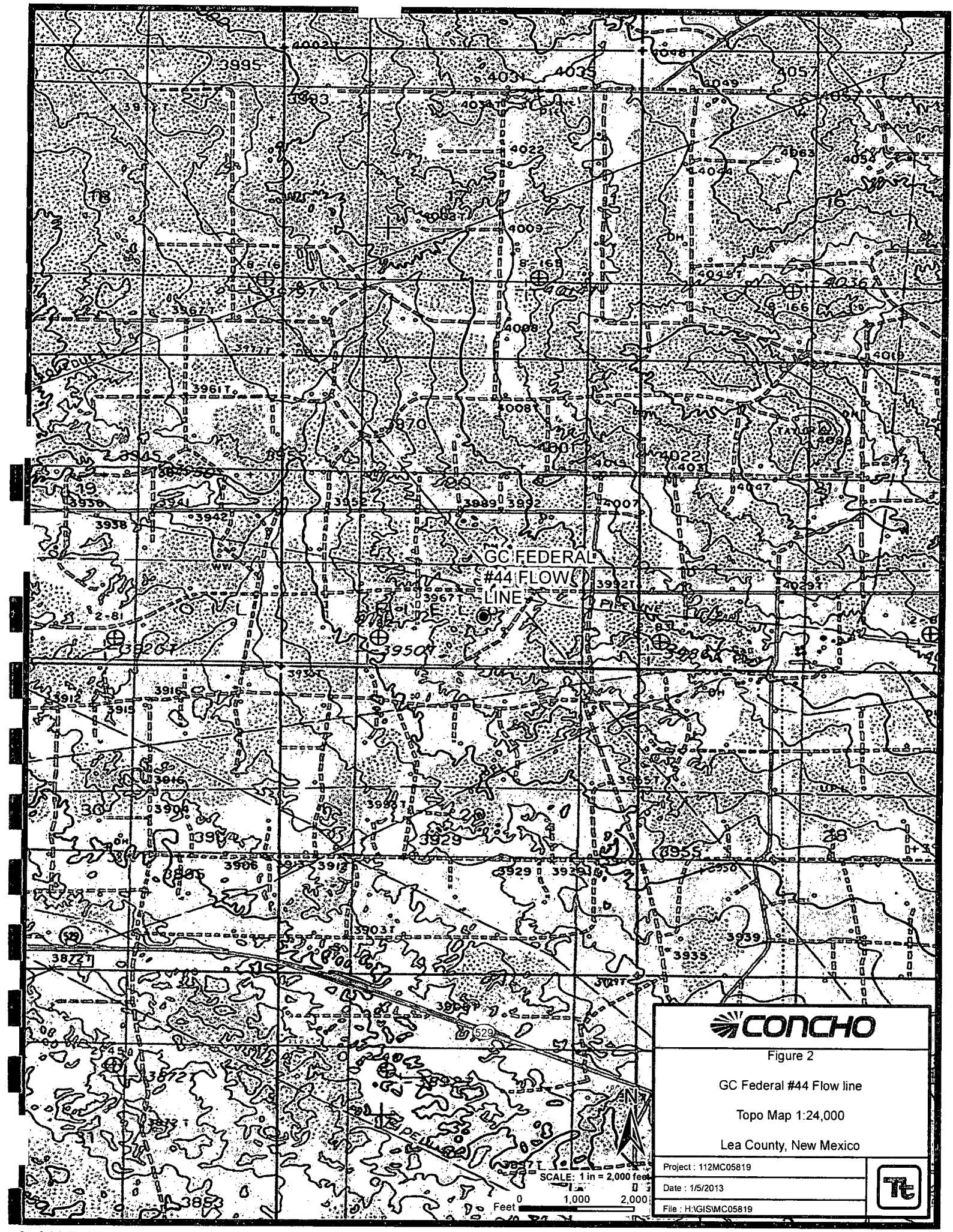
Clair Gonzales
Geologist

cc: Robert McNeil – COG
Jeffrey Robertson - BLM
Jim Amos – BLM

Figures



Drawn By: Isabel Marmolejo



CONCHO

Figure 2

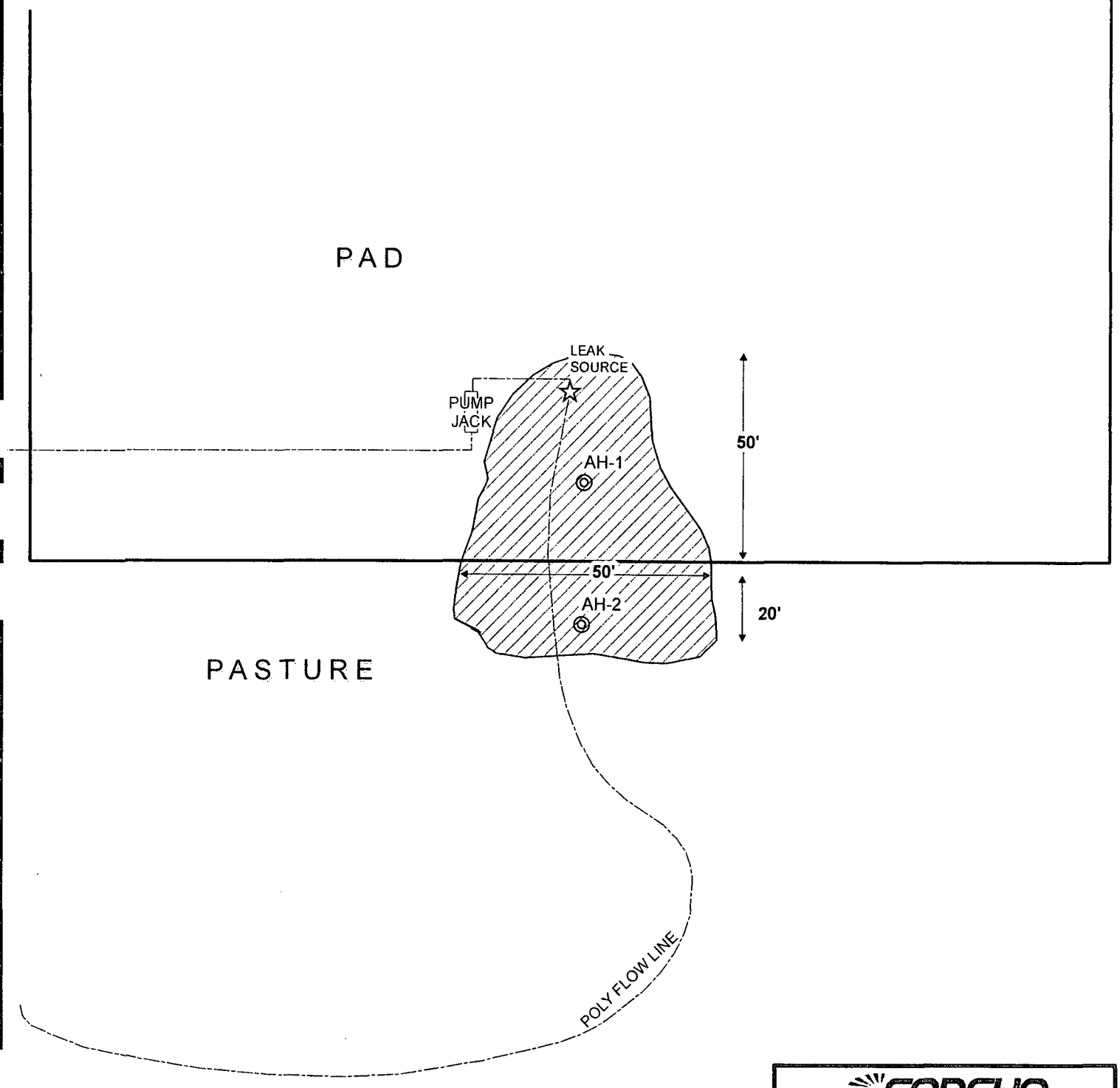
GC Federal #44 Flow line

Topo Map 1:24,000

