

SITE INFORMATION

Report Type: Closure

General Site Information:

Site:	Yucca State Tank Battery (Flow Lines)				
Company:	COG Operating LLC				
Section, Township and Range	Unit O	Sec. 16	T-17-S	R-31-E	
Lease Number:	API-30-015-3312				
County:	Eddy County				
GPS:	32.82855 N			103.87409° W	
Surface Owner:	State				
Mineral Owner:					
Directions:	From NM-82 and 529, travel east on 82 0.3 miles, left on CR-223 1.0 mile, right 200' to location.				

Release Data:

Date Released:	6/17/2012	RECEIVED
Type Release:	Produced Water and oil	
Source of Contamination:	flow lines	NOV 01 2012
Fluid Released:	40 bbls PW and 10 bbls oil	
Fluids Recovered:	30 bbls PW and 5 bbls oil	NMOCD ARTESIA

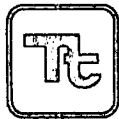
Official Communication:

Name:	Pat Ellis	Ike Tavaréz
Company:	COG Operating, LLC	Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300	1910 N. Big Spring
P.O. Box		
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	432-682-4559
Fax:	(432) 684-7137	
Email:	pellis@conchoresources.com	ike.tavarez@tetrattech.com

Ranking Criteria

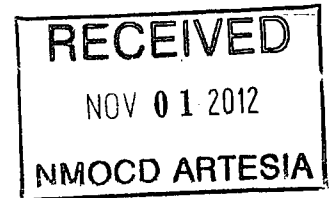
Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
Wellhead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10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

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



TETRA TECH

October 18, 2012



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

Re: Closure Report for the COG Operating LLC., Yucca State Tank Battery Flow Lines, Unit O, Section 16, Township 17 South, Range 31 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Yucca State Tank Battery Flow Lines located in Unit O, Section 16, Township 17 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.82855°, W 103.87409°. 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 June 14, 2012, and released approximately forty (40) barrels of produced fluids and ten (10) barrels of oil due to several burned flow lines located in the pasture near the Yucca Tank Battery. To alleviate the problem, COG repaired the flow lines. Thirty (30) barrels of produced water and five (5) barrels of oil were recovered. The spill area impacted an area measuring approximately 45' x 50' and migrated west 150', with a width of approximately 3.0' to 4.0'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 16. One well was listed in Section 34 with a recorded depth of 271' below surface by the *Geology and Groundwater Resources of Eddy County, New Mexico (Report 3)*. According to the NMOCD groundwater map, the average depth to

Tetra Tech

1919 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.com



groundwater in this area is approximately 300' below surface. The groundwater data is shown in Appendix B.

Regulatory

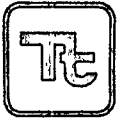
A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels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

Soil Assessment and Analytical Results

On July 30, 2012, Tetra Tech personnel inspected and sampled the spill area. Six (6) auger hole (AH-6) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, all of the submitted samples were below the RRAL for TPH and BTEX, except for AH-2. Auger hole (AH-2) showed TPH concentrations exceeding the RRAL at 0-1' (11,449 mg/kg) and 1-1.5' (7,990 mg/kg), but, declined below the RRAL at 2-2.5' below surface.

A shallow chloride impact was detected in the subsurface soils. Elevated chlorides were detected in AH-1, AH-2, AH-3, AH-4 and AH-5 at depths from 0 to 1.5' below surface, with chloride concentrations ranging from 1,460 mg/kg to 4,240 mg/kg. The chloride impact was vertically defined. However, the area of AH-1 did show a chloride of 2,190 mg/kg at 10-10.5 below surface, which appears to be cross-contaminated for the upper soils.



Remediation and Conclusion

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The excavated areas and depths are highlighted in Table 1 and shown on Figure 4. The final excavation depths of the soil remediation were met as stated in the approved work plan. Approximately 180 cubic yards of soil were excavated and transported to the R360 facility for proper disposal.

The excavated area measured approximately 30' x 50' and 2' x 105' at a depth of approximately 1.0' to 1.5' below surface. The area of AH-1 and AH-2 were excavated to a depth of 1.5' below. The remaining areas were excavated to a depth of 1.0' below surface then backfilled with clean material to grade.

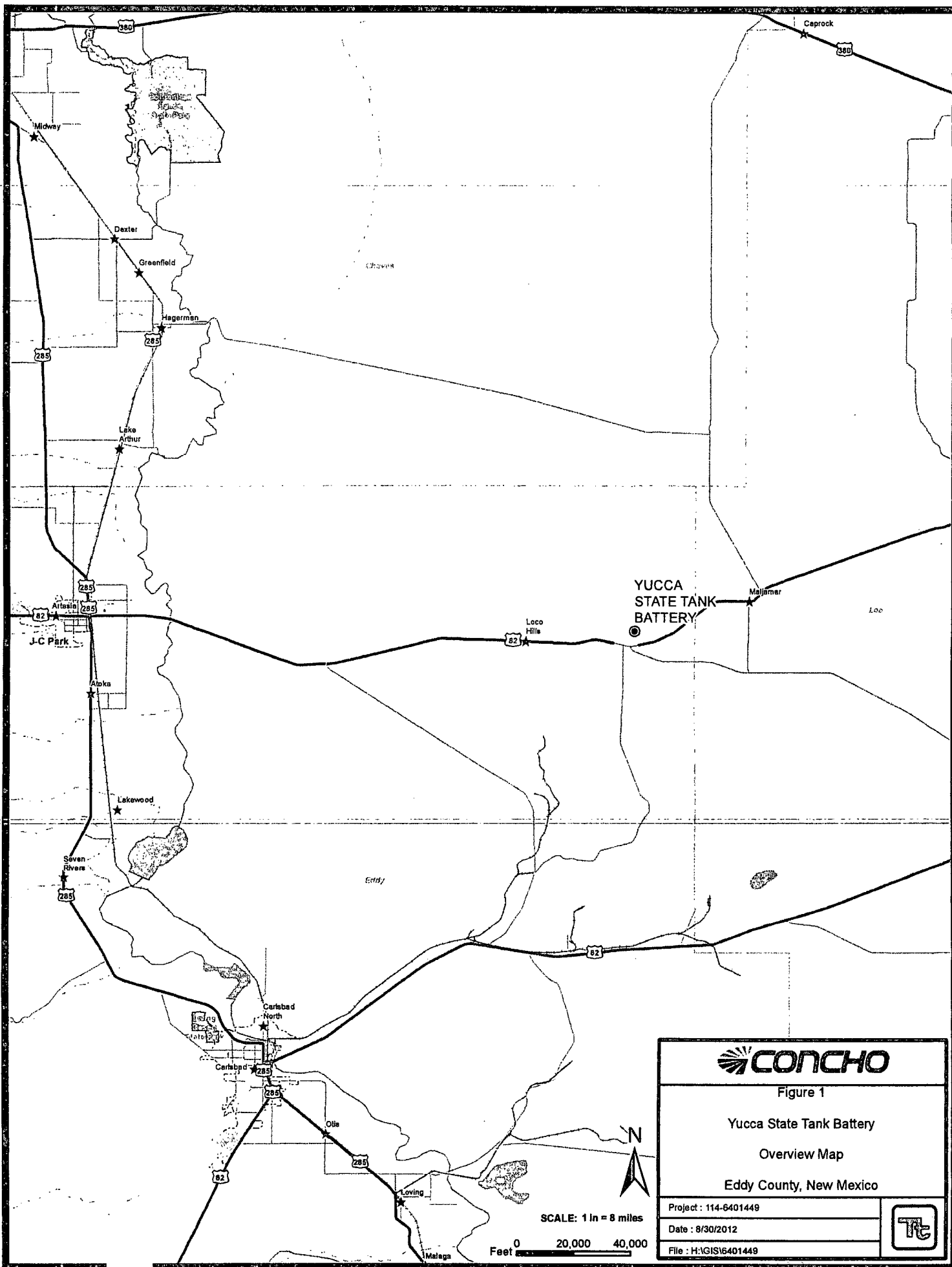
Based on the remedial activities performed, COG request closure of the site. A copy of the C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remedial activities, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

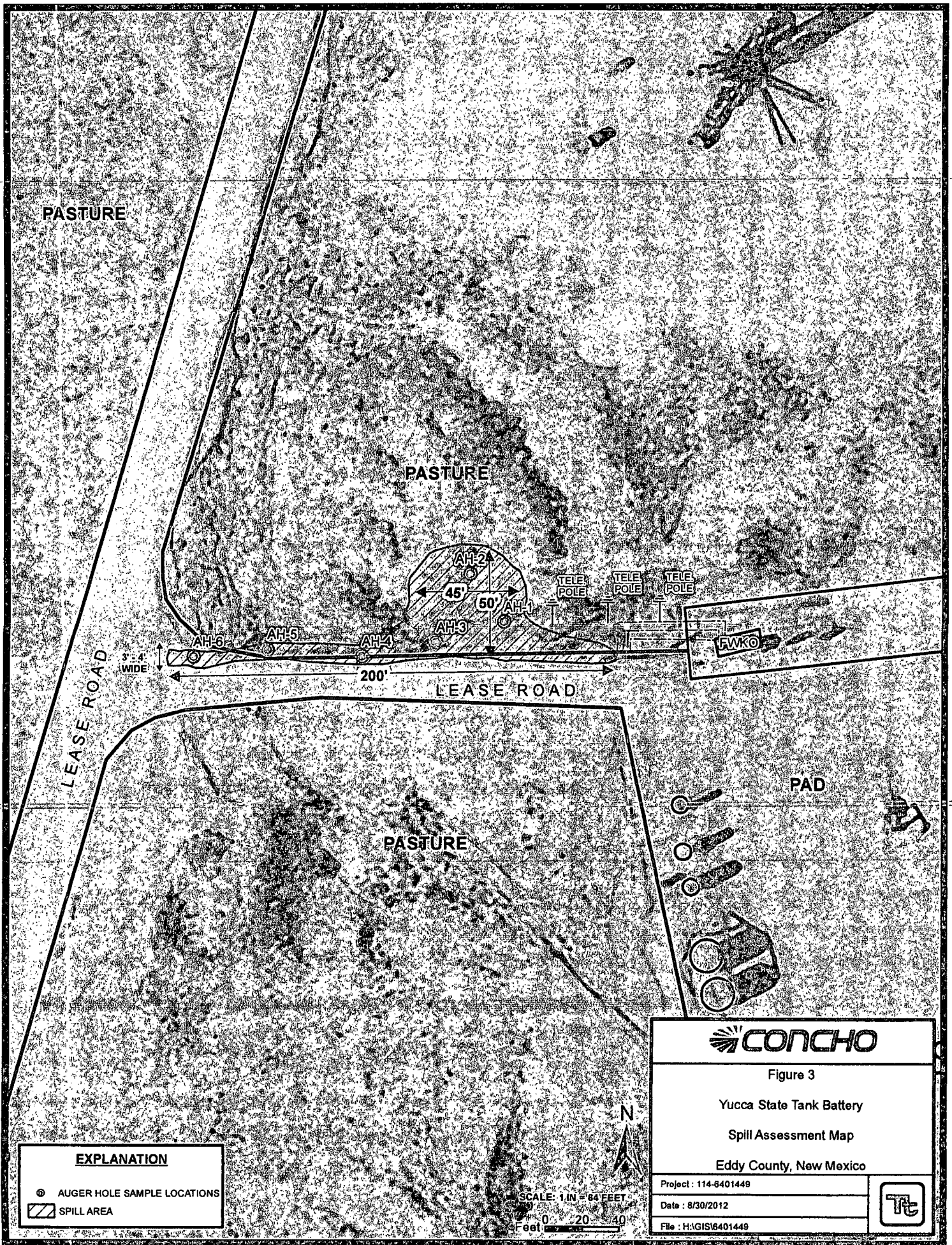
Ike Tavares, PG
Senior Project Manager

cc: Pat Ellis – COG

Figures







PASTURE

PASTURE

PASTURE

LEASE ROAD

LEASE ROAD

PAD

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA

SCALE: 1 IN = 64 FEET

Feet 0 20 40



Figure 3

Yucca State Tank Battery

Spill Assessment Map

Eddy County, New Mexico

Project : 114-6401449

Date : 8/30/2012

File : H:\GIS\6401449



PASTURE

PASTURE

1' DEEP

2' DEEP

3' - 4'
WIDE

AH-6

AH-5

AH-4

AH-3

AH-2

AH-1

TELE.
POLE

TELE.
POLE

TELE.
POLE

FWKO

200'

