SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	BKU Central Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Sec 24	T 17S	R 29E			
Lease Number:	API-30-015-27764					
County:	Eddy County					
GPS:	32.80546° N			104.06604° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	In Loco Hills, from the intersection of Haggerman Cutoff and 82, travel west on 82 (2.2 miles), turn South onto lease road for 400 ft., turn West for 600 ft to location.					

Release Data:	
Date Released:	11/30/2013
Type Release:	Produced Water
Source of Contamination:	Hose Failure
Fluid Released:	12 bbls
Fluids Recovered:	10 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:	**0**	

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

TETRA TECH

June 27, 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., BKU Central Tank Battery, Unit J, Section 24, Township 17 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from BKU Central Tank Battery, Unit J, Section 24, Township 17 South, Range 29 East, Eddy County, New Mexico (site). The spill site coordinates are N 32.80546°, W 104.06604°. 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 30, 2013, and released approximately twelve (12) barrels of produced water from a hose. To alleviate the problem, COG personnel replaced the hose. Ten (10) barrels of standing fluids were recovered. The spill was contained within the bermed area of the pad, affecting an area measuring approximately 30' x 10'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 24. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 150' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-

Tetra Tech
[illegible] Midland, TX 79705
Tel [illegible] Fax [illegible] www.tetratech.com

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 16, 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 holes (AH-1 and AH-2), with a chloride high of 5,800 mg/kg at 0'-1' and 2,870 mg/kg at 0'-1' below surface, respectively. The chloride impact at auger hole (AH-1) declined with depth and was vertically defined. The area of auger hole (AH-2) showed a chloride spike of 1,230 mg/kg at 3'-3.5' below surface. Deeper samples were not collected due to a dense formation.

Remediation Activities

On February 24, 2014, Tetra Tech supervised the removal impacted material as highlighted (green) in Table 1 and shown on Figure 4. Initial, approximately 1.0' of material was excavated from the areas of AH-1 and AH-2. As proposed in the work plan, Tetra Tech installed a backhoe trench (T-1) in the areas of AH-1 to define extents and confirm the detected chloride concentrations in the soils. Referring to Table 1, the area of T-1 showed chloride concentrations of 2,040 mg/kg at 12.0' below surface and the area was not vertically defined.

Based on the field data, the area of auger hole (AH-1) was excavated 3.0' below surface and placed a clay material to cap area and prevent further migration of contaminates left in place. Once the areas were excavated to the appropriate depths, the excavations were backfilled with clean soil to grade.

On June 17, 2014, Tetra Tech installed one (1) borehole (BH-1) in order to vertically define the chloride impact in the areas of AH-1. Referring to Table 1, BH-1 showed elevated chloride from 6'-7' to approximately 40.0 below surface, but significantly declined at approximately 60.0' below surface. The area was vertically defined.

TETRA TECH

Conclusion

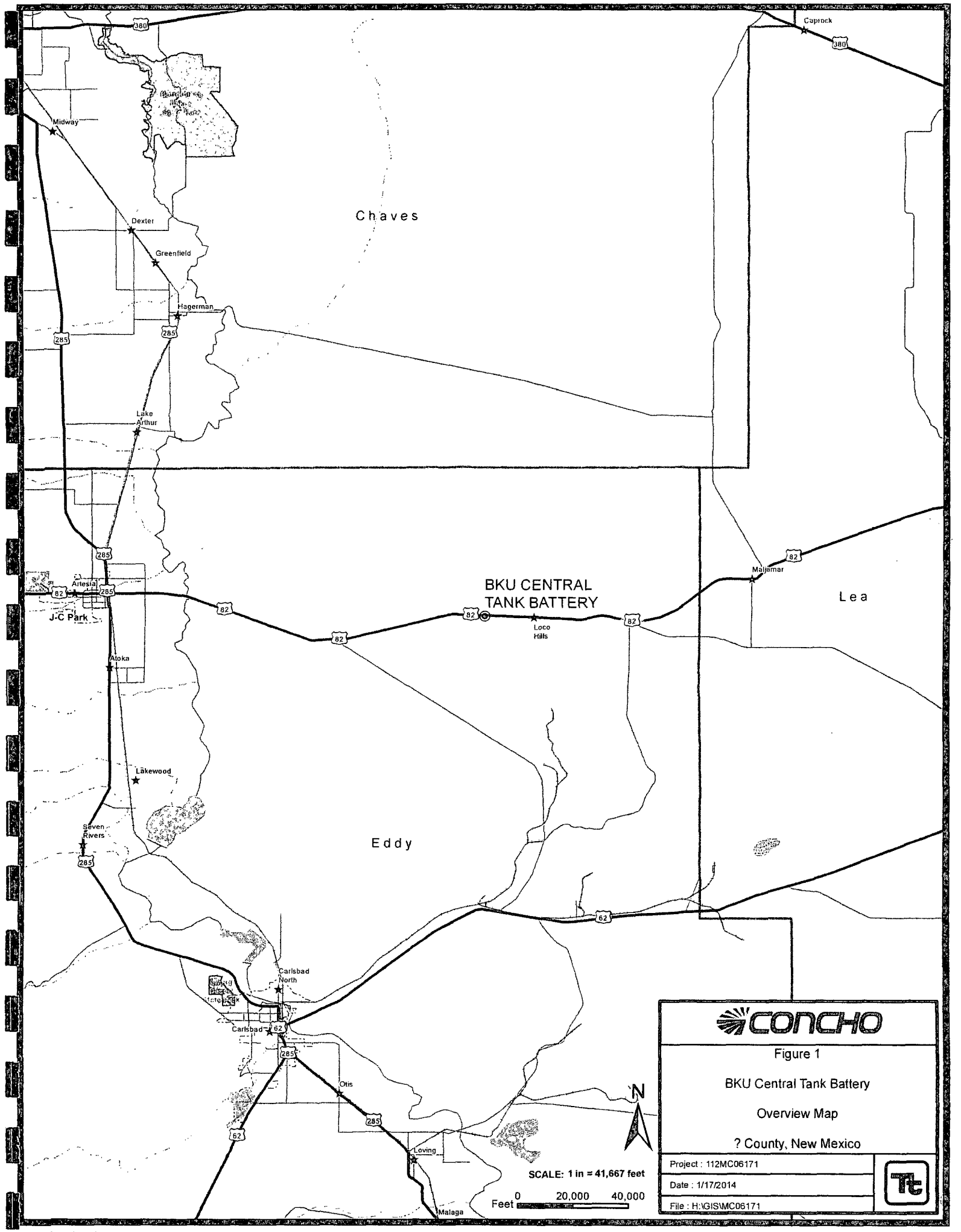
Based on the assessment and remediation work performed at this site, COG requests closure of this spill issue. A final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Clair Gonzales,
Geologist