Lea County, New Mexico

Project : 112MC05819	
Date : 1/5/2013	
File : H:\GIS\MC05819	

Drawn By: Isabel Marmolejo



EXPLANATION

- ◎ AUGER HOLE SAMPLE LOCATIONS
- ☆ LEAK SOURCE
- SPILL AREA

N

SCALE: 1 IN = 33 FEET

Feet 0 10 20

CONCHO

Figure 3

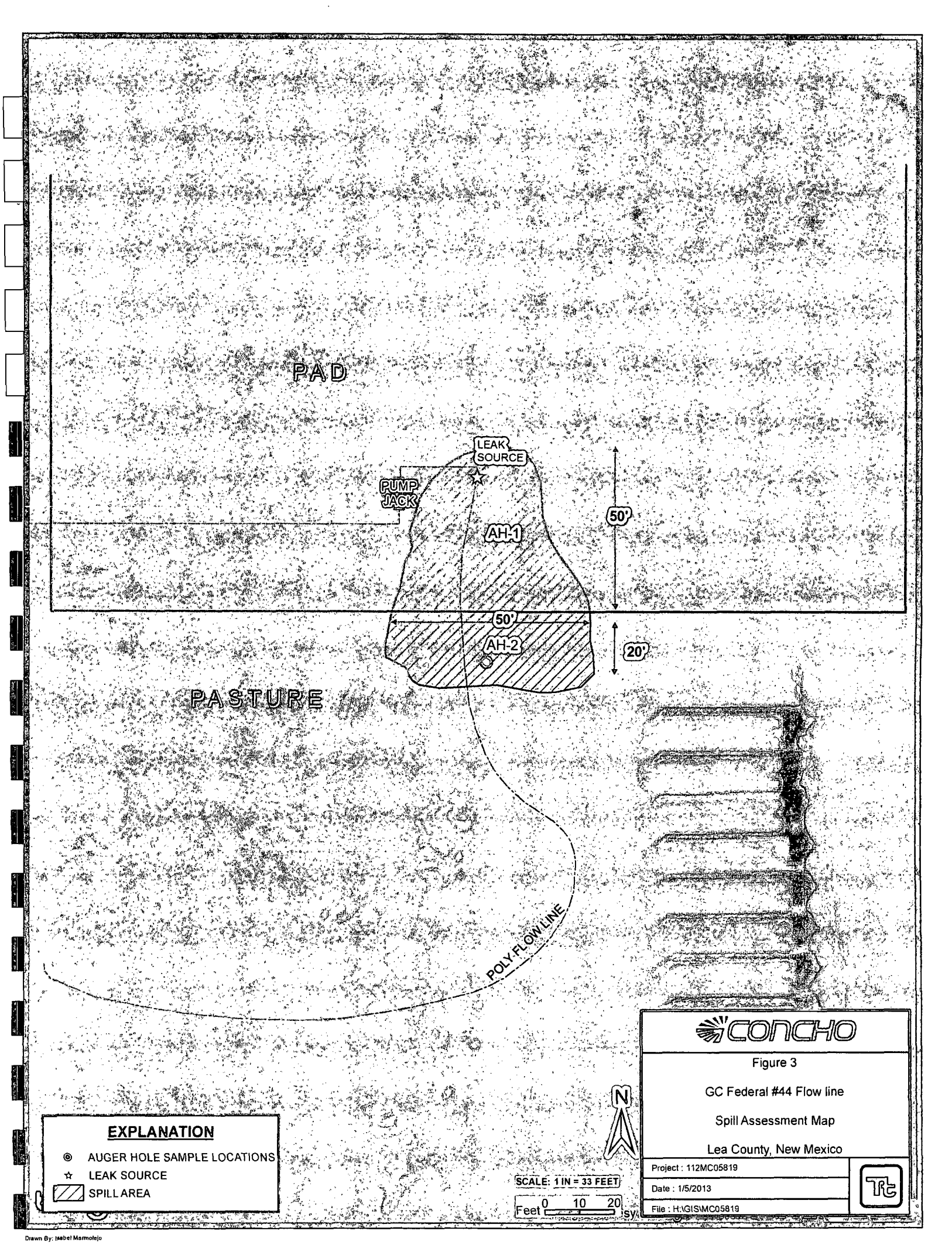