LEASE ROAD

LEASE ROAD

PASTURE

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ▨ EXCAVATED AREAS

SCALE: 1 IN = 50 FEET

Feet 0 20 40



Figure 4

Yucca State Tank Battery
Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 114-6401449

Date : 8/30/2012

File : H:\GIS\6401449



Tables

Table 1
COG Operating LLC.
Yucca State Tank Battery
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
Yucca State Tank Battery
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
Yucca State 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-5	7/30/2012	0-1		X	<4.00	191	191	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,460
	"	1-1.5	X		-	-	-	-	-	-	-	-	378
	"	2-2.5	X		-	-	-	-	-	-	-	-	354
	"	3-3.5	X		-	-	-	-	-	-	-	-	354
	"	4-4.5	X		-	-	-	-	-	-	-	-	313
	"	5-5.5	X		-	-	-	-	-	-	-	-	210
	"	6-6.5	X		-	-	-	-	-	-	-	-	321
	"	7-7.5	X		-	-	-	-	-	-	-	-	197
	"	8-8.5	X		-	-	-	-	-	-	-	-	381
	"	9-9.5	X		-	-	-	-	-	-	-	-	230
	"	10-10.5	X		-	-	-	-	-	-	-	-	188
AH-6	7/30/2012	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	551
	"	1-1.5	X		-	-	-	-	-	-	-	-	243
	"	2-2.5	X		-	-	-	-	-	-	-	-	165
	"	3-3.5	X		-	-	-	-	-	-	-	-	96.4
	"	4-4.5	X		-	-	-	-	-	-	-	-	216
	"	5-5.5	X		-	-	-	-	-	-	-	-	319
	"	6-6.5	X		-	-	-	-	-	-	-	-	213
	"	7-7.5	X		-	-	-	-	-	-	-	-	304
	"	8-8.5	X		-	-	-	-	-	-	-	-	189
	"	9-9.5	X		-	-	-	-	-	-	-	-	300
	"	10-10.5	X		-	-	-	-	-	-	-	-	696



Excavated Depths

(-)

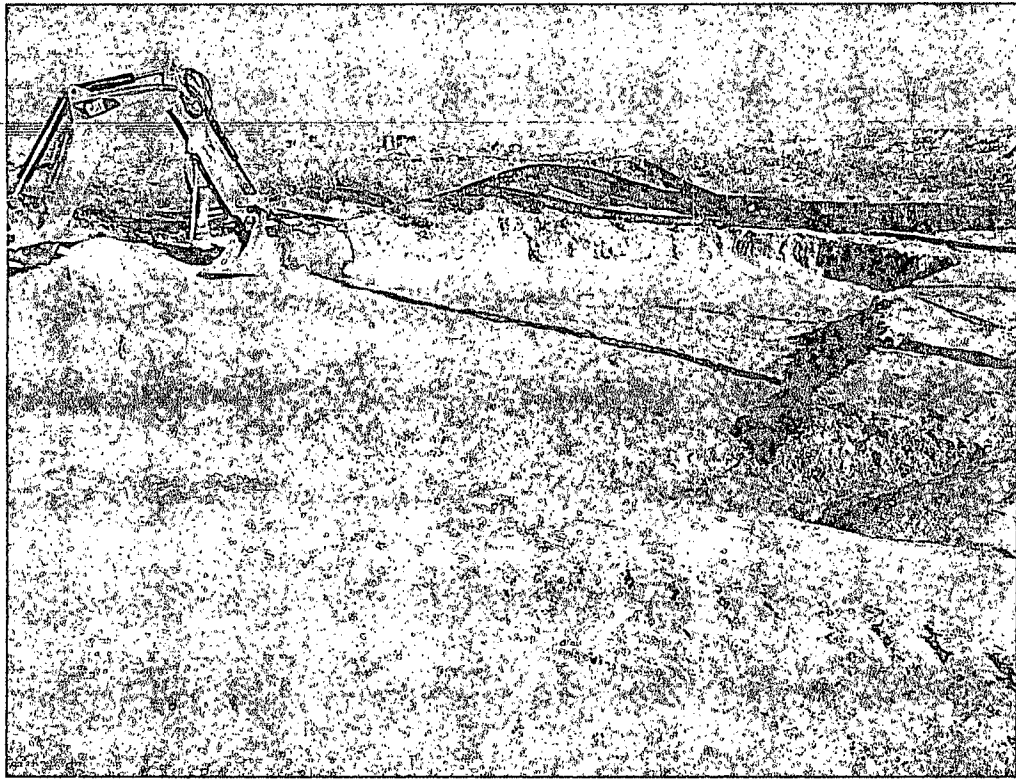
Not Analyzed

Photos

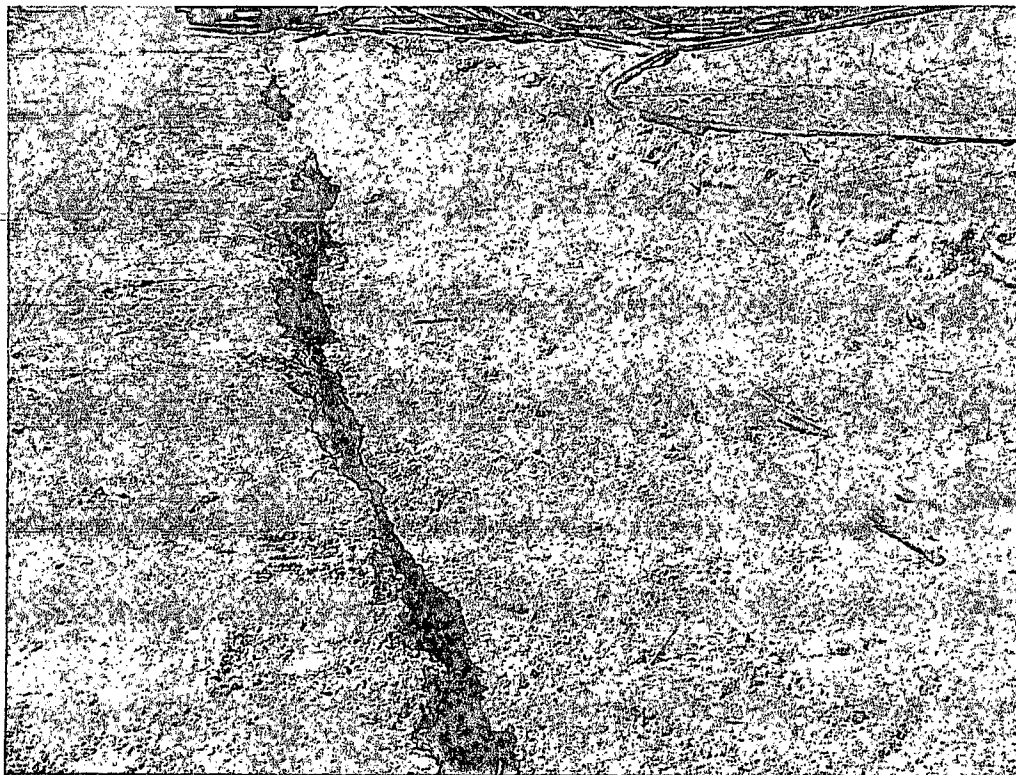
COG Operating LLC
Yucca State Tank Battery
Eddy County, New Mexico



TETRA TECH



View North – Area of AH-1, AH-2 and AH-3

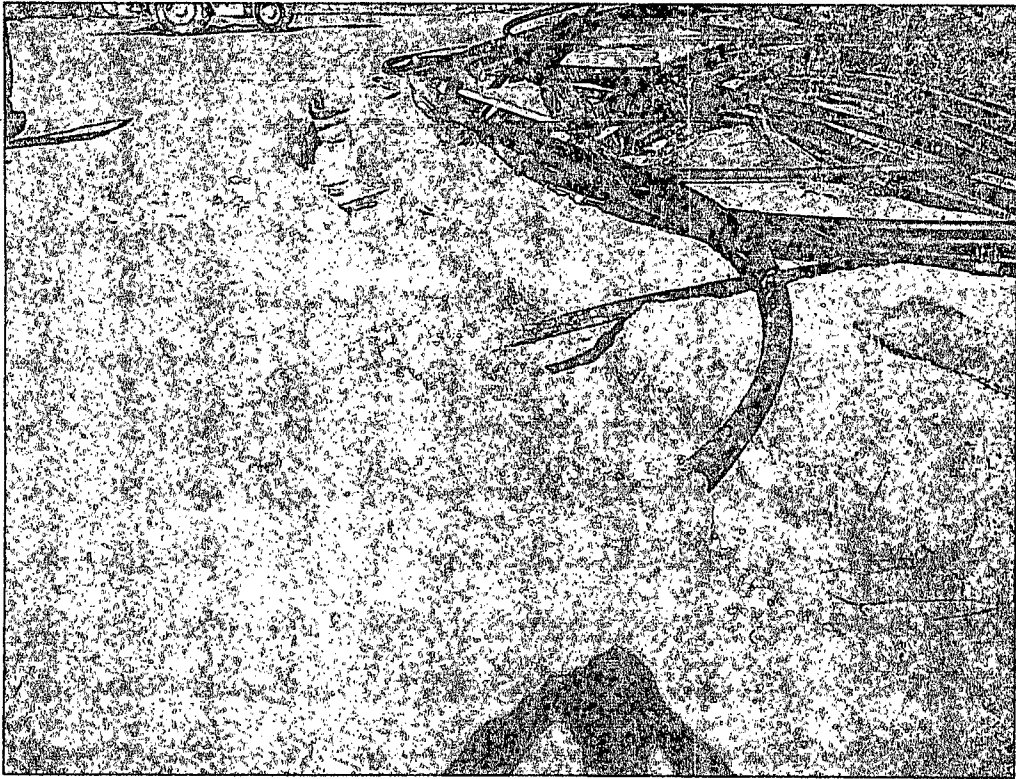


View West – Area of AH-4

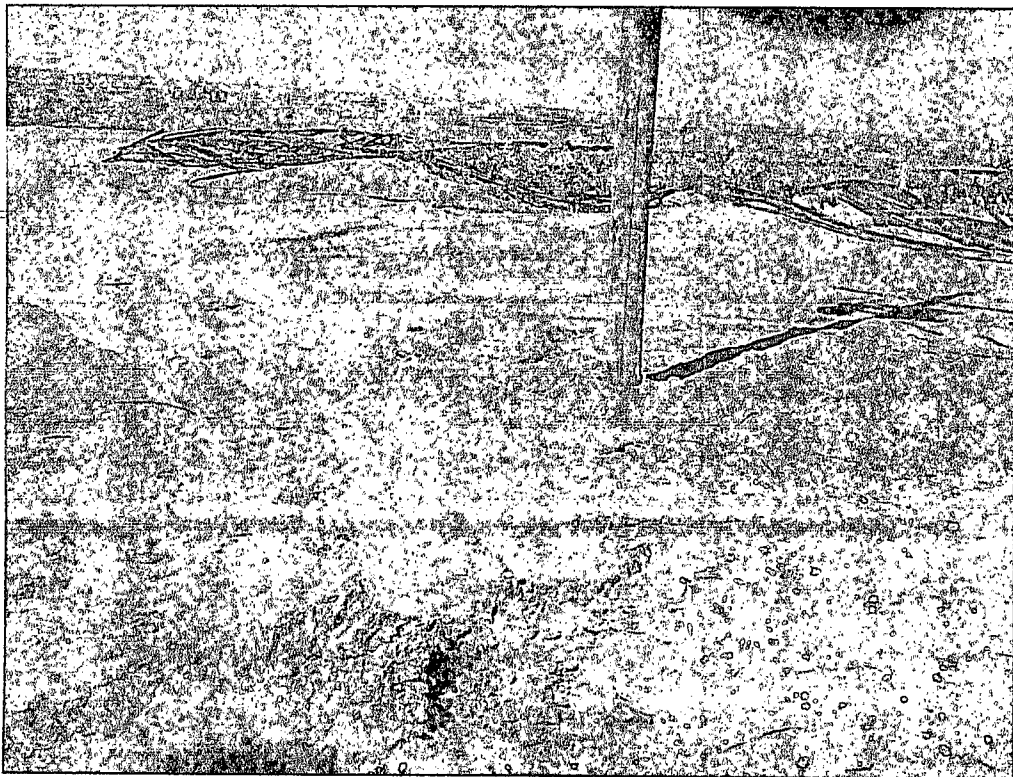
COG Operating LLC
Yucca State Tank Battery
Eddy County, New Mexico