cc: Robert McNeil – COG
cc: Mike Burton – BLM
Jeff Robertson - BLM

Figures



Drawn By: Isabel Marmolejo

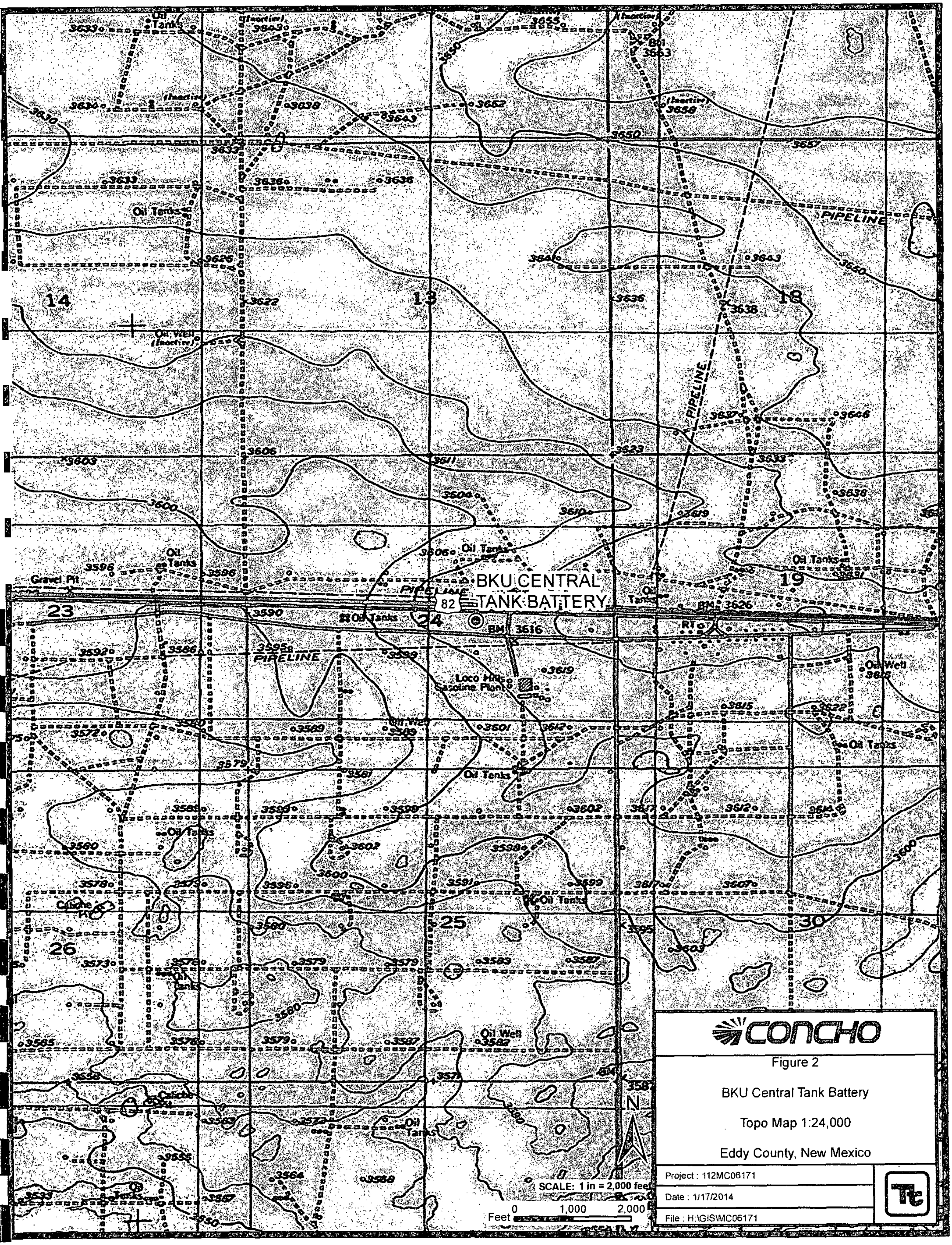


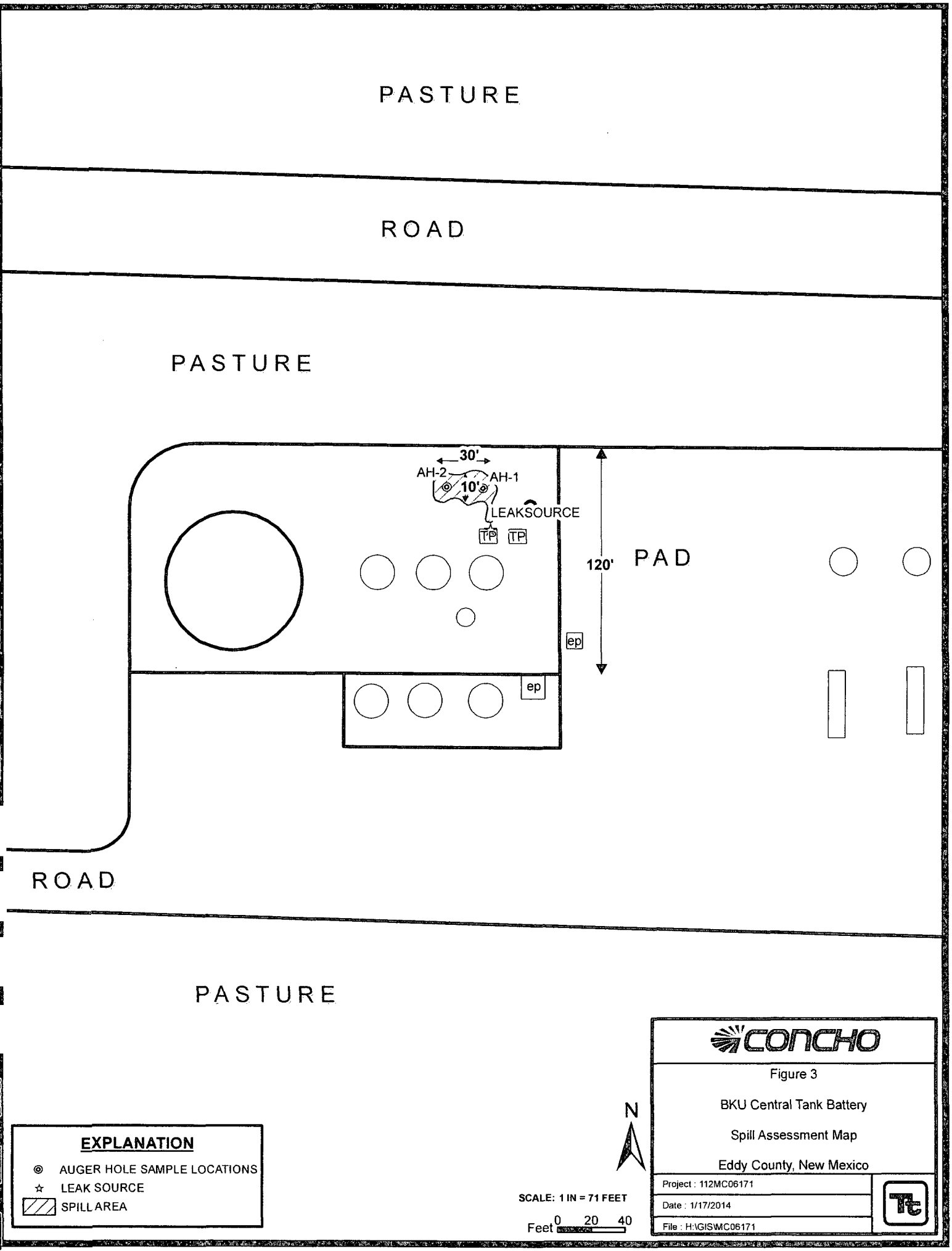
Figure 2

BKU Central Tank Battery

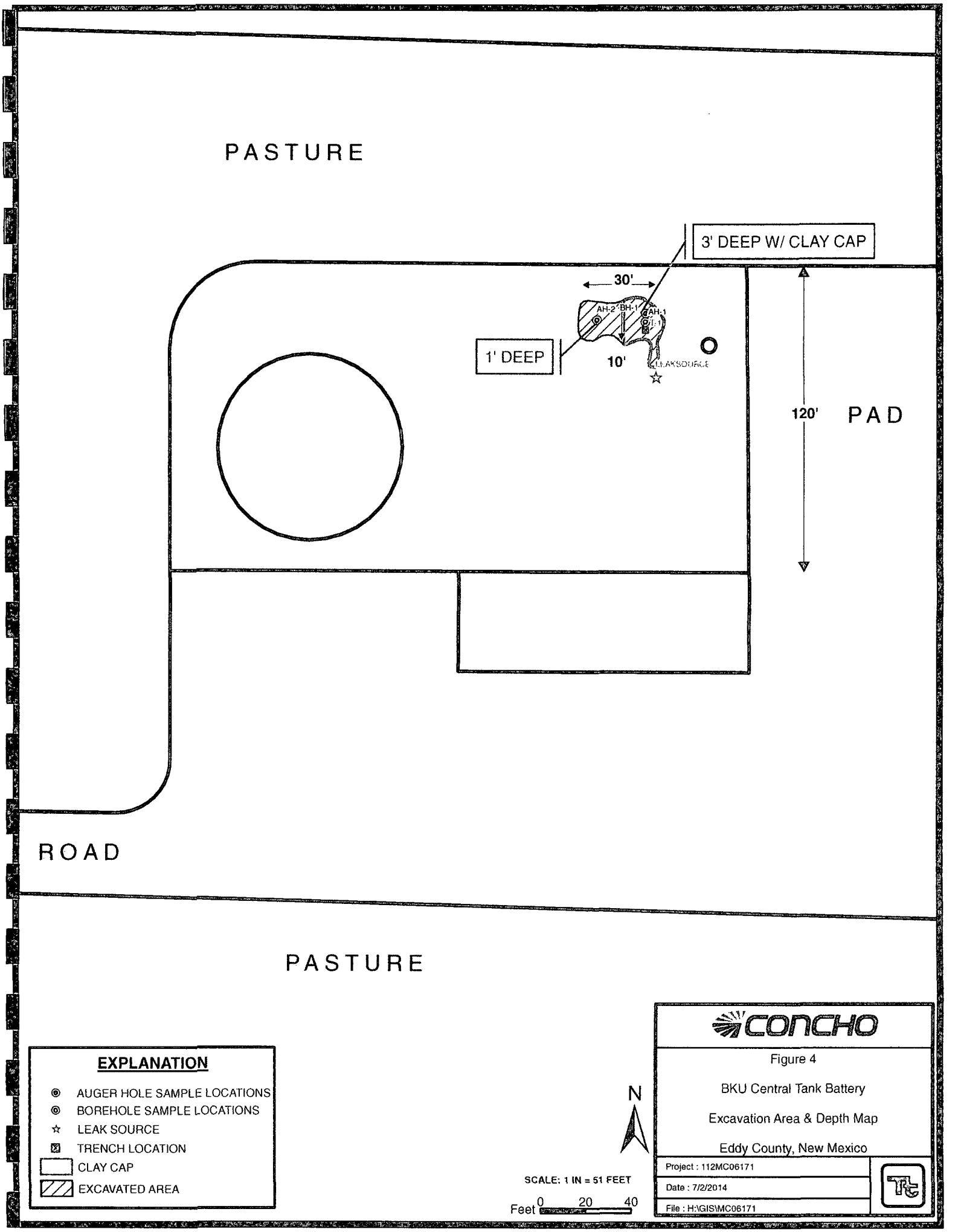
Topo Map 1:24,000

Eddy County, New Mexico

Drawn By: Isabel Marmolejo


PASTURE
ROAD
PASTURE
30'
AH-2
AH-1
10'
LEAKSOURCE
TP
TP
120'
PAD
ep
ep
ROAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
N
SCALE: 1 IN = 71 FEET
Feet 0 20 40
CONCHO
Figure 3
BKU Central Tank Battery
Spill Assessment Map
Eddy County, New Mexico
Project : 112MC06171
Date : 1/17/2014
File : H:\GIS\MC06171
Drawn By: Isabel Marmolejo


PASTURE
82
ROAD
82
PASTURE
30'
AH-2
AH-1
10'
LEAKSOURCE
TP
TP
120'
PAD
ep
ep
ROAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
N
SCALE: 1 IN = 71 FEET
Feet 0 20 40
CONCHO
Figure 3a
BKU Central Tank Battery
Spill Assessment Map
Eddy County, New Mexico
Project : 112MC06171
Date : 1/17/2014
File : H:\GIS\MC06171
Drawn By: Isabel Marmolejo


PASTURE
3' DEEP W/ CLAY CAP
30'
AH-2
BH-1
AH-1
T-1
1' DEEP
10'
LEAK SOURCE
120'
PAD
ROAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BOREHOLE SAMPLE LOCATIONS
LEAK SOURCE
TRENCH LOCATION
CLAY CAP
EXCAVATED AREA
N
SCALE: 1 IN = 51 FEET
Feet 0 20 40
CONCHO
Figure 4
BKU Central Tank Battery
Excavation Area & Depth Map
Eddy County, New Mexico