GC Federal #44 Flow line

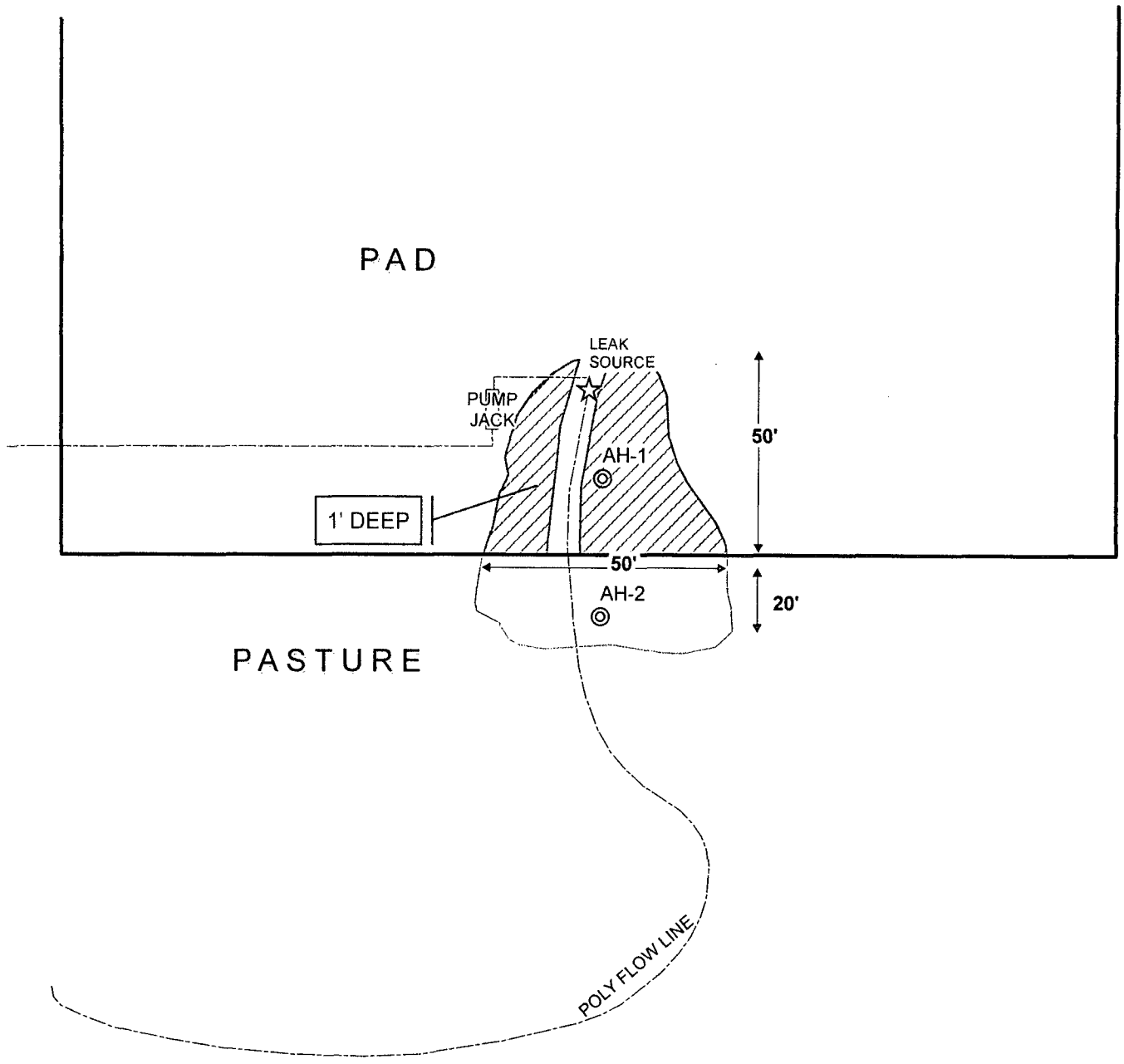
Spill Assessment Map

Lea County, New Mexico

Project : 112MC05819	
Date : 1/5/2013	
File : H:\GIS\MC05819	

Drawn By: Isabel Manrolejo


PAD
LEAK SOURCE
PUMP JACK
AH-1
50'
50'
AH-2
20'
PASTURE
POLY-FLOW LINE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
N
SCALE: 1 IN = 33 FEET
Feet 0 10 20
CONCHO
Figure 3
GC Federal #44 Flow line
Spill Assessment Map
Lea County, New Mexico
Project : 112MC05819
Date : 1/5/2013
File : H:\GIS\MC05819
Drawn By: Isabel Marmolejo