TETRA TECH



View West – Area of AH-5 and AH-6



View West - Backfill

Appendix A

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

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

RECEIVED

NOV 01 2012

NMOC D-ARTESIA

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	COG Operating LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No.	(432) 230-0077
Facility Name	Yucca State Tank Battery	Facility Type	Tank Battery

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-33012 Closest well location (B-2613)
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	16	17S	31E					Eddy

Latitude N 32.82855° Longitude W 103.87409°

NATURE OF RELEASE

Type of Release: Produced Fluid	Volume of Release 10bbls oil 40bbls produced water	Volume Recovered 5bbls oil 30bbls produced water
Source of Release: Poly flowline (burned in fire)	Date and Hour of Occurrence 06/17/2012	Date and Hour of Discovery 06/14/2012 3:00 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD	
By Whom? Michelle Mullins	Date and Hour 06/17/2012 8:24 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

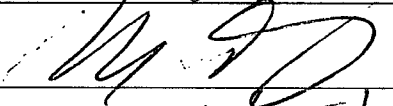
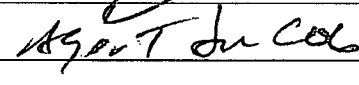
Describe Cause of Problem and Remedial Action Taken.*

An 8" DCP gas transmission line ruptured and ignited the surrounding pasture; which, in turn, burned several of our poly flowlines around the Yucca State Tank Battery. We are in the process of replacing all damaged flowlines.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it 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 	Approved by District Supervisor:		
Title: Project Manager	Approval Date:	Expiration Date:	
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:		Attached ☐
Date: 10-16-12	Phone: (432) 682-4559		

Attach Additional Sheets If Necessary

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

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Yucca State Tank Battery	Facility Type	Tank Battery

Surface Owner	State	Mineral Owner		Lease No. (API#)	30-015-33012
				Closest well location	(B-2613)

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	3	25S	28E					Eddy

Latitude 32 49.693 Longitude 103 52.411

NATURE OF RELEASE

Type of Release	Produced fluid	Volume of Release	10bbls oil 40bbls produced water	Volume Recovered	5bbls oil 30bbls produced water
Source of Release	Poly flowlines (burned in fire)	Date and Hour of Occurrence	06/17/2012	Date and Hour of Discovery	06/14/2012 3:00 p.m.
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher-OCD		
By Whom?	Michelle Mullins	Date and Hour	06/17/2012 8:24 p.m.		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

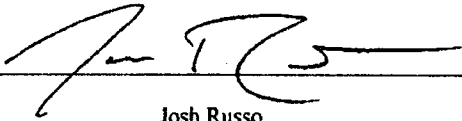
An 8" DCP gas transmission line ruptured and ignited the surrounding pasture; which, in turn, burned several of our poly flowlines around the Yucca State Tank Battery. We are in the process of replacing all damaged flowlines.

Describe Area Affected and Cleanup Action Taken.*

Due to the fire, there was a release of produced fluids from the burning of poly flowlines. Initially 50bbls of produced fluid was released from the flowlines and we were able to recover 35bbls with a vacuum truck. Tetra Tech will sample the spill site area where the fire burned our flowlines to delineate any possible contamination from the releases and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

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

OIL CONSERVATION DIVISION

Signature:			
Printed Name:	Josh Russo		
Title:	HSE Coordinator		
E-mail Address:	jrusso@conchoresources.com		
Date:	06/22/2012	Phone:	432-212-2399
Approved by District Supervisor:		Approval Date:	Expiration Date:
Conditions of Approval:		Attached ☐	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Yucca State
Eddy County, New Mexico

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

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

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

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

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

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	24
30	29	28	27	26	25
31	32	33	34	35	36

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

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

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  SITE -Yucca State

Appendix C

Summary Report

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

Report Date: August 10, 2012

Work Order: 12080302



Project Location: Eddy Co., NM
Project Name: COG/Yucca State Tank Battery
Project Number: 114-6401449

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305604	AH-1 0-1'	soil	2012-07-30	00:00	2012-08-02
305605	AH-1 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305606	AH-1 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305607	AH-1 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305608	AH-1 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305609	AH-1 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305610	AH-1 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305611	AH-1 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305612	AH-1 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305613	AH-1 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305614	AH-1 10-10.5'	soil	2012-07-30	00:00	2012-08-02

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
305604 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	751	<4.00

Sample: 305604 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		4190	mg/Kg	4

Sample: 305605 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2410	mg/Kg	4

Sample: 305606 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		190	mg/Kg	4

Sample: 305607 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		190	mg/Kg	4

Sample: 305608 - AH-1 4-4.5'

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

Sample: 305609 - AH-1 5-5.5'

Param	Flag	Result	Units	RL
Chloride		238	mg/Kg	4

Sample: 305610 - AH-1 6-6.5'

Param	Flag	Result	Units	RL
Chloride		47.6	mg/Kg	4

Sample: 305611 - AH-1 7-7.5'

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

Sample: 305612 - AH-1 8-8.5'

Param	Flag	Result	Units	RL
Chloride		47.6	mg/Kg	4

Sample: 305613 - AH-1 9-9.5'

Param	Flag	Result	Units	RL
Chloride		57.1	mg/Kg	4

Sample: 305614 - AH-1 10-10.5'

Param	Flag	Result	Units	RL
Chloride		2190	mg/Kg	4



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: August 10, 2012

Work Order: 12080302



Project Location: Eddy Co., NM
Project Name: COG/Yucca State Tank Battery
Project Number: 114-6401449

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
305604	AH-1 0-1'	soil	2012-07-30	00:00	2012-08-02
305605	AH-1 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305606	AH-1 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305607	AH-1 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305608	AH-1 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305609	AH-1 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305610	AH-1 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305611	AH-1 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305612	AH-1 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305613	AH-1 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305614	AH-1 10-10.5'	soil	2012-07-30	00:00	2012-08-02

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

This report consists of a total of 22 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael Abel

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

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Case Narrative

Samples for project COG/Yucca State Tank Battery were received by TraceAnalysis, Inc. on 2012-08-02 and assigned to work order 12080302. Samples for work order 12080302 were received intact at a temperature of 4.7 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	79433	2012-08-07 at 15:57	93704	2012-08-07 at 15:57
Chloride (Titration)	SM 4500-Cl B	79380	2012-08-04 at 09:17	93621	2012-08-04 at 10:42
Chloride (Titration)	SM 4500-Cl B	79380	2012-08-04 at 09:17	93622	2012-08-04 at 10:43
TPH DRO - NEW	S 8015 D	79440	2012-08-07 at 08:00	93713	2012-08-08 at 08:36
TPH GRO	S 8015 D	79433	2012-08-07 at 15:57	93705	2012-08-07 at 15:57

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 12080302 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

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Analytical Report

Sample: 305604 - AH-1 0-1'

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 93704
Prep Batch: 79433

Analytical Method: S 8021B
Date Analyzed: 2012-08-07
Sample Preparation: 2012-08-07

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

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)			1.64	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	70 - 130

Sample: 305604 - AH-1 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93621
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4190	mg/Kg	10	4.00

Sample: 305604 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 93713
Prep Batch: 79440

Analytical Method: S 8015 D
Date Analyzed: 2012-08-08
Sample Preparation: 2012-08-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	751	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qcr	Qcr	173	mg/Kg	1	100	173	49.3 - 157.5

Sample: 305604 - AH-1 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 93705
Prep Batch: 79433

Analytical Method: S 8015 D
Date Analyzed: 2012-08-07
Sample Preparation: 2012-08-07

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Sample: 305605 - AH-1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93621
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2410	mg/Kg	10	4.00

Sample: 305606 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93621
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

continued ...

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sample 305606 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			190	mg/Kg	5	4.00

Sample: 305607 - AH-1 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93621	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			190	mg/Kg	5	4.00

Sample: 305608 - AH-1 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93621	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

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

Sample: 305609 - AH-1 5-5.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93621	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			238	mg/Kg	5	4.00

Sample: 305610 - AH-1 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93621 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			47.6	mg/Kg	5	4.00

Sample: 305611 - AH-1 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93621 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

Sample: 305612 - AH-1 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93621 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			47.6	mg/Kg	5	4.00

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Sample: 305613 - AH-1 9-9.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93621	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			57.1	mg/Kg	5	4.00

Sample: 305614 - AH-1 10-10.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93622	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2190	mg/Kg	10	4.00

Method Blanks

Method Blank (1) QC Batch: 93621

QC Batch: 93621 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 QC Preparation: 2012-08-04 Prepared By: AR

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

Method Blank (1) QC Batch: 93622

QC Batch: 93622 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 QC Preparation: 2012-08-04 Prepared By: AR

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

Method Blank (1) QC Batch: 93704

QC Batch: 93704 Date Analyzed: 2012-08-07 Analyzed By: ZLM
Prep Batch: 79433 QC Preparation: 2012-08-07 Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	<0.00460	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

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Method Blank (1) QC Batch: 93705

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	1.14	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	70 - 130

Method Blank (1) QC Batch: 93713

QC Batch: 93713
Prep Batch: 79440

Date Analyzed: 2012-08-08
QC Preparation: 2012-08-07

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	52 - 160.8

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 93621
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2490	mg/Kg	1	2500	<3.85	100	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			2570	mg/Kg	1	2500	<3.85	103	85 - 115	3	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 93622
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2550	mg/Kg	1	2500	<3.85	102	85 - 115	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: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00365	90	75.4 - 120
Toluene		1	1.75	mg/Kg	1	2.00	<0.00816	88	74.9 - 120
Ethylbenzene		1	1.72	mg/Kg	1	2.00	<0.00560	86	78.1 - 120
Xylene		1	5.18	mg/Kg	1	6.00	<0.00460	86	77.3 - 120

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	1.76	mg/Kg	1	2.00	<0.00365	88	75.4 - 120	3	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	74.9 - 120	2	20
Ethylbenzene		1	1.73	mg/Kg	1	2.00	<0.00560	86	78.1 - 120	1	20
Xylene		1	5.19	mg/Kg	1	6.00	<0.00460	86	77.3 - 120	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)	1.73	1.66	mg/Kg	1	2.00	86	83	70 - 130
4-Bromofluorobenzene (4-BFB)	1.81	1.74	mg/Kg	1	2.00	90	87	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.2	mg/Kg	1	20.0	1.14	96	68.9 - 120

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	20.1	mg/Kg	1	20.0	1.14	100	68.9 - 120	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.93	2.02	mg/Kg	1	2.00	96	101	70 - 130
4-Bromofluorobenzene (4-BFB)	2.09	1.91	mg/Kg	1	2.00	104	96	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 93713
Prep Batch: 79440

Date Analyzed: 2012-08-08
QC Preparation: 2012-08-07

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	292	mg/Kg	1	250	<14.5	117	62 - 128.3

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		2	307	mg/Kg	1	250	<14.5	123	62 - 128.3	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	142	150	mg/Kg	1	100	142	150	58.6 - 149.6

Matrix Spike (MS-1) Spiked Sample: 305613

QC Batch: 93621
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2520	mg/Kg	5	2500	57.1	98	79.4 - 120.6

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			2650	mg/Kg	5	2500	57.1	104	79.4 - 120.6	5	20

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

Matrix Spike (MS-1) Spiked Sample: 305634

QC Batch: 93622
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	5	2500	<19.2	104	79.4 - 120.6

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			2620	mg/Kg	5	2500	<19.2	105	79.4 - 120.6	1	20

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

Matrix Spike (MS-1) Spiked Sample: 305596

QC Batch: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.80	mg/Kg	1	2.00	<0.00365	90	37.6 - 142
Toluene		1	1.91	mg/Kg	1	2.00	<0.00816	96	38.6 - 153
Ethylbenzene		1	2.04	mg/Kg	1	2.00	<0.00560	102	36.7 - 172
Xylene		1	6.10	mg/Kg	1	6.00	<0.00460	102	36.7 - 173

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	1.64	mg/Kg	1	2.00	<0.00365	82	37.6 - 142	9	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	38.6 - 153	10	20
Ethylbenzene		1	1.83	mg/Kg	1	2.00	<0.00560	92	36.7 - 172	11	20
Xylene		1	5.50	mg/Kg	1	6.00	<0.00460	92	36.7 - 173	10	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)	1.93	1.75	mg/Kg	1	2	96	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.81	mg/Kg	1	2	97	90	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305596