Project : 112MC06171
Date : 7/2/2014
File : H:\GIS\MC06171

Tables

Table 1
COG Operating LLC.
Birch Keely Unit Central Tank Battery
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						
AH-1	12/16/2013	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	5,800
	"	1-1.5		X	-	-	-	-	-	-	-	-	610
	"	2-2.5		X	-	-	-	-	-	-	-	-	841
	"	3-3.5		X	-	-	-	-	-	-	-	-	1,230
T-1	5/2/2014	0		X	-	-	-	-	-	-	-	-	7,200
	"	2		X	-	-	-	-	-	-	-	-	240
	"	4	X		-	-	-	-	-	-	-	-	2,320
	"	6	X		-	-	-	-	-	-	-	-	3,480
	"	8	X		-	-	-	-	-	-	-	-	3,000
	"	10	X		-	-	-	-	-	-	-	-	2,760
	"	12	X		-	-	-	-	-	-	-	-	2,040
AH-1 North Sidewall	5/5/2014	-	X		-	-	-	-	-	-	-	-	800
AH-1 South Sidewall	"	-	X		-	-	-	-	-	-	-	-	964
AH-1 East Sidewall	"	-	X		-	-	-	-	-	-	-	-	768
AH-1 West Sidewall	"	-	X		-	-	-	-	-	-	-	-	272
BH-1	6/17/2014	4-5	X		-	-	-	-	-	-	-	-	690
	"	6-7	X		-	-	-	-	-	-	-	-	2,160
	"	9-10	X		-	-	-	-	-	-	-	-	2,880
	"	14-15	X		-	-	-	-	-	-	-	-	2,020
	"	19-20	X		-	-	-	-	-	-	-	-	2,980
	"	24-25	X		-	-	-	-	-	-	-	-	3,990
	"	29-30	X		-	-	-	-	-	-	-	-	3,080
	"	39-40	X		-	-	-	-	-	-	-	-	1,250
	"	49-50	X		-	-	-	-	-	-	-	-	1,110
	"	59-60	X		-	-	-	-	-	-	-	-	673
	"	64-65	X		-	-	-	-	-	-	-	-	385
	"	69-70	X		-	-	-	-	-	-	-	-	386
AH-2	12/16/2013	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,870
	"	1-1.5	X		-	-	-	-	-	-	-	-	442
	"	2-2.5	X		-	-	-	-	-	-	-	-	543
	"	3-3.5	X		-	-	-	-	-	-	-	-	889