EXPLANATION

- ◎ AUGER HOLE SAMPLE LOCATIONS
- ☆ LEAK SOURCE
- EXCAVATED AREAS

N

SCALE: 1 IN = 38 FEET

Feet 0 10 20

CONCHO

Figure 4

GC Federal #44 Flow line

Excavation Areas & Depths Map

Lea County, New Mexico

Project : 112MC05819	
Date : 1/5/2013	
File : H:\GIS\MC05819	

Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
GC Federal #44
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB 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	12/12/2013	0-1			X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	4,450
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	295
AH-1 Bottom Hole	5/9/2014	1	-	X		-	-	-	-	-	-	-	-	128
AH-1 West Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	64.0
AH-1 East Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	48.0
AH-1 South Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	128
AH-2	12/12/2013	0-1	-	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	4-4.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	5-5.5	-	X		-	-	-	-	-	-	-	-	<20.0

(-) Not Analyzed

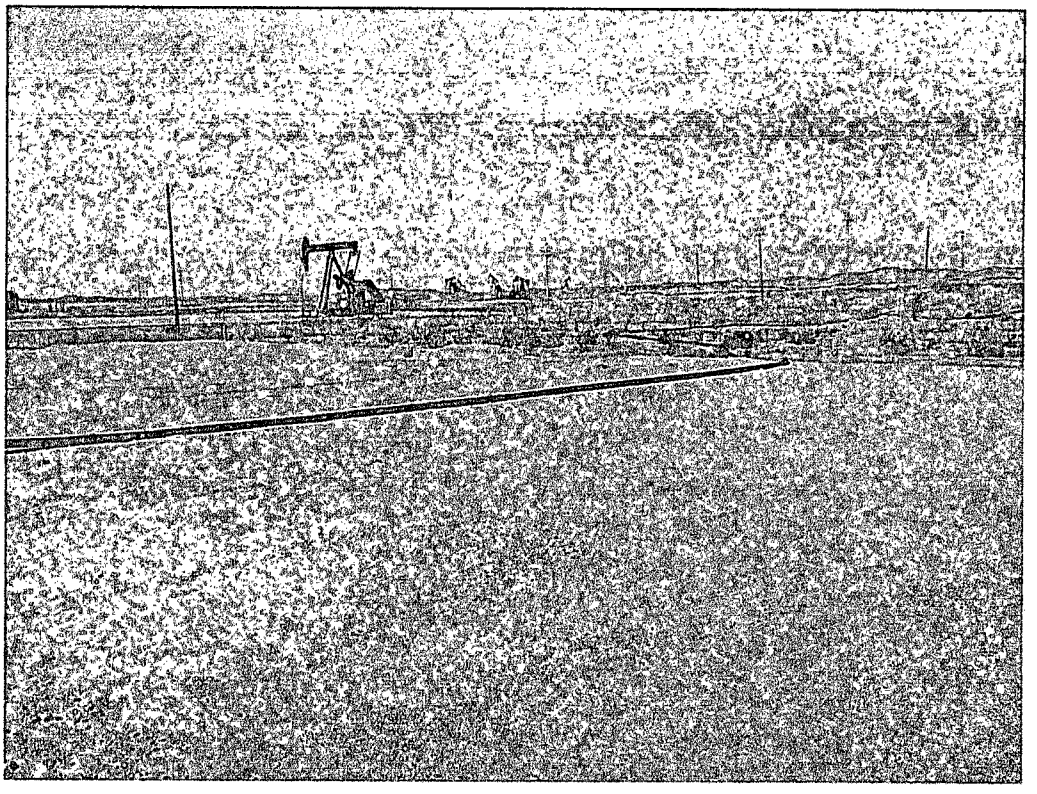
(BEB) Below Excavation Bottom

Excavated Depths

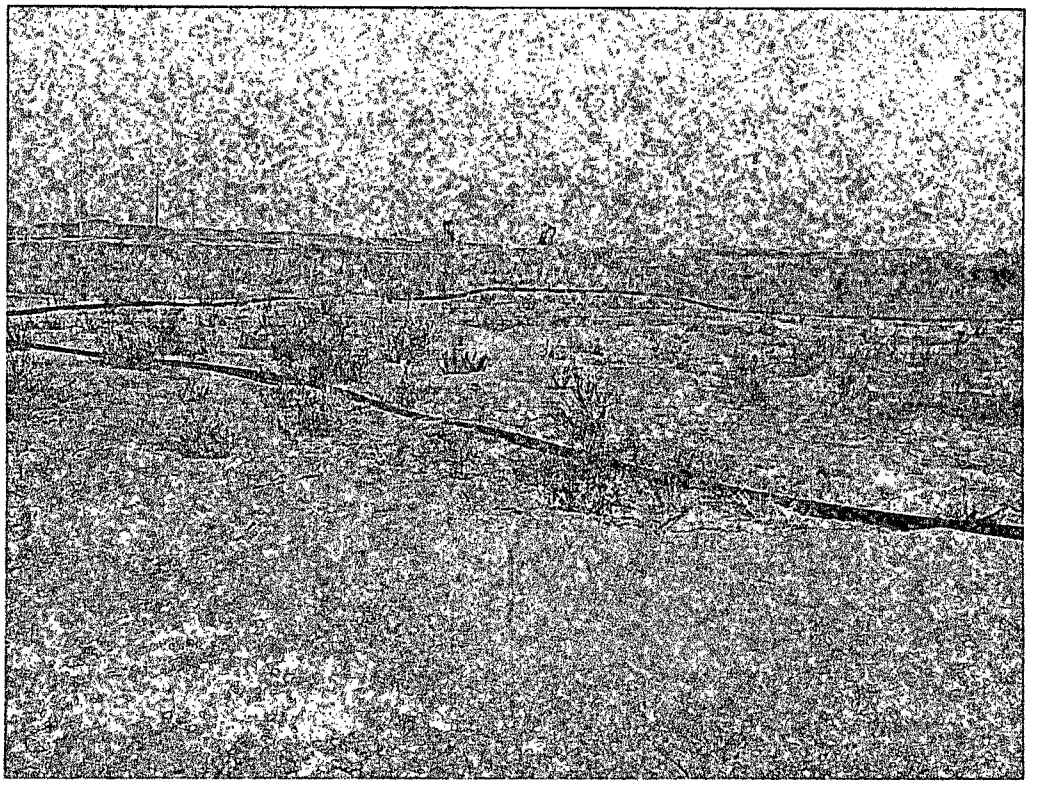
Photos

COG Operating LLC
CG Federal #4 Well
Lea County, New Mexico

TETRA TECH



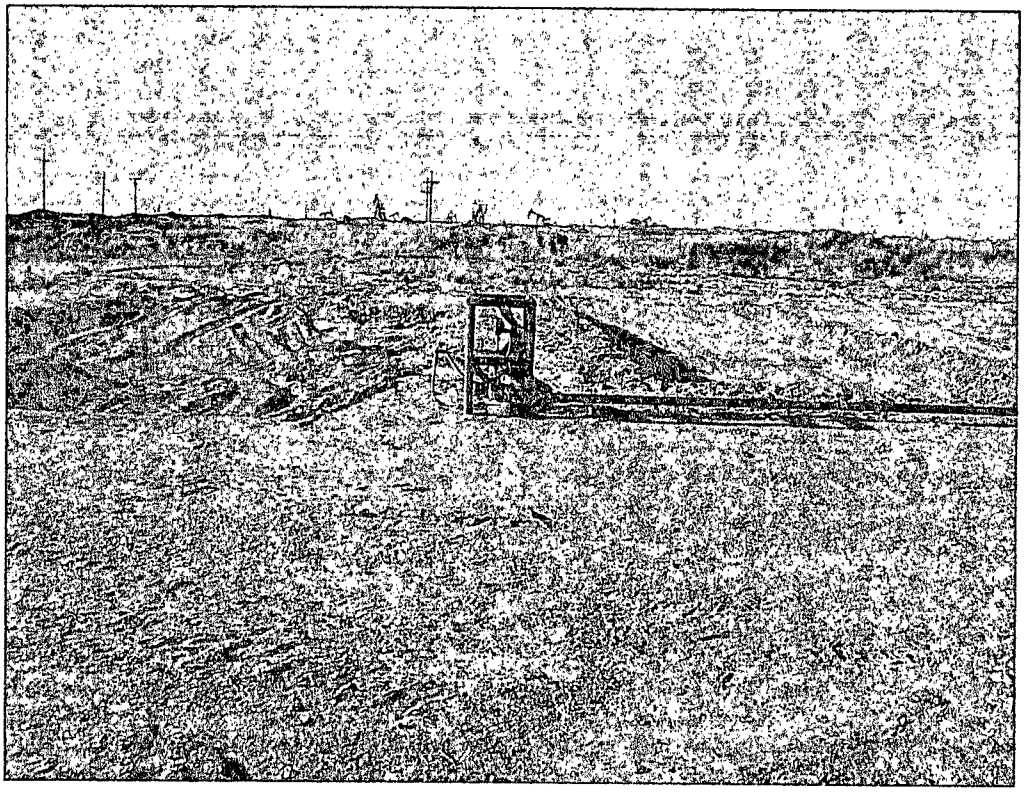
View Northwest - Area of AH-1



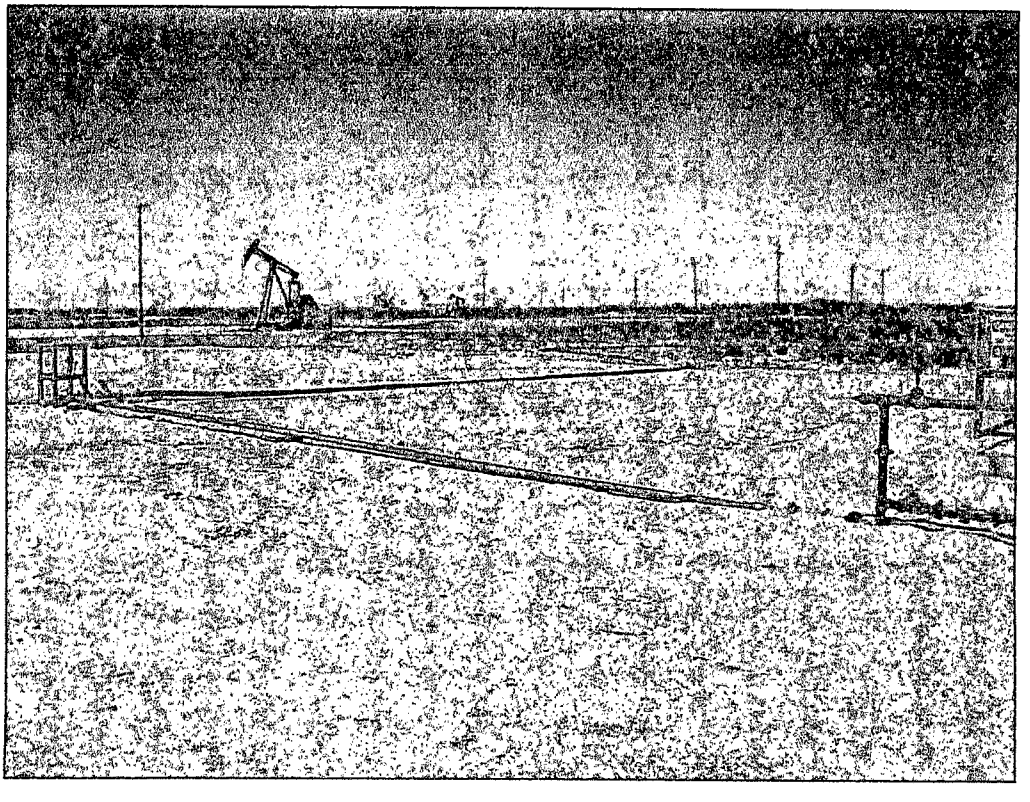
View North – Area of AH-2

COG Operating LLC
CG Federal #4 Well
Lea County, New Mexico

TETRA TECH



View North – Excavated area of AH-1



View Northwest – Backfilled area of AH-1

Appendix A