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Report Date: August 10, 2012
114-6401449

Work Order: 12080302
COG/Yucca State Tank Battery

Page Number: 17 of 22
Eddy Co., NM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.9	mg/Kg	1	20.0	<0.359	74	68.9 - 120

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	15.6	mg/Kg	1	20.0	<0.359	78	68.9 - 120	5	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.75	mg/Kg	1	2	88	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	2.11	mg/Kg	1	2	99	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305604

QC Batch: 93713
Prep Batch: 79440

Date Analyzed: 2012-08-08
QC Preparation: 2012-08-07

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	943	mg/Kg	1	250	751	77	45.5 - 127

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		2	1010	mg/Kg	1	250	751	104	45.5 - 127	7	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	158	169	mg/Kg	1	100	158	169	45.4 - 145.8

Calibration Standards

Standard (CCV-1)

QC Batch: 93621

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93621

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.8	99	85 - 115	2012-08-04

Standard (CCV-1)

QC Batch: 93622

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93622

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2012-08-04

Report Date: August 10, 2012
114-6401449

Work Order: 12080302
COG/Yucca State Tank Battery

Page Number: 19 of 22
Eddy Co., NM

Standard (CCV-1)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0928	93	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0906	91	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0891	89	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.268	89	80 - 120	2012-08-07

Standard (CCV-2)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0884	88	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0860	86	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0857	86	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.254	85	80 - 120	2012-08-07

Standard (CCV-3)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0842	84	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0816	82	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0826	83	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.246	82	80 - 120	2012-08-07

Standard (CCV-1)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Report Date: August 10, 2012
114-6401449

Work Order: 12080302
COG/Yucca State Tank Battery

Page Number: 20 of 22
Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2012-08-07

Standard (CCV-2)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.827	83	80 - 120	2012-08-07

Standard (CCV-3)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.860	86	80 - 120	2012-08-07

Standard (CCV-1)

QC Batch: 93713

Date Analyzed: 2012-08-08

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	291	116	80 - 120	2012-08-08

Standard (CCV-2)

QC Batch: 93713

Date Analyzed: 2012-08-08

Analyzed By: CW

Report Date: August 10, 2012
114-6401449

Work Order: 12080302
COG/Yucca State Tank Battery

Page Number: 21 of 22
Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	276	110	80 - 120	2012-08-08

Standard (CCV-3)

QC Batch: 93713

Date Analyzed: 2012-08-08

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	280	112	80 - 120	2012-08-08

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	Midland

Standard Flags

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

PAGE: 1 OF: 2



TETRA TECH

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tovar

PROJECT NO.:

114-6401449

PROJECT NAME:

COG Nucca State Tank Battery
Edge of N.M.
SAMPLE IDENTIFICATION

LAB I.D. NUMBER

DATE

TIME

MATRIX

COMB

GRAB

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE METHOD

HCL

HNO3

ICE

NONE

TEX 80215
TPH 8015 MOG
PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCBs 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

605604

7/30/12

S

X

AH1

0-1'

1

X

XX

X

605

1-1.5'

1

X

X

606

2-2.5'

1

X

X

607

3-3.5'

1

X

X

608

4-4.5'

1

X

X

609

5-5.5'

1

X

X

610

6-6.5'

1

X

X

611

7-7.5'

1

X

X

612

8-8.5'

1

X

X

613

9-9.5'

1

X

X

RELINQUISHED BY: (Signature)

Date:

7/30/12

RECEIVED BY: (Signature)

Date:

7/30/12

SAMPLED BY: (Print & Initial)

Brandon JH

Date:

7/30/12

RELINQUISHED BY: (Signature)

Date:

7/30/12

RECEIVED BY: (Signature)

Date:

7/30/12

SAMPLE SHIPPED BY: (Circle)

FEDEX

AIRBILL #: 219975192

RELINQUISHED BY: (Signature)

Date:

7/30/12

RECEIVED BY: (Signature)

Date:

12080302

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

**TETRA TECH**

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavares

PROJECT NO.:

114-6401449

PROJECT NAME:

Yucca State Tank Station

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

AH1

Eddy Co NM
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHODSTEX 8021B
EPH 8015 MOB. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 809/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

8/2/12

RECEIVED BY: (Signature)

Date:

8/2/12

SAMPLED BY: (Print & Initial)

Date:

7/30/12

RELINQUISHED BY: (Signature)

Date:

8/3/12

RECEIVED BY: (Signature)

Date:

8/3/12

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

OTHER:

RELINQUISHED BY: (Signature)

Date:

8/3/12

RECEIVED BY: (Signature)

Date:

8/3/12

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

PHONE:

ZIP:

CONTACT:

RECEIVED BY: (Signature)

DATE:

8/3/12

TIME:

9:30

Ike Tavares

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

See remarks of p. 1

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

Summary Report

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

Report Date: August 23, 2012

Work Order: 12080306



Project Location: Eddy Co., NM
Project Name: COG/Yucca State Tank Battery
Project Number: 114-6401449

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305626	AH-2 0-1'	soil	2012-07-30	00:00	2012-08-02
305627	AH-2 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305628	AH-2 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305629	AH-2 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305630	AH-2 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305631	AH-2 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305632	AH-2 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305633	AH-2 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305634	AH-2 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305635	AH-2 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305636	AH-2 10-10.5'	soil	2012-07-30	00:00	2012-08-02

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
305626 - AH-2 0-1'	<0.100 ¹	<0.100	0.577	1.94	11200 Qs	249
305627 - AH-2 1-1.5'					7500 H, Je, Qs	490 H, Qs
305628 - AH-2 2-2.5'					<50.0 H, Qr	<4.00 H
305629 - AH-2 3-3.5'					<50.0 H, Qr	<4.00 H

Sample: 305626 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		1760	mg/Kg	4

¹ Dilution due to excessive hydrocarbons.

Sample: 305627 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		712	mg/Kg	4

Sample: 305628 - AH-2 2-2.5'

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

Sample: 305629 - AH-2 3-3.5'

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

Sample: 305630 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		77.5	mg/Kg	4

Sample: 305631 - AH-2 5-5.5'

Param	Flag	Result	Units	RL
Chloride		136	mg/Kg	4

Sample: 305632 - AH-2 6-6.5'

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

Sample: 305633 - AH-2 7-7.5'

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

Sample: 305634 - AH-2 8-8.5'

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

Sample: 305635 - AH-2 9-9.5'

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

Sample: 305636 - AH-2 10-10.5'

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



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: August 23, 2012

Work Order: 12080306



Project Location: Eddy Co., NM
Project Name: COG/Yucca State Tank Battery
Project Number: 114-6401449

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
305626	AH-2 0-1'	soil	2012-07-30	00:00	2012-08-02
305627	AH-2 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305628	AH-2 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305629	AH-2 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305630	AH-2 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305631	AH-2 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305632	AH-2 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305633	AH-2 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305634	AH-2 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305635	AH-2 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305636	AH-2 10-10.5'	soil	2012-07-30	00:00	2012-08-02

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

This report consists of a total of 32 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blair Leftwich

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

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Case Narrative

Samples for project COG/Yucca State Tank Battery were received by TraceAnalysis, Inc. on 2012-08-02 and assigned to work order 12080306. Samples for work order 12080306 were received intact at a temperature of 4.7 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	79433	2012-08-07 at 15:57	93704	2012-08-07 at 15:57
Chloride (Titration)	SM 4500-Cl B	79380	2012-08-04 at 09:17	93622	2012-08-04 at 10:43
Chloride (Titration)	SM 4500-Cl B	79380	2012-08-04 at 09:17	93623	2012-08-04 at 10:44
TPH DRO - NEW	S 8015 D	79529	2012-08-10 at 13:00	93810	2012-08-13 at 08:43
TPH DRO - NEW	S 8015 D	79643	2012-08-15 at 15:00	93950	2012-08-15 at 15:36
TPH DRO - NEW	S 8015 D	79748	2012-08-20 at 08:00	94082	2012-08-21 at 08:20
TPH GRO	S 8015 D	79433	2012-08-07 at 15:57	93705	2012-08-07 at 15:57
TPH GRO	S 8015 D	79669	2012-08-16 at 17:58	93974	2012-08-16 at 17:58
TPH GRO	S 8015 D	79813	2012-08-22 at 12:56	94163	2012-08-22 at 12:56

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 12080306 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

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Analytical Report

Sample: 305626 - AH-2 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 93704

Prep Batch: 79433

Analytical Method: S 8021B

Date Analyzed: 2012-08-07

Sample Preparation: 2012-08-07

Prep Method: S 5035

Analyzed By: ZLM

Prepared By: ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene	U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene		1	0.577	mg/Kg	5	0.0200
Xylene		1	1.94	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	1.31	mg/Kg	5	2.00	66	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.89	mg/Kg	5	2.00	144	70 - 130

Sample: 305626 - AH-2 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93622

Prep Batch: 79380

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1760	mg/Kg	10	4.00

Sample: 305626 - AH-2 0-1'

Laboratory: Lubbock

Analysis: TPH DRO - NEW

QC Batch: 93810

Prep Batch: 79529

Analytical Method: S 8015 D

Date Analyzed: 2012-08-13

Sample Preparation: 2012-08-10

Prep Method: N/A

Analyzed By: CM

Prepared By: CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	11200	mg/Kg	20	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	985	mg/Kg	20	100	985	59.9 - 168

Sample: 305626 - AH-2 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 93705
Prep Batch: 79433

Analytical Method: S 8015 D
Date Analyzed: 2012-08-07
Sample Preparation: 2012-08-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	249	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	1.24	mg/Kg	5	2.00	62	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	4.92	mg/Kg	5	2.00	246	70 - 130

Sample: 305627 - AH-2 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			712	mg/Kg	5	4.00

Sample: 305627 - AH-2 1-1.5'

Laboratory: Lubbock
Analysis: TPH DRO - NEW
QC Batch: 93950
Prep Batch: 79643

Analytical Method: S 8015 D
Date Analyzed: 2012-08-15
Sample Preparation: 2012-08-15

Prep Method: N/A
Analyzed By: CM
Prepared By: DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	H, Je, Q _{sr}	1	7500	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	290	mg/Kg	1	100	290	70 - 130

Sample: 305627 - AH-2 1-1.5'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 93974
Prep Batch: 79669

Analytical Method: S 8015 D
Date Analyzed: 2012-08-16
Sample Preparation: 2012-08-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	H, Qs	1	490	mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	10	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	5.49	mg/Kg	10	2.00	274	70 - 130

Sample: 305628 - AH-2 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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

Sample: 305628 - AH-2 2-2.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 94082
Prep Batch: 79748

Analytical Method: S 8015 D
Date Analyzed: 2012-08-21
Sample Preparation: 2012-08-20

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

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	70 - 130

Sample: 305628 - AH-2 2-2.5'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 94163
Prep Batch: 79813

Analytical Method: S 8015 D
Date Analyzed: 2012-08-22
Sample Preparation: 2012-08-22

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.20	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1	2.00	101	70 - 130

Sample: 305629 - AH-2 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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

Sample: 305629 - AH-2 3-3.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 94082
Prep Batch: 79748

Analytical Method: S 8015 D
Date Analyzed: 2012-08-21
Sample Preparation: 2012-08-20

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

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

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

Sample: 305629 - AH-2 3-3.5'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 94163
Prep Batch: 79813

Analytical Method: S 8015 D
Date Analyzed: 2012-08-22
Sample Preparation: 2012-08-22

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	H	1	<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)			1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 305630 - AH-2 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			77.5	mg/Kg	5	4.00

Sample: 305631 - AH-2 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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sample 305631 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			136	mg/Kg	5	4.00

Sample: 305632 - AH-2 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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

Sample: 305633 - AH-2 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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

Sample: 305634 - AH-2 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93622
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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

Sample: 305635 - AH-2 9-9.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93623 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

Sample: 305636 - AH-2 10-10.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93623 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

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Method Blanks

Method Blank (1) QC Batch: 93622

QC Batch: 93622
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93623

QC Batch: 93623
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93704

QC Batch: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	<0.00460	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

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Method Blank (1) QC Batch: 93705

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	1.14	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	70 - 130

Method Blank (1) QC Batch: 93810

QC Batch: 93810
Prep Batch: 79529

Date Analyzed: 2012-08-13
QC Preparation: 2012-08-10

Analyzed By: CM
Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.50	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	59.9 - 168