(-) Not Analyzed

Excavation Depth

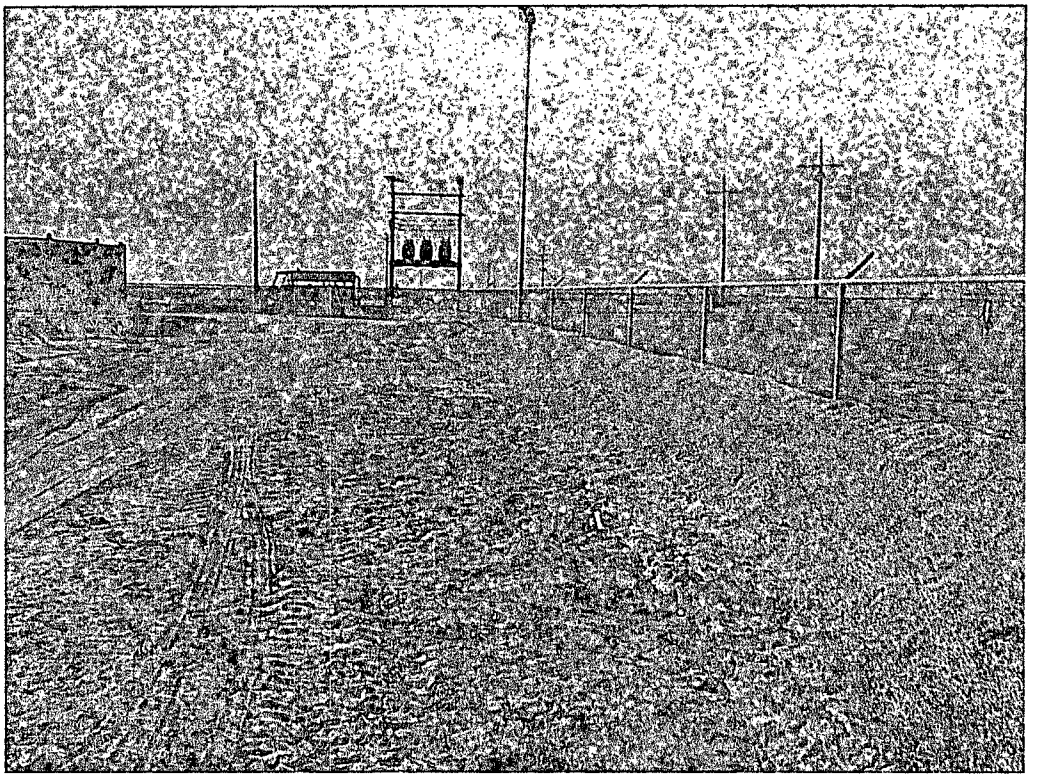
Clay Cap

Photos

COG Operating LLC
BKU Central Tank Battery
Eddy County, New Mexico

TETRA TECH

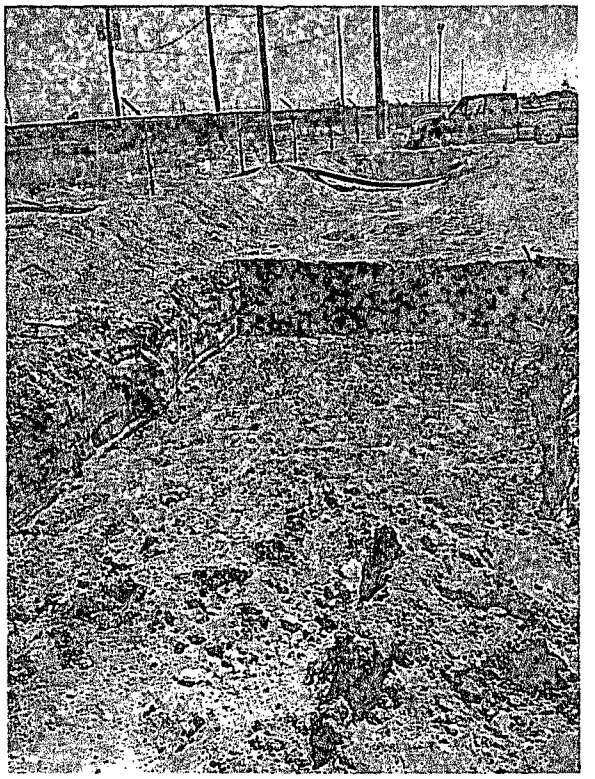
Leak Source



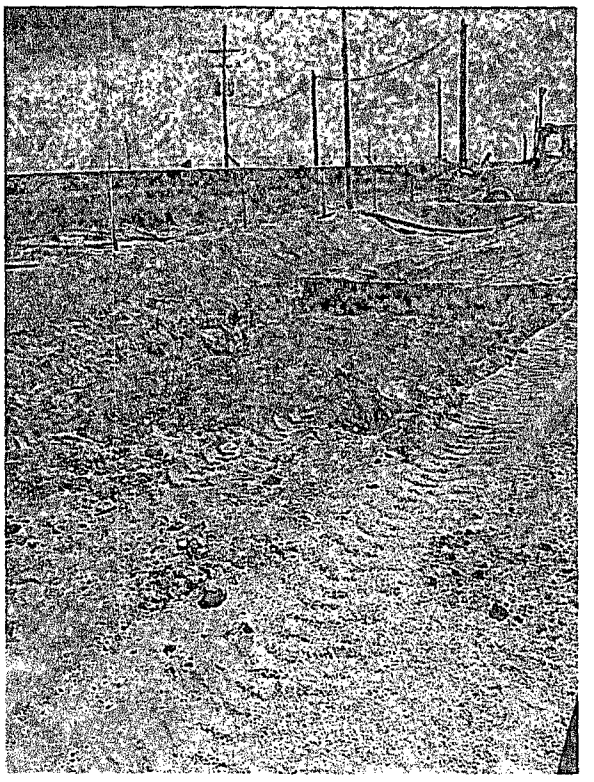
View West – Area of AH-1 and AH-2

COG Operating LLC
BKU Central Tank Battery
Eddy County, New Mexico

TETRA TECH



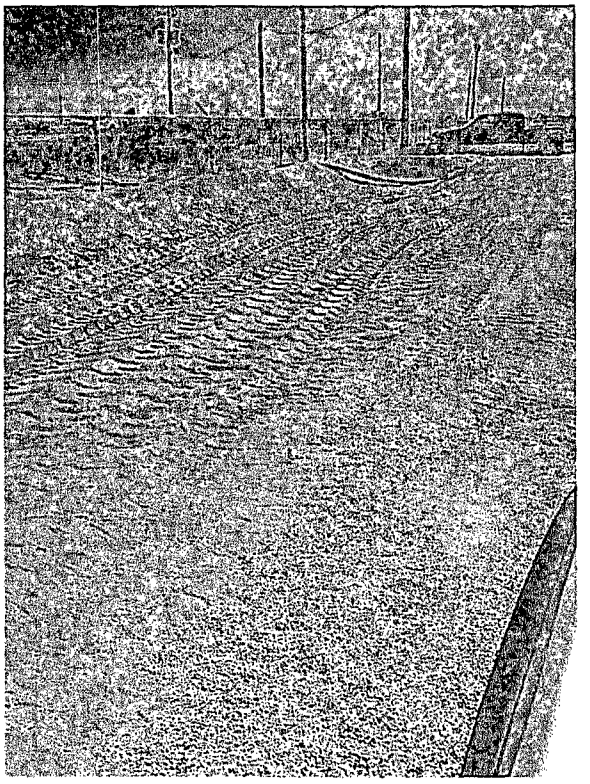
View East – Excavated area of AH-1



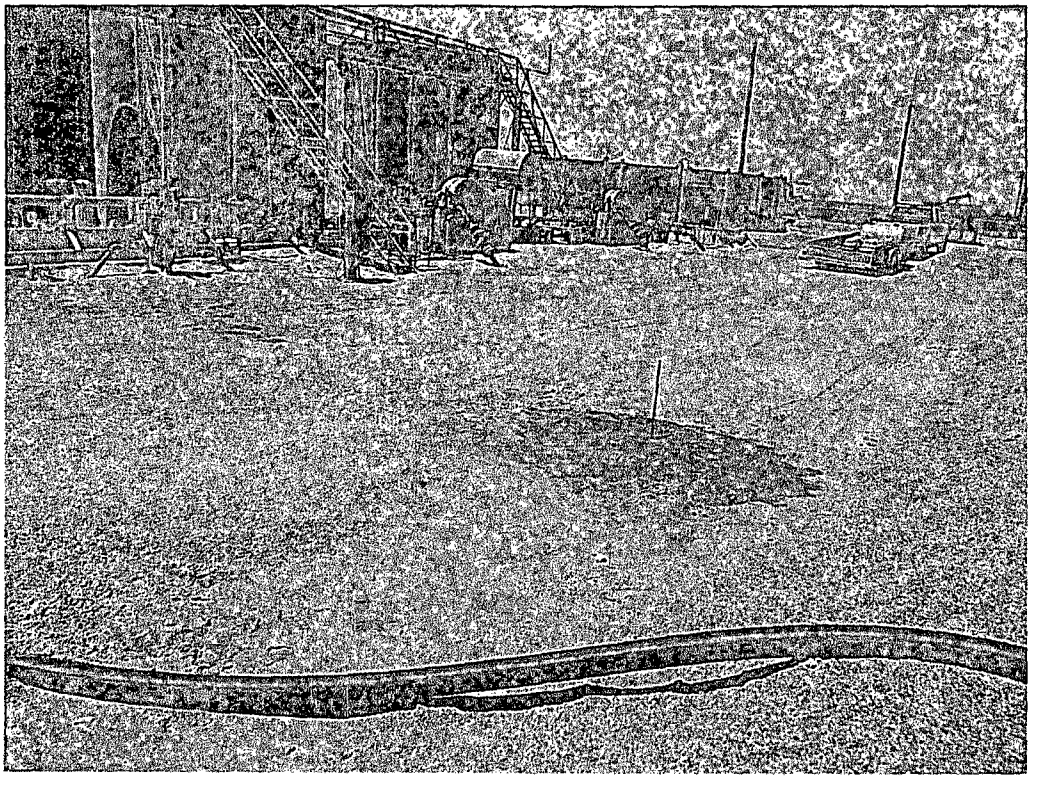
View East – Lined area of AH-1

COG Operating LLC
BKU Central Tank Battery
Eddy County, New Mexico

TETRA TECH



View East – Backfilled area of AH-1



View West – Area of BH-1

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	Central Battery	Facility Type	Tank Battery

Surface Owner Federal	Mineral Owner	Lease No. (API#) 30-015-27764

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	24	17S	29E					Eddy

Latitude 32.819 **Longitude** 104.025

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 12bbls	Volume Recovered 10bbls
Source of Release Steal breaded hose	Date and Hour of Occurrence 11-30-2013	Date and Hour of Discovery 11-30-2013 07:00am
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.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Steal breaded hose failed on discharged pressure on murphy. Replace hose.

Describe Area Affected and Cleanup Action Taken.*

Initially 12bbls of produced water were released due to a failed breaded hose on murphy. We were able to recover 10bbls of produced water with a vacuum truck. All free fluid has been recovered. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a work plan to the BLM/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: Robert Grubbs Jr.	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: 12-11-2013 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

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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 BKU Central Tank Battery	Facility Type **Tank Battery**

Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-015-27764

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	24	17S	29E					Eddy

Latitude N 32.819° **Longitude** W 104.025°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release **12 bbls**	Volume Recovered 10 **bbls**
Source of Release Steel Breaded Hose	Date and Hour of Occurrence 11-30-2013	Date and Hour of Discovery **11-30-2013 7:00 a.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.*