Method Blank (1) QC Batch: 93950

QC Batch: 93950
Prep Batch: 79643

Date Analyzed: 2012-08-15
QC Preparation: 2012-08-15

Analyzed By: CM
Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.3	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			112	mg/Kg	1	100	112	70 - 130

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Method Blank (1) QC Batch: 93974

QC Batch: 93974
Prep Batch: 79669

Date Analyzed: 2012-08-16
QC Preparation: 2012-08-16

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Method Blank (1) QC Batch: 94082

QC Batch: 94082
Prep Batch: 79748

Date Analyzed: 2012-08-21
QC Preparation: 2012-08-20

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	70 - 130

Method Blank (1) QC Batch: 94163

QC Batch: 94163
Prep Batch: 79813

Date Analyzed: 2012-08-22
QC Preparation: 2012-08-22

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.38	mg/Kg	1	2.00	119	70 - 130
4-Bromofluorobenzene (4-BFB)			2.15	mg/Kg	1	2.00	108	70 - 130

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 93622
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2550	mg/Kg	1	2500	<3.85	102	85 - 115	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: 93623
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2520	mg/Kg	1	2500	<3.85	101	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			2680	mg/Kg	1	2500	<3.85	107	85 - 115	6	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: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00365	90	75.4 - 120
Toluene		1	1.75	mg/Kg	1	2.00	<0.00816	88	74.9 - 120
Ethylbenzene		1	1.72	mg/Kg	1	2.00	<0.00560	86	78.1 - 120
Xylene		1	5.18	mg/Kg	1	6.00	<0.00460	86	77.3 - 120

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.76	mg/Kg	1	2.00	<0.00365	88	75.4 - 120	3	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	74.9 - 120	2	20
Ethylbenzene		1	1.73	mg/Kg	1	2.00	<0.00560	86	78.1 - 120	1	20
Xylene		1	5.19	mg/Kg	1	6.00	<0.00460	86	77.3 - 120	0	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.73	1.66	mg/Kg	1	2.00	86	83	70 - 130
4-Bromofluorobenzene (4-BFB)	1.81	1.74	mg/Kg	1	2.00	90	87	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.2	mg/Kg	1	20.0	1.14	96	68.9 - 120

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	20.1	mg/Kg	1	20.0	1.14	100	68.9 - 120	5	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.93	2.02	mg/Kg	1	2.00	96	101	70 - 130
4-Bromofluorobenzene (4-BFB)	2.09	1.91	mg/Kg	1	2.00	104	96	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 93810
Prep Batch: 79529

Date Analyzed: 2012-08-13
QC Preparation: 2012-08-10

Analyzed By: CM
Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	227	mg/Kg	1	250	<6.50	91	72.7 - 120

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	208	mg/Kg	1	250	<6.50	83	72.7 - 120	9	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	113	97.5	mg/Kg	1	100	113	98	59.9 - 168

Laboratory Control Spike (LCS-1)

QC Batch: 93950
Prep Batch: 79643

Date Analyzed: 2012-08-15
QC Preparation: 2012-08-15

Analyzed By: CM
Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	271	mg/Kg	1	250	<15.3	108	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	270	mg/Kg	1	250	<15.3	108	70 - 130	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	112	110	mg/Kg	1	100	112	110	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93974
Prep Batch: 79669

Date Analyzed: 2012-08-16
QC Preparation: 2012-08-16

Analyzed By: MT
Prepared By: MT

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.8	mg/Kg	1	20.0	<0.359	89	68.9 - 120

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	17.6	mg/Kg	1	20.0	<0.359	88	68.9 - 120	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)	1.83	1.87	mg/Kg	1	2.00	92	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.95	1.97	mg/Kg	1	2.00	98	98	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 94082
Prep Batch: 79748

Date Analyzed: 2012-08-21
QC Preparation: 2012-08-20

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	220	mg/Kg	1	250	<14.5	88	70 - 130

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

Param				LCSD			Spike	Matrix		Rec.		RPD
	F	C		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	qr	qr	2	280	mg/Kg	1	250	<14.5	112	70 - 130	24	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	118	136	mg/Kg	1	100	118	136	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 94163
Prep Batch: 79813

Date Analyzed: 2012-08-22
QC Preparation: 2012-08-22

Analyzed By: MT
Prepared By: MT

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.9	mg/Kg	1	20.0	<0.359	89	68.9 - 120

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	18.2	mg/Kg	1	20.0	<0.359	91	68.9 - 120	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.05	2.08	mg/Kg	1	2.00	102	104	70 - 130
4-Bromofluorobenzene (4-BFB)	1.97	1.99	mg/Kg	1	2.00	98	99	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305634

QC Batch: 93622
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
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	79.4 - 120.6

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			2620	mg/Kg	5	2500	<19.2	105	79.4 - 120.6	1	20

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

Matrix Spike (MS-1) Spiked Sample: 305647

QC Batch: 93623
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2650	mg/Kg	1	2500	<3.85	106	79.4 - 120.6

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			2750	mg/Kg	1	2500	<3.85	110	79.4 - 120.6	4	20

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

Matrix Spike (MS-1) Spiked Sample: 305596

QC Batch: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.80	mg/Kg	1	2.00	<0.00365	90	37.6 - 142
Toluene		1	1.91	mg/Kg	1	2.00	<0.00816	96	38.6 - 153
Ethylbenzene		1	2.04	mg/Kg	1	2.00	<0.00560	102	36.7 - 172
Xylene		1	6.10	mg/Kg	1	6.00	<0.00460	102	36.7 - 173

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	1.64	mg/Kg	1	2.00	<0.00365	82	37.6 - 142	9	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	38.6 - 153	10	20
Ethylbenzene		1	1.83	mg/Kg	1	2.00	<0.00560	92	36.7 - 172	11	20
Xylene		1	5.50	mg/Kg	1	6.00	<0.00460	92	36.7 - 173	10	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)	1.93	1.75	mg/Kg	1	2	96	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.81	mg/Kg	1	2	97	90	70 - 130

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Matrix Spike (MS-1) Spiked Sample: 305596

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.9	mg/Kg	1	20.0	<0.359	74	68.9 - 120

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	15.6	mg/Kg	1	20.0	<0.359	78	68.9 - 120	5	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.75	mg/Kg	1	2	88	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	2.11	mg/Kg	1	2	99	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305595

QC Batch: 93810
Prep Batch: 79529

Date Analyzed: 2012-08-13
QC Preparation: 2012-08-10

Analyzed By: CM
Prepared By: CM

Param			MS			Spike	Matrix		Rec.	
	F	C	Result	Units	Dil.	Amount	Result	Rec	Limit	
DRO	Qs	Qs	1	64.8	mg/Kg	1	250	<6.50	26	45.3 - 139

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

Param			MSD			Spike	Matrix		Rec.		RPD	
	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
DRO	Qs	Qs	1	73.5	mg/Kg	1	250	<6.50	29	45.3 - 139	13	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	106	102	mg/Kg	10	100	106	102	59.9 - 168

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Matrix Spike (MS-1) Spiked Sample: 305627

QC Batch: 93950
Prep Batch: 79643

Date Analyzed: 2012-08-15
QC Preparation: 2012-08-15

Analyzed By: CM
Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Je,Qs	Je,Qs	1	7590	mg/Kg	1	250	7500	36 70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Je,Qs	Je,Qs	1	7440	mg/Kg	1	250	7500	-24 70 - 130	2	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane Qsr Qsr	282	274	mg/Kg	1	100	282	274	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305627

QC Batch: 93974
Prep Batch: 79669

Date Analyzed: 2012-08-16
QC Preparation: 2012-08-16

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	595	mg/Kg	10	20.0	490	525 68.9 - 120

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	Qs	Qs	1	546	mg/Kg	10	20.0	490	280 68.9 - 120	9	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)	1.58	1.70	mg/Kg	10	2	79	85	70 - 130
4-Bromofluorobenzene (4-BFB) Qsr Qsr	6.26	5.80	mg/Kg	10	2	313	290	70 - 130

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Matrix Spike (MS-1) Spiked Sample: 306914

QC Batch: 94082
Prep Batch: 79748

Date Analyzed: 2012-08-21
QC Preparation: 2012-08-20

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	231	mg/Kg	1	250	<14.5	92	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	233	mg/Kg	1	250	<14.5	93	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
n-Tricosane	112	113	mg/Kg	1	100	112	113	70 - 130

Matrix Spike (MS-1) Spiked Sample: 306910

QC Batch: 94163
Prep Batch: 79813

Date Analyzed: 2012-08-22
QC Preparation: 2012-08-22

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.9	mg/Kg	1	20.0	1.92	90	68.9 - 120

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	21.1	mg/Kg	1	20.0	1.92	96	68.9 - 120	6	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)	1.88	1.82	mg/Kg	1	2	94	91	70 - 130
4-Bromofluorobenzene (4-BFB)	2.44	2.36	mg/Kg	1	2	122	118	70 - 130

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Calibration Standards

Standard (CCV-1)

QC Batch: 93622

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93622

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2012-08-04

Standard (CCV-1)

QC Batch: 93623

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93623

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

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Standard (CCV-1)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0928	93	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0906	91	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0891	89	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.268	89	80 - 120	2012-08-07

Standard (CCV-2)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0884	88	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0860	86	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0857	86	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.254	85	80 - 120	2012-08-07

Standard (CCV-3)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0842	84	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0816	82	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0826	83	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.246	82	80 - 120	2012-08-07

Standard (CCV-1)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2012-08-07

Standard (CCV-2)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.827	83	80 - 120	2012-08-07

Standard (CCV-3)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.860	86	80 - 120	2012-08-07

Standard (CCV-1)

QC Batch: 93810

Date Analyzed: 2012-08-13

Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	215	86	80 - 120	2012-08-13

Standard (CCV-2)

QC Batch: 93810

Date Analyzed: 2012-08-13

Analyzed By: CM

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	222	89	80 - 120	2012-08-13

Standard (CCV-1)

QC Batch: 93950

Date Analyzed: 2012-08-15

Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	287	115	80 - 120	2012-08-15

Standard (CCV-2)

QC Batch: 93950

Date Analyzed: 2012-08-15

Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	274	110	80 - 120	2012-08-15

Standard (CCV-1)

QC Batch: 93974

Date Analyzed: 2012-08-16

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.918	92	80 - 120	2012-08-16

Standard (CCV-2)

QC Batch: 93974

Date Analyzed: 2012-08-16

Analyzed By: MT

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.942	94	80 - 120	2012-08-16

Standard (CCV-1)

QC Batch: 94082

Date Analyzed: 2012-08-21

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	230	92	80 - 120	2012-08-21

Standard (CCV-2)

QC Batch: 94082

Date Analyzed: 2012-08-21

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	224	90	80 - 120	2012-08-21

Standard (CCV-3)

QC Batch: 94082

Date Analyzed: 2012-08-21

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	240	96	80 - 120	2012-08-21

Standard (CCV-1)

QC Batch: 94163

Date Analyzed: 2012-08-22

Analyzed By: MT

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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	2012-08-22

Standard (CCV-2)

QC Batch: 94163

Date Analyzed: 2012-08-22

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.834	83	80 - 120	2012-08-22

Standard (CCV-3)

QC Batch: 94163

Date Analyzed: 2012-08-22

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.867	87	80 - 120	2012-08-22

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

- 1 Dilution due to excessive hydrocarbons.

Attachments

Report Date: August 23, 2012
114-6401449

Work Order: 12080306
COG/Yucca State Tank Battery

Page Number: 32 of 32
Eddy Co., NM

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

18080306

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2



TETRA TECH

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tenny

PROJECT NO.:

114-6401449

PROJECT NAME:

Yucca State Tank Battery

NUMBER OF CONTAINERS

PRESERVATIVE METHOD

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

LAB I.D. NUMBER

DATE

TIME

MATRIX

COMP

GRAB

SAMPLE IDENTIFICATION

305626

7/30

S

X

AH2

O-1

627

1-1.5

628

2-2.5

629

3-3.5

630

4-4.5

631

5-5.5

632

6-6.5

633

7-7.5

634

8-8.5

635

9-9.5

RELINQUISHED BY: (Signature)

Date:

8/2/12

RECEIVED BY: (Signature)

Date:

8/2/12

SAMPLED BY: (Print & Initial)

Date:

7/26/12

RELINQUISHED BY: (Signature)

Date:

8/3/12

RECEIVED BY: (Signature)

Date:

8/3/12

SAMPLE SHIPPED BY: (Circle)

AIRBILL #:

2N95173

RELINQUISHED BY: (Signature)

Date:

8/3/12

RECEIVED BY: (Signature)

Date:

8/3/12

FEDEX

BUS

OTHER:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

DATE:

8/3/12

TIME:

9:30

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges

Authorized:

Yes No

SAMPLE CONDITION WHEN RECEIVED:

470 38/3.7

REMARKS:

Run deeper samples if TPH exceeds 5000 mg/kg.

Midland - DKO-CP
Lab - BTEX/GKO

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

Run deeper samples if Benzene exceeds 10 mg/kg or BTEX exceeds 50 mg/kg

12080306

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

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

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Toney

PROJECT NO.:

114-6401449

PROJECT NAME:

Yucca State Tank Battery

LAB I.D.
NUMBERDATE
2012

TIME

MATRIX

COMP

GRAB

 Edy Co NM
 SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO₃

ICE

NONE

PRESERVATIVE
METHOD
 BTX 8021B
 TPH 8018 MOD. TX1005 (Ext. to C35)
 PAH 8270
 RCRA Metals Ag As Ba Cd Cr Pb Hg Se
 TCLP Metals Ag As Ba Cd Cr Pb Hg Se
 TCLP Volatiles
 TCLP Semi Volatiles
 RCI
 GC/MS Vol. 8240/8260/624
 GC/MS Semi. Vol. 8270/625
 PCB's 8080/608
 Pest. 808/608
 Chloride
 Gamma Spec.
 Alpha Beta (Air)
 PLM (Asbestos)
 Major Anions/Cations, pH, TDS

636 7/30 S X AH2 10-10.5'

RELINQUISHED BY: (Signature)

Date:

8/2/12

Time:

8:16 AM

RECEIVED BY: (Signature)

Date:

8/2/12

Time:

10:40

SAMPLED BY: (Print & Initial)

J. Toney

Date:

8/2/12

Time:

11:50 AM

RELINQUISHED BY: (Signature)

Date:

8/3/12

Time:

11:00

RECEIVED BY: (Signature)

Date:

8/3/12

Time:

11:00

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

OTHER:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

See TA

DATE:

8/7/12

TIME:

9:30

SAMPLE CONDITION WHEN RECEIVED:

4.1

3.0/3.7

REMARKS:

See remarks of R 1

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

Summary Report

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

Report Date: August 10, 2012

Work Order: 12080307



Project Location: Eddy Co., NM
Project Name: COG/Yucca State Tank Battery
Project Number: 114-6401449

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305640	AH-3 0-1'	soil	2012-07-30	00:00	2012-08-02
305641	AH-3 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305642	AH-3 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305643	AH-3 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305644	AH-3 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305645	AH-3 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305646	AH-3 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305647	AH-3 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305648	AH-3 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305649	AH-3 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305650	AH-3 10-10.5'	soil	2012-07-30	00:00	2012-08-02
305651	AH-4 0-1'	soil	2012-07-30	00:00	2012-08-02
305652	AH-4 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305653	AH-4 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305654	AH-4 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305655	AH-4 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305656	AH-4 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305657	AH-4 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305658	AH-4 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305659	AH-4 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305660	AH-4 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305661	AH-4 10-10.5'	soil	2012-07-30	00:00	2012-08-02
305662	AH-5 0-1'	soil	2012-07-30	00:00	2012-08-02
305663	AH-5 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305664	AH-5 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305665	AH-5 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305666	AH-5 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305667	AH-5 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305668	AH-5 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305669	AH-5 7-7.5'	soil	2012-07-30	00:00	2012-08-02

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305670	AH-5 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305671	AH-5 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305672	AH-5 10-10.5'	soil	2012-07-30	00:00	2012-08-02
305673	AH-6 0-1'	soil	2012-07-30	00:00	2012-08-02
305674	AH-6 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305675	AH-6 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305676	AH-6 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305677	AH-6 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305678	AH-6 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305679	AH-6 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305680	AH-6 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305681	AH-6 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305682	AH-6 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305683	AH-6 10-10.5'	soil	2012-07-30	00:00	2012-08-02

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
305640 - AH-3 0-1'	<0.100 ¹	<0.100	<0.100	<0.100	1490	83.9
305651 - AH-4 0-1'	<0.0400 ²	<0.0400	<0.0400	<0.0400	392	14.3
305662 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	191	<4.00
305673 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

Sample: 305640 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		2510	mg/Kg	4

Sample: 305641 - AH-3 1-1.5'

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

Sample: 305642 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		49.4	mg/Kg	4

Sample: 305643 - AH-3 3-3.5'¹Dilution due to excessive hydrocarbons.²Dilution due to excessive hydrocarbons.

Param	Flag	Result	Units	RL
Chloride		34.6	mg/Kg	4

Sample: 305644 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		69.2	mg/Kg	4

Sample: 305645 - AH-3 5-5.5'

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

Sample: 305646 - AH-3 6-6.5'

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

Sample: 305647 - AH-3 7-7.5'

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

Sample: 305648 - AH-3 8-8.5'

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

Sample: 305649 - AH-3 9-9.5'

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

Sample: 305650 - AH-3 10-10.5'

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

Sample: 305651 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		4240	mg/Kg	4

Sample: 305652 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		39.5	mg/Kg	4

Sample: 305653 - AH-4 2-2.5'

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

Sample: 305654 - AH-4 3-3.5'

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

Sample: 305655 - AH-4 4-4.5'

Param	Flag	Result	Units	RL
Chloride		54.3	mg/Kg	4

Sample: 305656 - AH-4 5-5.5'

Param	Flag	Result	Units	RL
Chloride		79.0	mg/Kg	4

Sample: 305657 - AH-4 6-6.5'

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

Sample: 305658 - AH-4 7-7.5'

Param	Flag	Result	Units	RL
Chloride		163	mg/Kg	4

Sample: 305659 - AH-4 8-8.5'

Param	Flag	Result	Units	RL
Chloride		74.6	mg/Kg	4

Sample: 305660 - AH-4 9-9.5'

Param	Flag	Result	Units	RL
Chloride		88.6	mg/Kg	4

Sample: 305661 - AH-4 10-10.5'

Param	Flag	Result	Units	RL
Chloride		135	mg/Kg	4

Sample: 305662 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		1460	mg/Kg	4

Sample: 305663 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		378	mg/Kg	4

Sample: 305664 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		354	mg/Kg	4

Sample: 305665 - AH-5 3-3.5'

Param	Flag	Result	Units	RL
Chloride		354	mg/Kg	4

Sample: 305666 - AH-5 4-4.5'

Param	Flag	Result	Units	RL
Chloride		313	mg/Kg	4

Sample: 305667 - AH-5 5-5.5'

Param	Flag	Result	Units	RL
Chloride		210	mg/Kg	4

Sample: 305668 - AH-5 6-6.5'

Param	Flag	Result	Units	RL
Chloride		321	mg/Kg	4

Sample: 305669 - AH-5 7-7.5'

Param	Flag	Result	Units	RL
Chloride		197	mg/Kg	4

Sample: 305670 - AH-5 8-8.5'

Param	Flag	Result	Units	RL
Chloride		381	mg/Kg	4

Sample: 305671 - AH-5 9-9.5'

Param	Flag	Result	Units	RL
Chloride		230	mg/Kg	4

Sample: 305672 - AH-5 10-10.5'

Param	Flag	Result	Units	RL
Chloride		188	mg/Kg	4

Sample: 305673 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		551	mg/Kg	4

Sample: 305674 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		243	mg/Kg	4

Sample: 305675 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		165	mg/Kg	4

Sample: 305676 - AH-6 3-3.5'

Param	Flag	Result	Units	RL
Chloride		96.4	mg/Kg	4

Sample: 305677 - AH-6 4-4.5'

Param	Flag	Result	Units	RL
Chloride		216	mg/Kg	4

Sample: 305678 - AH-6 5-5.5'

Param	Flag	Result	Units	RL
Chloride		319	mg/Kg	4

Sample: 305679 - AH-6 6-6.5'

Param	Flag	Result	Units	RL
Chloride		213	mg/Kg	4

Sample: 305680 - AH-6 7-7.5'

Param	Flag	Result	Units	RL
Chloride		304	mg/Kg	4

Sample: 305681 - AH-6 8-8.5'

Param	Flag	Result	Units	RL
Chloride		189	mg/Kg	4

Sample: 305682 - AH-6 9-9.5'

Param	Flag	Result	Units	RL
Chloride		300	mg/Kg	4

Sample: 305683 - AH-6 10-10.5'

Param	Flag	Result	Units	RL
Chloride		696	mg/Kg	4



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: August 10, 2012

Work Order: 12080307



Project Location: Eddy Co., NM
Project Name: COG/Yucca State Tank Battery
Project Number: 114-6401449

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
305640	AH-3 0-1'	soil	2012-07-30	00:00	2012-08-02
305641	AH-3 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305642	AH-3 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305643	AH-3 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305644	AH-3 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305645	AH-3 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305646	AH-3 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305647	AH-3 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305648	AH-3 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305649	AH-3 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305650	AH-3 10-10.5'	soil	2012-07-30	00:00	2012-08-02
305651	AH-4 0-1'	soil	2012-07-30	00:00	2012-08-02
305652	AH-4 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305653	AH-4 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305654	AH-4 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305655	AH-4 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305656	AH-4 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305657	AH-4 6-6.5'	soil	2012-07-30	00:00	2012-08-02

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305658	AH-4 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305659	AH-4 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305660	AH-4 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305661	AH-4 10-10.5'	soil	2012-07-30	00:00	2012-08-02
305662	AH-5 0-1'	soil	2012-07-30	00:00	2012-08-02
305663	AH-5 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305664	AH-5 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305665	AH-5 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305666	AH-5 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305667	AH-5 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305668	AH-5 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305669	AH-5 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305670	AH-5 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305671	AH-5 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305672	AH-5 10-10.5'	soil	2012-07-30	00:00	2012-08-02
305673	AH-6 0-1'	soil	2012-07-30	00:00	2012-08-02
305674	AH-6 1-1.5'	soil	2012-07-30	00:00	2012-08-02
305675	AH-6 2-2.5'	soil	2012-07-30	00:00	2012-08-02
305676	AH-6 3-3.5'	soil	2012-07-30	00:00	2012-08-02
305677	AH-6 4-4.5'	soil	2012-07-30	00:00	2012-08-02
305678	AH-6 5-5.5'	soil	2012-07-30	00:00	2012-08-02
305679	AH-6 6-6.5'	soil	2012-07-30	00:00	2012-08-02
305680	AH-6 7-7.5'	soil	2012-07-30	00:00	2012-08-02
305681	AH-6 8-8.5'	soil	2012-07-30	00:00	2012-08-02
305682	AH-6 9-9.5'	soil	2012-07-30	00:00	2012-08-02
305683	AH-6 10-10.5'	soil	2012-07-30	00:00	2012-08-02

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

This report consists of a total of 42 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

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Sample 305643 (AH-3 3-3.5')	9
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Sample 305645 (AH-3 5-5.5')	9
Sample 305646 (AH-3 6-6.5')	10
Sample 305647 (AH-3 7-7.5')	10
Sample 305648 (AH-3 8-8.5')	10
Sample 305649 (AH-3 9-9.5')	10
Sample 305650 (AH-3 10-10.5')	11
Sample 305651 (AH-4 0-1')	11
Sample 305652 (AH-4 1-1.5')	12
Sample 305653 (AH-4 2-2.5')	13
Sample 305654 (AH-4 3-3.5')	13
Sample 305655 (AH-4 4-4.5')	13
Sample 305656 (AH-4 5-5.5')	14
Sample 305657 (AH-4 6-6.5')	14
Sample 305658 (AH-4 7-7.5')	14
Sample 305659 (AH-4 8-8.5')	14
Sample 305660 (AH-4 9-9.5')	15
Sample 305661 (AH-4 10-10.5')	15
Sample 305662 (AH-5 0-1')	15
Sample 305663 (AH-5 1-1.5')	17
Sample 305664 (AH-5 2-2.5')	17
Sample 305665 (AH-5 3-3.5')	17
Sample 305666 (AH-5 4-4.5')	18
Sample 305667 (AH-5 5-5.5')	18
Sample 305668 (AH-5 6-6.5')	18
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Case Narrative