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 29 2014
RECEIVED

Describe Cause of Problem and Remedial Action Taken.*

Steel breaded jose failed on discharged pressure on murphy. Replaced hose.

Describe Area Affected and Cleanup Action Taken.*

Initially 12 bbls of produced water was released due to a failed breaded hose on murphy. We were able to recover 10 bbls of produced water with a vacuum truck. All free fluids were recovered. 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: 7-2-14 Phone: (432) 682-4559	

Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - BKU Central Tank Battery
Eddy County, New Mexico

16 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 **61**	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Carlsbad

16 South 29 East

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

16 South 30 East

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

17 South 28 East

6	5	4	3	2 **28**	1
7	8	9	10	11	12
18	17	16	15	14 **80**	13
19 **224**	20	21	22 **45** **79**	23	24
30	29	28	27	26	25
31	32	33	34	35 **258**	36

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **76** **80**	23	24 SITE
30	29 **210** **208**	28	27	26	25
31	32	33	34	35 153	36

17 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20 **80**	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South 28 East

6	5	4 **108**	3	2 **55**	1
7 **49**	8 **81** **69**	9	10	11	12
18	17	16	15 **80**	14	13
19	20	21 **226**	22	23	24
30 **137**	29	28	27	26	25
31	32	33	34	35 **65**	36

18 South 29 East

6	5	4	3	2	1
7	8	9	10 **95**	11	12
18	17	16	15	14	13
19	20	21	22	23	24 **158**
30	29	28	27	26	25
31	32	33	34	35	36

18 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23 **44**	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

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 8, 2014

Work Order: 13121828

Project Location: Eddy Co, NM
Project Name: COG/BKU Central Battery
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
349391	AH-1 0-1'	soil	2013-12-16	00:00	2013-12-18
349392	AH-1 1-1.5'	soil	2013-12-16	00:00	2013-12-18
349393	AH-1 2-2.5'	soil	2013-12-16	00:00	2013-12-18
349394	AH-1 3-3.5'	soil	2013-12-16	00:00	2013-12-18
349395	AH-2 0-1'	soil	2013-12-16	00:00	2013-12-18
349396	AH-2 1-1.5'	soil	2013-12-16	00:00	2013-12-18
349397	AH-2 2-2.5'	soil	2013-12-16	00:00	2013-12-18
349398	AH-2 3-3.5'	soil	2013-12-16	00:00	2013-12-18