Samples for project COG/Yucca State Tank Battery were received by TraceAnalysis, Inc. on 2012-08-02 and assigned to work order 12080307. Samples for work order 12080307 were received intact at a temperature of 4.7 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	79433	2012-08-07 at 15:57	93704	2012-08-07 at 15:57
Chloride (Titration)	SM 4500-Cl B	79380	2012-08-04 at 09:17	93623	2012-08-04 at 10:44
Chloride (Titration)	SM 4500-Cl B	79380	2012-08-04 at 09:17	93624	2012-08-04 at 10:45
Chloride (Titration)	SM 4500-Cl B	79383	2012-08-04 at 10:18	93625	2012-08-04 at 10:46
Chloride (Titration)	SM 4500-Cl B	79383	2012-08-04 at 10:18	93626	2012-08-04 at 10:47
Chloride (Titration)	SM 4500-Cl B	79383	2012-08-04 at 10:18	93627	2012-08-04 at 10:50
TPH DRO - NEW	S 8015 D	79440	2012-08-07 at 08:00	93713	2012-08-08 at 08:36
TPH GRO	S 8015 D	79433	2012-08-07 at 15:57	93705	2012-08-07 at 15:57

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 12080307 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

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Analytical Report

Sample: 305640 - AH-3 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 93704

Prep Batch: 79433

Analytical Method: S 8021B

Date Analyzed: 2012-08-07

Sample Preparation: 2012-08-07

Prep Method: S 5035

Analyzed By: ZLM

Prepared By: ZLM

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	1.33	mg/Kg	5	2.00	66	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	5	2.00	87	70 - 130

Sample: 305640 - AH-3 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93623

Prep Batch: 79380

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2510	mg/Kg	10	4.00

Sample: 305640 - AH-3 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 93713

Prep Batch: 79440

Analytical Method: S 8015 D

Date Analyzed: 2012-08-08

Sample Preparation: 2012-08-07

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	1490	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			71.6	mg/Kg	1	100	72	49.3 - 157.5

Sample: 305640 - AH-3 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 93705
Prep Batch: 79433

Analytical Method: S 8015 D
Date Analyzed: 2012-08-07
Sample Preparation: 2012-08-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			83.9	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{nr}	Q _{nr}	1.37	mg/Kg	5	2.00	68	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	5	2.00	94	70 - 130

Sample: 305641 - AH-3 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93623
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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

Sample: 305642 - AH-3 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93623
Prep Batch: 79380

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

continued ...

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sample 305642 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			49.4	mg/Kg	5	4.00

Sample: 305643 - AH-3 3-3.5'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	93623	Date Analyzed:	2012-08-04	Analyzed By: AR
Prep Batch:	79380	Sample Preparation:	2012-08-04	Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			34.6	mg/Kg	5	4.00

Sample: 305644 - AH-3 4-4.5'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	93623	Date Analyzed:	2012-08-04	Analyzed By: AR
Prep Batch:	79380	Sample Preparation:	2012-08-04	Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			69.2	mg/Kg	5	4.00

Sample: 305645 - AH-3 5-5.5'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	93623	Date Analyzed:	2012-08-04	Analyzed By: AR
Prep Batch:	79380	Sample Preparation:	2012-08-04	Prepared By: AR

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

Sample: 305646 - AH-3 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93623 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

Sample: 305647 - AH-3 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93623 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

Sample: 305648 - AH-3 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93624 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

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Sample: 305649 - AH-3 9-9.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93624

Prep Batch: 79380

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 305650 - AH-3 10-10.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93624

Prep Batch: 79380

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 305651 - AH-4 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 93704

Prep Batch: 79433

Analytical Method: S 8021B

Date Analyzed: 2012-08-07

Sample Preparation: 2012-08-07

Prep Method: S 5035

Analyzed By: ZLM

Prepared By: ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0400	mg/Kg	2	0.0200
Toluene	u	1	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	u	1	<0.0400	mg/Kg	2	0.0200
Xylene	u	1	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.63	mg/Kg	2	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.60	mg/Kg	2	2.00	80	70 - 130

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Sample: 305651 - AH-4 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93624	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4240	mg/Kg	10	4.00

Sample: 305651 - AH-4 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-08-08	Analyzed By:	CW
QC Batch:	93713	Sample Preparation:	2012-08-07	Prepared By:	CW
Prep Batch:	79440				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	392	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			155	mg/Kg	1	100	155	49.3 - 157.5

Sample: 305651 - AH-4 0-1'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-08-07	Analyzed By:	ZLM
QC Batch:	93705	Sample Preparation:	2012-08-07	Prepared By:	ZLM
Prep Batch:	79433				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	14.3	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.62	mg/Kg	2	2.00	81	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	2	2.00	92	70 - 130

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Sample: 305652 - AH-4 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93624	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			39.5	mg/Kg	5	4.00

Sample: 305653 - AH-4 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93624	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

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

Sample: 305654 - AH-4 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93624	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

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

Sample: 305655 - AH-4 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93624	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79380				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			54.3	mg/Kg	5	4.00

Sample: 305656 - AH-4 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93624 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			79.0	mg/Kg	5	4.00

Sample: 305657 - AH-4 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93624 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79380 Sample Preparation: 2012-08-04 Prepared By: AR

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

Sample: 305658 - AH-4 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93625 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			163	mg/Kg	5	4.00

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Sample: 305659 - AH-4 8-8.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93625	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			74.6	mg/Kg	5	4.00

Sample: 305660 - AH-4 9-9.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93625	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			88.6	mg/Kg	5	4.00

Sample: 305661 - AH-4 10-10.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93625	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			135	mg/Kg	5	4.00

Sample: 305662 - AH-5 0-1'

Laboratory:	Lubbock	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2012-08-07	Analyzed By:	ZLM
QC Batch:	93704	Sample Preparation:	2012-08-07	Prepared By:	ZLM
Prep Batch:	79433				

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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)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 305662 - AH-5 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93625

Prep Batch: 79383

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1460	mg/Kg	10	4.00

Sample: 305662 - AH-5 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 93713

Prep Batch: 79440

Analytical Method: S 8015 D

Date Analyzed: 2012-08-08

Sample Preparation: 2012-08-07

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	191	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			143	mg/Kg	1	100	143	49.3 - 157.5

Sample: 305662 - AH-5 0-1'

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 93705

Prep Batch: 79433

Analytical Method: S 8015 D

Date Analyzed: 2012-08-07

Sample Preparation: 2012-08-07

Prep Method: S 5035

Analyzed By: ZLM

Prepared By: ZLM

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1	2.00	105	70 - 130

Sample: 305663 - AH-5 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93625 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			378	mg/Kg	5	4.00

Sample: 305664 - AH-5 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93625 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			354	mg/Kg	5	4.00

Sample: 305665 - AH-5 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93625 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			354	mg/Kg	5	4.00

Sample: 305666 - AH-5 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93625	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			313	mg/Kg	5	4.00

Sample: 305667 - AH-5 5-5.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93625	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			210	mg/Kg	5	4.00

Sample: 305668 - AH-5 6-6.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93626	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			321	mg/Kg	5	4.00

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Sample: 305669 - AH-5 7-7.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93626	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			197	mg/Kg	5	4.00

Sample: 305670 - AH-5 8-8.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93626	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			381	mg/Kg	5	4.00

Sample: 305671 - AH-5 9-9.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93626	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			230	mg/Kg	5	4.00

Sample: 305672 - AH-5 10-10.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93626	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			188	mg/Kg	5	4.00

Sample: 305673 - AH-6 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 93704

Prep Batch: 79433

Analytical Method: S 8021B

Date Analyzed: 2012-08-07

Sample Preparation: 2012-08-07

Prep Method: S 5035

Analyzed By: ZLM

Prepared By: ZLM

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)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.95	mg/Kg	1	2.00	98	70 - 130

Sample: 305673 - AH-6 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93626

Prep Batch: 79383

Analytical Method: SM 4500-Cl-B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			551	mg/Kg	5	4.00

Sample: 305673 - AH-6 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 93713

Prep Batch: 79440

Analytical Method: S 8015 D

Date Analyzed: 2012-08-08

Sample Preparation: 2012-08-07

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	49.3 - 157.5

Sample: 305673 - AH-6 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 93705
Prep Batch: 79433

Analytical Method: S 8015 D
Date Analyzed: 2012-08-07
Sample Preparation: 2012-08-07

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	1	2.00	109	70 - 130

Sample: 305674 - AH-6 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93626
Prep Batch: 79383

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			243	mg/Kg	5	4.00

Sample: 305675 - AH-6 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 93626
Prep Batch: 79383

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-08-04
Sample Preparation: 2012-08-04

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			165	mg/Kg	5	4.00

Sample: 305676 - AH-6 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93626 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			96.4	mg/Kg	5	4.00

Sample: 305677 - AH-6 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93626 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			216	mg/Kg	5	4.00

Sample: 305678 - AH-6 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93627 Date Analyzed: 2012-08-04 Analyzed By: AR
Prep Batch: 79383 Sample Preparation: 2012-08-04 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			319	mg/Kg	5	4.00

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Sample: 305679 - AH-6 6-6.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93627	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			213	mg/Kg	5	4.00

Sample: 305680 - AH-6 7-7.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93627	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			304	mg/Kg	5	4.00

Sample: 305681 - AH-6 8-8.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93627	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			189	mg/Kg	5	4.00

Sample: 305682 - AH-6 9-9.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-04	Analyzed By:	AR
QC Batch:	93627	Sample Preparation:	2012-08-04	Prepared By:	AR
Prep Batch:	79383				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			300	mg/Kg	5	4.00

Sample: 305683 - AH-6 10-10.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93627

Prep Batch: 79383

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-04

Sample Preparation: 2012-08-04

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			696	mg/Kg	5	4.00

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Method Blanks

Method Blank (1) QC Batch: 93623

QC Batch: 93623
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93624

QC Batch: 93624
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93625

QC Batch: 93625
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93626

QC Batch: 93626
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93627

QC Batch: 93627
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93704

QC Batch: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	<0.00460	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Method Blank (1) QC Batch: 93705

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

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Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	1.14	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	70 - 130

Method Blank (1) QC Batch: 93713

QC Batch: 93713
Prep Batch: 79440

Date Analyzed: 2012-08-08
QC Preparation: 2012-08-07

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	52 - 160.8

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 93623
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2520	mg/Kg	1	2500	<3.85	101	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			2680	mg/Kg	1	2500	<3.85	107	85 - 115	6	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: 93624
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2510	mg/Kg	1	2500	<3.85	100	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: 93625
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2560	mg/Kg	1	2500	<3.85	102	85 - 115	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: 93626
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2420	mg/Kg	1	2500	<3.85	97	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			2470	mg/Kg	1	2500	<3.85	99	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: 93627
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
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	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	85 - 115	4	20

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

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Laboratory Control Spike (LCS-1)

QC Batch: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00365	90	75.4 - 120
Toluene		1	1.75	mg/Kg	1	2.00	<0.00816	88	74.9 - 120
Ethylbenzene		1	1.72	mg/Kg	1	2.00	<0.00560	86	78.1 - 120
Xylene		1	5.18	mg/Kg	1	6.00	<0.00460	86	77.3 - 120

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	1.76	mg/Kg	1	2.00	<0.00365	88	75.4 - 120	3	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	74.9 - 120	2	20
Ethylbenzene		1	1.73	mg/Kg	1	2.00	<0.00560	86	78.1 - 120	1	20
Xylene		1	5.19	mg/Kg	1	6.00	<0.00460	86	77.3 - 120	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)	1.73	1.66	mg/Kg	1	2.00	86	83	70 - 130
4-Bromofluorobenzene (4-BFB)	1.81	1.74	mg/Kg	1	2.00	90	87	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.2	mg/Kg	1	20.0	1.14	96	68.9 - 120

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	20.1	mg/Kg	1	20.0	1.14	100	68.9 - 120	5	20

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

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control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.93	2.02	mg/Kg	1	2.00	96	101	70 - 130
4-Bromofluorobenzene (4-BFB)	2.09	1.91	mg/Kg	1	2.00	104	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93713
Prep Batch: 79440

Date Analyzed: 2012-08-08
QC Preparation: 2012-08-07

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	292	mg/Kg	1	250	<14.5	117	62 - 128.3

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		2	307	mg/Kg	1	250	<14.5	123	62 - 128.3	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	142	150	mg/Kg	1	100	142	150	58.6 - 149.6

Matrix Spike (MS-1) Spiked Sample: 305647

QC Batch: 93623
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2650	mg/Kg	1	2500	<3.85	106	79.4 - 120.6

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			2750	mg/Kg	1	2500	<3.85	110	79.4 - 120.6	4	20

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114-6401449

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COG/Yucca State Tank Battery

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

Matrix Spike (MS-1) Spiked Sample: 305657

QC Batch: 93624
Prep Batch: 79380

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2660	mg/Kg	1	2500	<3.85	106	79.4 - 120.6

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			2780	mg/Kg	1	2500	<3.85	111	79.4 - 120.6	4	20

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

Matrix Spike (MS-1) Spiked Sample: 305667

QC Batch: 93625
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2800	mg/Kg	5	2500	210	104	79.4 - 120.6

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			2860	mg/Kg	5	2500	210	106	79.4 - 120.6	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: 305677

QC Batch: 93626
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Report Date: August 10, 2012
114-6401449

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COG/Yucca State Tank Battery

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2660	mg/Kg	5	2500	216	98	79.4 - 120.6

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			2760	mg/Kg	5	2500	216	102	79.4 - 120.6	4	20

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

Matrix Spike (MS-1) Spiked Sample: 305687

QC Batch: 93627
Prep Batch: 79383

Date Analyzed: 2012-08-04
QC Preparation: 2012-08-04

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			4190	mg/Kg	10	2500	1500	108	79.4 - 120.6

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			4020	mg/Kg	10	2500	1500	101	79.4 - 120.6	4	20

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

Matrix Spike (MS-1) Spiked Sample: 305596

QC Batch: 93704
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.80	mg/Kg	1	2.00	<0.00365	90	37.6 - 142
Toluene		1	1.91	mg/Kg	1	2.00	<0.00816	96	38.6 - 153
Ethylbenzene		1	2.04	mg/Kg	1	2.00	<0.00560	102	36.7 - 172
Xylene		1	6.10	mg/Kg	1	6.00	<0.00460	102	36.7 - 173

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

continued ...