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

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

Report Contents

Case Narrative

Samples for project COG/BKU Central Battery were received by TraceAnalysis, Inc. on 2013-12-18 and assigned to work order 13121828. Samples for work order 13121828 were received intact at a temperature of 3.9 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	91224	2013-12-20 at 12:31	107810	2013-12-23 at 09:48
Chloride (Titration)	SM 4500-Cl B	91386	2014-01-02 at 15:59	108052	2014-01-06 at 14:17
TPH DRO - NEW	S 8015 D	91251	2013-12-23 at 08:35	107808	2013-12-23 at 08:40
TPH GRO	S 8015 D	91224	2013-12-20 at 12:31	107811	2013-12-23 at 09:51

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 13121828 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: 349391 - AH-1 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)			1.41	mg/Kg	1	2.00	70	70 - 130
4-Bromofluorobenzene (4-BFB)			1.59	mg/Kg	1	2.00	80	70 - 130

Sample: 349391 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**5800**	mg/Kg	10	4.00

Sample: 349391 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	107808	Date Analyzed:	2013-12-23	Analyzed By:	KC
Prep Batch:	91251	Sample Preparation:		Prepared By:	KC

Parameter	Flag	Cert	RL Result	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			106	mg/Kg	1	100	106	70 - 130

Sample: 349391 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	107811	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
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			2.56	mg/Kg	1	2.00	128	70 - 130

Sample: 349392 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**610**	mg/Kg	5	4.00

Sample: 349393 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

continued ...

sample 349393 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**841**	mg/Kg	5	4.00

Sample: 349394 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1230**	mg/Kg	5	4.00

Sample: 349395 - 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)			1.42	mg/Kg	1	2.00	71	70 - 130
4-Bromofluorobenzene (4-BFB)			1.58	mg/Kg	1	2.00	79	70 - 130

Sample: 349395 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**2870**	mg/Kg	10	4.00

Sample: 349395 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	107808	Date Analyzed:	2013-12-23	Analyzed By:	KC
Prep Batch:	91251	Sample Preparation:		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: 349395 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	107811	Date Analyzed:	2013-12-23	Analyzed By:	AK
Prep Batch:	91224	Sample Preparation:	2013-12-20	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)			2.06	mg/Kg	1	2.00	103	70 - 130
4-Bromofluorobenzene (4-BFB)			2.29	mg/Kg	1	2.00	114	70 - 130

Sample: 349396 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**442**	mg/Kg	5	4.00

Sample: 349397 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**543**	mg/Kg	5	4.00

Sample: 349398 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	Sample Preparation:	2014-01-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**889**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 107808

QC Batch:	107808	Date Analyzed:	2013-12-23	Analyzed By:	KC
Prep Batch:	91251	QC Preparation:	2013-12-23	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			109	mg/Kg	1	100	109	88.3 - 126.1

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: 107811

QC Batch:	107811	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
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	70 - 130

Method Blank (1) QC Batch: 108052

QC Batch:	108052	Date Analyzed:	2014-01-06	Analyzed By:	AR
Prep Batch:	91386	QC Preparation:	2014-01-02	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: 107808 | Date Analyzed: 2013-12-23 | Analyzed By: KC
Prep Batch: 91251 | QC Preparation: 2013-12-23 | Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	292	mg/Kg	1	250	<6.88	117	79.4 - 120.1

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	291	mg/Kg	1	250	<6.88	116	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	112	112	mg/Kg	1	100	112	112	92.9 - 137.7

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
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: 107811 | 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
GRO		1	15.2	mg/Kg	1	20.0	<2.32	76	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	16.9	mg/Kg	1	20.0	<2.32	84	70 - 130	11	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)	1.94	2.12	mg/Kg	1	2.00	97	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.42	2.46	mg/Kg	1	2.00	121	123	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108052 | Date Analyzed: 2014-01-06 | Analyzed By: AR
Prep Batch: 91386 | QC Preparation: 2014-01-02 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2410	mg/Kg	1	2500	<3.85	96	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			2460	mg/Kg	1	2500	<3.85	98	89.7 - 115.9	2	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: 349344

QC Batch: 107808 | Date Analyzed: 2013-12-23 | Analyzed By: KC
Prep Batch: 91251 | QC Preparation: 2013-12-23 | Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	273	mg/Kg	1	250	<6.88	109	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	265	mg/Kg	1	250	<6.88	106	64.8 - 149.9	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	108	104	mg/Kg	1	100	108	104	85.4 - 147.7

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.

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

continued . . .

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	1.55	1.49	mg/Kg	1	2	78	74	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349344

QC Batch: 107811 | 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
GRO		1	15.4	mg/Kg	1	20.0	<2.32	77	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.2	mg/Kg	1	20.0	<2.32	76	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)	1.95	1.91	mg/Kg	1	2	98	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.38	2.41	mg/Kg	1	2	119	120	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349404

QC Batch: 108052 | Date Analyzed: 2014-01-06 | Analyzed By: AR
Prep Batch: 91386 | QC Preparation: 2014-01-02 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2450	mg/Kg	5	2500	76.9	95	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			2590	mg/Kg	5	2500	76.9	100	78.9 - 121	6	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: 107808 | Date Analyzed: 2013-12-23 | 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	2013-12-23

Standard (CCV-2)

QC Batch: 107808 | Date Analyzed: 2013-12-23 | 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	284	114	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107808 | Date Analyzed: 2013-12-23 | 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	273	109	80 - 120	2013-12-23

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

continued ...

standard continued ...

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
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: 107811 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
GRO		1	mg/Kg	1.00	0.906	91	80 - 120	2013-12-23

Standard (CCV-2)

QC Batch: 107811 | 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
GRO		1	mg/Kg	1.00	0.812	81	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107811 | 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
GRO		1	mg/Kg	1.00	0.837	84	80 - 120	2013-12-23

Standard (CCV-1)

QC Batch: 108052 | Date Analyzed: 2014-01-06 | 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	102	102	85 - 115	2014-01-06

Standard (CCV-2)

QC Batch: 108052 | Date Analyzed: 2014-01-06 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.5	98	85 - 115	2014-01-06

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.

1312828

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.:

PROJECT NAME: BKU COG - Central Battery Eddy CO NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
349391	12/16		S		X	AH 1 (0-1)	1	N			X		X	X											X				
392						(1-1.5)																							
393						(2-2.5)																							
394						(3-3.5)																							
395						AH 2 (0-1)							X	X															
396						(1-1.5)																							
397						(2-2.5)																							
398						(3-3.5)																							

RELINQUISHED BY: (Signature) Adrian Lara — Date: 12/18/13 Time: 0830 — RECEIVED BY: (Signature) — Date: 12/18/13 Time: 8:30

SAMPLED BY: (Print & Initial) Adrian/Legar AG/LL — Date: 12/16/13 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: Trace — RECEIVED BY: (Signature)
ADDRESS:
CITY: Midland STATE: ZIP:
CONTACT: PHONE: DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 39°

REMARKS: Run deeper samples if TPH exceeds 5000, BTEX exceeds 50 or Chlorides exceeds 10.

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

CARDINAL Laboratories

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

May 12, 2014

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: BKU CENTRAL TANK BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 05/06/14 9:50.