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114-6401449

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COG/Yucca State Tank Battery

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matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.64	mg/Kg	1	2.00	<0.00365	82	37.6 - 142	9	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	38.6 - 153	10	20
Ethylbenzene		1	1.83	mg/Kg	1	2.00	<0.00560	92	36.7 - 172	11	20
Xylene		1	5.50	mg/Kg	1	6.00	<0.00460	92	36.7 - 173	10	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)	1.93	1.75	mg/Kg	1	2	96	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.81	mg/Kg	1	2	97	90	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305596

QC Batch: 93705
Prep Batch: 79433

Date Analyzed: 2012-08-07
QC Preparation: 2012-08-07

Analyzed By: ZLM
Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.9	mg/Kg	1	20.0	<0.359	74	68.9 - 120

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	15.6	mg/Kg	1	20.0	<0.359	78	68.9 - 120	5	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.75	mg/Kg	1	2	88	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	2.11	mg/Kg	1	2	99	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 305604

QC Batch: 93713
Prep Batch: 79440

Date Analyzed: 2012-08-08
QC Preparation: 2012-08-07

Analyzed By: CW
Prepared By: CW

Report Date: August 10, 2012
114-6401449

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COG/Yucca State Tank Battery

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Eddy Co., NM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	943	mg/Kg	1	250	751	77	45.5 - 127

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		2	1010	mg/Kg	1	250	751	104	45.5 - 127	7	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane Q _{sr} Q _{sr}	158	169	mg/Kg	1	100	158	169	45.4 - 145.8

Report Date: August 10, 2012
114-6401449

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Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 93623

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93623

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-1)

QC Batch: 93624

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93624

Date Analyzed: 2012-08-04

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	99.4	99	85 - 115	2012-08-04

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COG/Yucca State Tank Battery

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Eddy Co., NM

Standard (CCV-1)

QC Batch: 93625

Date Analyzed: 2012-08-04

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	97.4	97	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93625

Date Analyzed: 2012-08-04

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	103	103	85 - 115	2012-08-04

Standard (CCV-1)

QC Batch: 93626

Date Analyzed: 2012-08-04

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93626

Date Analyzed: 2012-08-04

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	99.0	99	85 - 115	2012-08-04

Standard (CCV-1)

QC Batch: 93627

Date Analyzed: 2012-08-04

Analyzed By: AR

Report Date: August 10, 2012
114-6401449

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COG/Yucca State Tank Battery

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Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-04

Standard (CCV-2)

QC Batch: 93627

Date Analyzed: 2012-08-04

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	99.4	99	85 - 115	2012-08-04

Standard (CCV-1)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0928	93	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0906	91	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0891	89	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.268	89	80 - 120	2012-08-07

Standard (CCV-2)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0884	88	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0860	86	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0857	86	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.254	85	80 - 120	2012-08-07

Report-Date: August 10, 2012
114-6401449

Work Order: 12080307
COG/Yucca State Tank Battery

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Eddy Co., NM

Standard (CCV-3)

QC Batch: 93704

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0842	84	80 - 120	2012-08-07
Toluene		1	mg/kg	0.100	0.0816	82	80 - 120	2012-08-07
Ethylbenzene		1	mg/kg	0.100	0.0826	83	80 - 120	2012-08-07
Xylene		1	mg/kg	0.300	0.246	82	80 - 120	2012-08-07

Standard (CCV-1)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2012-08-07

Standard (CCV-2)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.827	83	80 - 120	2012-08-07

Standard (CCV-3)

QC Batch: 93705

Date Analyzed: 2012-08-07

Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.860	86	80 - 120	2012-08-07

Report Date: August 10, 2012
114-6401449

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COG/Yucca State Tank Battery

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Eddy Co., NM

Standard (CCV-1)

QC Batch: 93713

Date Analyzed: 2012-08-08

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	291	116	80 - 120	2012-08-08

Standard (CCV-2)

QC Batch: 93713

Date Analyzed: 2012-08-08

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	276	110	80 - 120	2012-08-08

Standard (CCV-3)

QC Batch: 93713

Date Analyzed: 2012-08-08

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	280	112	80 - 120	2012-08-08

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

- 1 Dilution due to excessive hydrocarbons.
- 2 Dilution due to excessive hydrocarbons.

Report Date: August 10, 2012
114-6401449

Work Order: 12080307
COG/Yucca State Tank Battery

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Attachments

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

12080307

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 5

**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:
COGSITE MANAGER:
Ike Tmance

PROJECT NO.:

PROJECT NAME:

Yucca State Tank Bottom**Eddy Co. Wm**
SAMPLE IDENTIFICATION

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	NUMBER OF CONTAINERS FILTERED (Y/N)	PRESERVATIVE METHOD	HCL	HNO3	ICE	NONE	BTEX 8821B	TPH 8075 M9D. (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. 8240/8260/824	GC/MS Semi. Vol. 8270/825	PCB's 8080/808	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
305640	7/30		S	X		AH3	0-1			X			X											X				
641							1-1.5			X														X				
642							2-2.5			X														X				
643							3-3.5			X														X				
644							4-4.5			X														X				
645							5-5.5			X														X				
646							6-6.5			X														X				
647							7-7.5			X														X				
648							8-8.5			X														X				
649							9-9.5			X														X				

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

AIRBILL #: 2N973173

FEDEX

BUS

HAND DELIVERED

UPS

OTHER:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

Date:

Time:

Date:

Time:

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

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

Run deeper samples if TPH exceeds 5,000 mg/kg.
Run deeper samples if benzene exceeds 10 mg/kg or total BTEX exceeds 50 mg/kg

12080307

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 5

**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 TAVAN

PROJECT NO.:

114-6401449

PROJECT NAME:

YUCCA State Tank Battery
Eddy Co. NM
SAMPLE IDENTIFICATIONLAB I.D.
NUMBER

DATE

2012

TIME

MATRIX

COMP

GRAB

AH3

10-10.5'

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

ATX 80245
RPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/808

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date: 8/2/12

Time: 1:40

RECEIVED BY: (Signature)

Date: 8/2/12

Time: 6:40

SAMPLED BY: (Print & Initial)

Date: 11/30/12

Time: 11:30

RELINQUISHED BY: (Signature)

Date: 8/3/12

Time: 11:05

RECEIVED BY: (Signature)

Date: 8/3/12

Time: 11:05

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

AIRBILL #: 209751

OTHER: 52

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

PHONE:

ZIP:

CONTACT:

RECEIVED BY: (Signature)

Date: 8/7/12

Time: 9:30

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

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

12080307

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 5

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

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavares

PROJECT NO.:

114-640449

PROJECT NAME:

 Yucca State Tank Bottom
 Eddy Co. Perm
 SAMPLE IDENTIFICATION
LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

AH4

9-9.5'

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD
 BTEX 802TB
 TPH 8015 MOD. TX1005 (Ext. to C35)
 PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

9/12/12

Time:

11:51

RECEIVED BY: (Signature)

Date:

9/12/12

Time:

11:51

SAMPLED BY: (Print & Initial)

Trenda

Date: 9/12/12

RELINQUISHED BY: (Signature)

Date:

9/13/12

Time:

11:51

RECEIVED BY: (Signature)

Date:

9/13/12

Time:

11:51

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

AIRBILL #: 2N9757152

OTHER:

RELINQUISHED BY: (Signature)

Date:

9/13/12

Time:

11:51

RECEIVED BY: (Signature)

Date:

9/13/12

Time:

11:51

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

ASST. MGR. TA

DATE:

9/13/12

TIME:

9:30

SAMPLE CONDITION WHEN RECEIVED:

4.3/4.2

REMARKS:

See remarks 1 pg 1

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

12080307

Analysis Request of Chain of Custody Record

PAGE: 4 OF: 5

**TETRA TECH**
 1910 N. Big Spring St.
 Midland, Texas 79705
 (432) 682-4359 • Fax (432) 682-3946

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavares

PROJECT NO.:

114-6401449

PROJECT NAME:

 YUCCA State Tank Battery
 Eddy Co NM
 SAMPLE IDENTIFICATION

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	Eddy Co nm SAMPLE IDENTIFICATION		NUMBER OF	FILTERED (	HCL	HNO3	ICE	NONE	BTX 8021E	TPH 8015	PAH 8270	RCRA Metals	TCLP Metals	TCLP Volatiles	TCLP Semi	RCI	GC-MS Vol.	GC-MS Sem	PCB's 8060/	Pest. 808/6/	Chloride	Gamma Spec	Alpha Beta	PLM (Asbes	Major Anions
670	7/30		S		X	AH5	8-8.5	1				X														X				
671							9-9.5	1				X														X				
672							10-10.5	1				X														X				
673						AH6	0-1	1				X		X	X											X				
674							1-1.5	1				X														X				
675							2-2.5	1				X														X				
676							3-3.5	1				X														X				
677							4-4.5	1				X														X				
678							5-5.5	1				X														X				
679							6-6.5	1				X														X				

RELINQUISHED BY: (Signature)

Date:

8/2/12

Time:

11:41

RECEIVED BY: (Signature)

Date:

8/2/12

Time:

11:41

SAMPLED BY: (Print & Initial)

Brandon

Date:

7/30/12

Time:

11:41

RELINQUISHED BY: (Signature)

Date:

8/3/12

Time:

11:00

RECEIVED BY: (Signature)

Date:

8/3/12

Time:

11:00

SAMPLE SHIPPED BY: (Circle)

FEDEX

AIRBILL #:

LN 0775162

HAND DELIVERED

BUS

OTHER:

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges

Authorized:

Yes No

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

8/2/12

TIME:

11:00

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

See remarks of Pg 1

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

12080307

Analysis Request of Chain of Custody Record

PAGE: 5 OF: 5

**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 Tovar

PROJECT NO.:

114-6401449

PROJECT NAME:

 YUCCA State Tank Battery
 Eddy Co NM
 SAMPLE IDENTIFICATION
LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMF.

GRAB

AH6

7-7.5

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD
 BTX 8021B
 TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

ROHA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCL

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

RELINQUISHED BY: (Signature)

Date:

8/12/12

Time:

16:41

RECEIVED BY: (Signature)

Date:

8/12/12

Time:

16:42

SAMPLED BY: (Print & Initial)

Brandon JH

Date:

7/30/12

Time:

16:42

RELINQUISHED BY: (Signature)

Date:

8/13/12

Time:

11:12

RECEIVED BY: (Signature)

Date:

8/13/12

Time:

11:12

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

AIRBILL #:

219975

OTHER:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

DATE:

8/17/12

TIME:

9:30

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

See remarks of pg 1

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges

Authorized:

Yes

No