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:	05/06/2014	Sampling Date:	05/02/2014
Reported:	05/12/2014	Sampling Type:	Soil
Project Name:	BKU CENTRAL TANK BATTERY	Sampling Condition:	** (See Notes)
Project Number:	112MC06171	Sample Received By:	Jodi Henson
Project Location:	COG		

Sample ID: T-1 AH-1 0' (H401374-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**7200**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: T-1 AH-1 2' (H401374-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**240**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: T-1 AH-1 4' (H401374-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2320**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: T-1 AH-1 6' (H401374-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3480**	16.0	05/12/2014	ND	400	100	400	3.92	

Cardinal Laboratories

*=Accredited Analyte

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:	05/06/2014	Sampling Date:	05/02/2014
Reported:	05/12/2014	Sampling Type:	Soil
Project Name:	BKU CENTRAL TANK BATTERY	Sampling Condition:	** (See Notes)
Project Number:	112MC06171	Sample Received By:	Jodi Henson
Project Location:	COG		

Sample ID: T-1 AH-1 8' (H401374-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3000**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: T-1 AH-1 10' (H401374-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2760**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: T-1 AH-1 12' (H401374-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2040**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: AH-1 NSW (H401374-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**800**	16.0	05/12/2014	ND	400	100	400	3.92	

Sample ID: AH-1 SSW (H401374-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**964**	16.0	05/09/2014	ND	416	104	400	3.92	

Cardinal Laboratories

*=Accredited Analyte

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:	05/06/2014	Sampling Date:	05/05/2014
Reported:	05/12/2014	Sampling Type:	Soil
Project Name:	BKU CENTRAL TANK BATTERY	Sampling Condition:	** (See Notes)
Project Number:	112MC06171	Sample Received By:	Jodi Henson
Project Location:	COG		

Sample ID: AH-1 ESW (H401374-10)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**768**	16.0	05/09/2014	ND	416	104	400	3.92	

Sample ID: AH-1 WSW (H401374-11)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**272**	16.0	05/09/2014	ND	416	104	400	3.92	

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

Analysis Request of Chain of Custody Record

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

H4D1374

PAGE:

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112mc06171

PROJECT NAME: BKU Central Tank Battery

LAB I.D. NUMBER	DATE	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	5/2/14					T-1 AH-1 0'																		✓				
2						T-1 AH-1 2'																		✓				
3						T-1 AH-1 4'																		✓				
4						T-1 AH-1 6'																		✓				
5						T-1 AH-1 8'																		✓				
6						T-1 AH-1 10'																		✓				
7						T-1 AH-1 12'																		✓				

ANALYSIS REQUEST
(Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 5-6-14 Time: 9:50 AM	RECEIVED BY: (Signature) Addie Henson	Date: 5/6/14 Time: 9:50
SAMPLED BY: (Print & Initial)	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:
TETRA TECH CONTACT PERSON:	Results by:		
RECEIVING LABORATORY: ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE: TIME:		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.

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:

H4D1374

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC06171

PROJECT NAME: BKU Central Tank Battery

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
8	5.5.14					AH-1 NSW						
9						AH-1 SSW						
10						AH-1 ESW						
11						AH-1 WSW						

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. 8081/608 | Chloride | Gamma Spec. | Alpha Beta (Air) | PLM (Asbestos) | Major Anions/Cations, pH, TDS

Chloride: ✓ (8), ✓ (9), ✓ (10), ✓ (11)

RELINQUISHED BY: (Signature) — Date: 5.6.14 Time: 9:50 am — RECEIVED BY: (Signature) Will Henson — Date: 5/6/14 Time: 9:50

SAMPLED BY: (Print & Initial) — 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:

TETRA TECH CONTACT PERSON: — Results by:

RECEIVING LABORATORY: — RECEIVED BY: (Signature)

ADDRESS: — CITY: — STATE: — ZIP: — CONTACT: — PHONE: — DATE: — TIME:

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.

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
1901 N. Big Spring St.
Midland, TX, 79705

Report Date: June 24, 2014

Work Order: 14062016

Project Location: Eddy Co, NM
Project Name: COG/BKU Central Battery
Project Number: 112MC06171

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
366372	BH-1 4-5'	soil	2014-06-17	00:00	2014-06-20
366373	BH-1 6-7'	soil	2014-06-17	00:00	2014-06-20
366374	BH-1 9-10'	soil	2014-06-17	00:00	2014-06-20
366375	BH-1 14-15'	soil	2014-06-17	00:00	2014-06-20
366376	BH-1 19-20'	soil	2014-06-17	00:00	2014-06-20
366377	BH-1 24-25'	soil	2014-06-17	00:00	2014-06-20
366378	BH-1 29-30'	soil	2014-06-17	00:00	2014-06-20
366379	BH-1 39-40'	soil	2014-06-17	00:00	2014-06-20
366380	BH-1 49-50'	soil	2014-06-17	00:00	2014-06-20
366381	BH-1 59-60'	soil	2014-06-17	00:00	2014-06-20
366382	BH-1 64-65'	soil	2014-06-17	00:00	2014-06-20
366383	BH-1 69-70'	soil	2014-06-17	00:00	2014-06-20

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

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

Report Contents

Case Narrative

Samples for project COG/BKU Central Battery were received by TraceAnalysis, Inc. on 2014-06-20 and assigned to work order 14062016. Samples for work order 14062016 were received intact at a temperature of 10.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	95597	2014-06-20 at 13:48	113052	2014-06-23 at 14:01
Chloride (Titration)	SM 4500-Cl B	95599	2014-06-20 at 13:51	113053	2014-06-23 at 14:04
Chloride (Titration)	SM 4500-Cl B	95602	2014-06-20 at 14:11	113055	2014-06-23 at 14:21

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 14062016 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: 366372 - BH-1 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113052	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95597	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**690**	mg/Kg	5	4.00

Sample: 366373 - BH-1 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2160**	mg/Kg	5	4.00

Sample: 366374 - BH-1 9-10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2880**	mg/Kg	5	4.00

Sample: 366375 - BH-1 14-15'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2020**	mg/Kg	5	4.00

Sample: 366376 - BH-1 19-20'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2980**	mg/Kg	5	4.00

Sample: 366377 - BH-1 24-25'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3990**	mg/Kg	5	4.00

Sample: 366378 - BH-1 29-30'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3080**	mg/Kg	5	4.00

Sample: 366379 - BH-1 39-40'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1250**	mg/Kg	5	4.00

Sample: 366380 - BH-1 49-50'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1110**	mg/Kg	5	4.00

Sample: 366381 - BH-1 59-60'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**673**	mg/Kg	5	4.00

Sample: 366382 - BH-1 64-65'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**385**	mg/Kg	5	4.00

Sample: 366383 - BH-1 69-70'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	113055	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95602	Sample Preparation:	2014-06-20	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**386**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 113052

QC Batch:	113052	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95597	QC Preparation:	2014-06-20	Prepared By:	SC

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

Method Blank (1) QC Batch: 113053

QC Batch:	113053	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95599	QC Preparation:	2014-06-20	Prepared By:	SC

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

Method Blank (1) QC Batch: 113055

QC Batch:	113055	Date Analyzed:	2014-06-23	Analyzed By:	SC
Prep Batch:	95602	QC Preparation:	2014-06-20	Prepared By:	SC

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 113052 | Date Analyzed: 2014-06-23 | Analyzed By: SC
Prep Batch: 95597 | QC Preparation: 2014-06-20 | Prepared By: SC

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2560	mg/Kg	5	2500	<19.2	102	85 - 115	0	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 113053 | Date Analyzed: 2014-06-23 | Analyzed By: SC
Prep Batch: 95599 | QC Preparation: 2014-06-20 | Prepared By: SC

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2640	mg/Kg	5	2500	<19.2	106	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 113055 | Date Analyzed: 2014-06-23 | Analyzed By: SC
Prep Batch: 95602 | QC Preparation: 2014-06-20 | Prepared By: SC

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2610	mg/Kg	5	2500	<19.2	104	85 - 115	0	20

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

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 366366

QC Batch: 113052 | Date Analyzed: 2014-06-23 | Analyzed By: SC
Prep Batch: 95597 | QC Preparation: 2014-06-20 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5760	mg/Kg	5	2500	3100	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			5910	mg/Kg	5	2500	3100	112	78.9 - 121	3	20

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

Matrix Spike (MS-1) Spiked Sample: 366375

QC Batch: 113053 | Date Analyzed: 2014-06-23 | Analyzed By: SC
Prep Batch: 95599 | QC Preparation: 2014-06-20 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			4660	mg/Kg	5	2500	2020	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			4570	mg/Kg	5	2500	2020	102	78.9 - 121	2	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: 366383

QC Batch: 113055 | Date Analyzed: 2014-06-23 | Analyzed By: SC
Prep Batch: 95602 | QC Preparation: 2014-06-20 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3280	mg/Kg	5	2500	386	116	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			3190	mg/Kg	5	2500	386	112	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 (ICV-1)

QC Batch: 113052 | Date Analyzed: 2014-06-23 | Analyzed By: SC

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-06-23

Standard (CCV-1)

QC Batch: 113052 | Date Analyzed: 2014-06-23 | Analyzed By: SC

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	2014-06-23

Standard (ICV-1)

QC Batch: 113053 | Date Analyzed: 2014-06-23 | Analyzed By: SC

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-06-23

Standard (CCV-1)

QC Batch: 113053 | Date Analyzed: 2014-06-23 | Analyzed By: SC

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	2014-06-23

Standard (ICV-1)

QC Batch: 113055 | Date Analyzed: 2014-06-23 | Analyzed By: SC

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-06-23

Standard (CCV-1)

QC Batch: 113055 | Date Analyzed: 2014-06-23 | Analyzed By: SC

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	2014-06-23

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

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: | OF: 2

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC04171

PROJECT NAME: BKU Central Tank Battery

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
366372	6/17		S		X	BH-1 4-5					X													X				
373						6-7					X													X				
374						9-10					X													X				
375						14-15					X													X				
376						19-20					X													X				
377						24-25					X													X				
378						29-30					X													X				
379						39-40					X													X				
380						49-50					X													X				
381						59-60					X													X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 6-20-14 Time: 1037	RECEIVED BY: (Signature)	Date: 6/20/14 Time: 10:37
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) CG — Date: 6-17-14 Time:

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

TETRA TECH CONTACT PERSON: — Results by:

RECEIVING LABORATORY: — RECEIVED BY: (Signature)
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE: DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 10.6°

REMARKS: Thidium all

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

Analysis Request of Chain of Custody Record

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MCO60171

PROJECT NAME: BKU Central Tank Battery

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
382	6/17		S		X	BH-1 64-65					X													X				
383	6/17					" 69-70					X													X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 6-20-14 Time: 1037

RECEIVED BY: (Signature) Date: 6/20/14 Time: 10:37

SAMPLED BY: (Print & Initial) CG Date: 6-17-14 Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

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

AIRBILL #:

OTHER:

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

RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 10.7°

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.

Summary Report

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

Report Date: June 24, 2014

Work Order: 14062016

Project Location: Eddy Co, NM
Project Name: COG/BKU Central Battery
Project Number: 112MC06171

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
366372	BH-1 4-5'	soil	2014-06-17	00:00	2014-06-20
366373	BH-1 6-7'	soil	2014-06-17	00:00	2014-06-20
366374	BH-1 9-10'	soil	2014-06-17	00:00	2014-06-20
366375	BH-1 14-15'	soil	2014-06-17	00:00	2014-06-20
366376	BH-1 19-20'	soil	2014-06-17	00:00	2014-06-20
366377	BH-1 24-25'	soil	2014-06-17	00:00	2014-06-20
366378	BH-1 29-30'	soil	2014-06-17	00:00	2014-06-20
366379	BH-1 39-40'	soil	2014-06-17	00:00	2014-06-20
366380	BH-1 49-50'	soil	2014-06-17	00:00	2014-06-20
366381	BH-1 59-60'	soil	2014-06-17	00:00	2014-06-20
366382	BH-1 64-65'	soil	2014-06-17	00:00	2014-06-20
366383	BH-1 69-70'	soil	2014-06-17	00:00	2014-06-20

Sample: 366372 - BH-1 4-5'

Param	Flag	Result	Units	RL
Chloride		**690**	mg/Kg	4

Sample: 366373 - BH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	4

Sample: 366374 - BH-1 9-10'

Param	Flag	Result	Units	RL
Chloride		**2880**	mg/Kg	4

Sample: 366375 - BH-1 14-15'

Param	Flag	Result	Units	RL
Chloride		**2020**	mg/Kg	4

Sample: 366376 - BH-1 19-20'

Param	Flag	Result	Units	RL
Chloride		**2980**	mg/Kg	4

Sample: 366377 - BH-1 24-25'

Param	Flag	Result	Units	RL
Chloride		**3990**	mg/Kg	4

Sample: 366378 - BH-1 29-30'

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

Sample: 366379 - BH-1 39-40'

Param	Flag	Result	Units	RL
Chloride		**1250**	mg/Kg	4

Sample: 366380 - BH-1 49-50'

Param	Flag	Result	Units	RL
Chloride		**1110**	mg/Kg	4

Sample: 366381 - BH-1 59-60'

Param	Flag	Result	Units	RL
Chloride		**673**	mg/Kg	4

Sample: 366382 - BH-1 64-65'

Param	Flag	Result	Units	RL
Chloride		**385**	mg/Kg	4

Sample: 366383 - BH-1 69-70'

Param	Flag	Result	Units	RL
Chloride		**386**	mg/Kg	4

Summary Report

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

Report Date: January 8, 2014

Work Order: 13121828

Project Location: Eddy Co, NM
Project Name: COG/BKU Central Battery
Project Number: TBD

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
349391	AH-1 0-1'	soil	2013-12-16	00:00	2013-12-18
349392	AH-1 1-1.5'	soil	2013-12-16	00:00	2013-12-18
349393	AH-1 2-2.5'	soil	2013-12-16	00:00	2013-12-18
349394	AH-1 3-3.5'	soil	2013-12-16	00:00	2013-12-18
349395	AH-2 0-1'	soil	2013-12-16	00:00	2013-12-18
349396	AH-2 1-1.5'	soil	2013-12-16	00:00	2013-12-18
349397	AH-2 2-2.5'	soil	2013-12-16	00:00	2013-12-18
349398	AH-2 3-3.5'	soil	2013-12-16	00:00	2013-12-18

	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)
349391 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
349395 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

Sample: 349391 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**5800**	mg/Kg	4

Sample: 349392 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**610**	mg/Kg	4

Sample: 349393 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**841**	mg/Kg	4

Sample: 349394 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**1230**	mg/Kg	4

Sample: 349395 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**2870**	mg/Kg	4

Sample: 349396 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**442**	mg/Kg	4

Sample: 349397 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**543**	mg/Kg	4

Sample: 349398 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**889**	mg/Kg	4