

SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	Burch Keely Unit #205				
Company:	COG Operating LLC				
Section, Township and Range	Sec 26	T 17S	R 29E		
Lease Number:	API-30-015-031333				
County:	Eddy County				
GPS:	32.80008° N		104.04331 ° W		
Surface Owner:	Federal				
Mineral Owner:					
Directions:	In Loco Hills, from the intersection of CR 217 and Hwy 82, travel West on Hwy 82 for 3.1 miles, turn South onto lease road and continue for 1.2 miles to location on West side of lease road.				

Release Data:

Date Released:	1/2/2014
Type Release:	Produced Water
Source of Contamination:	Water Line
Fluid Released:	50 bbls
Fluids Recovered:	40 bbls

Official Communication:

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

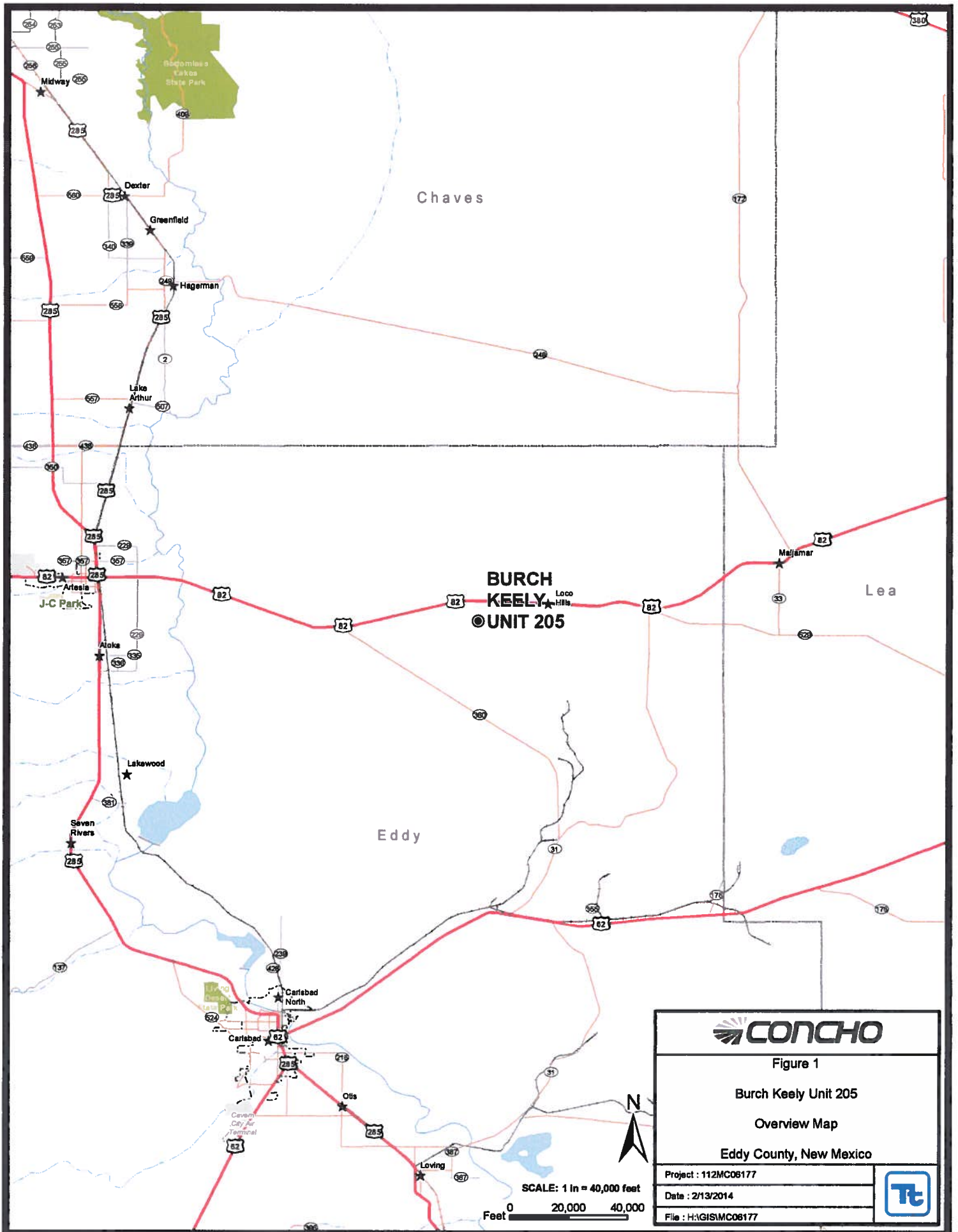
Ranking Criteria

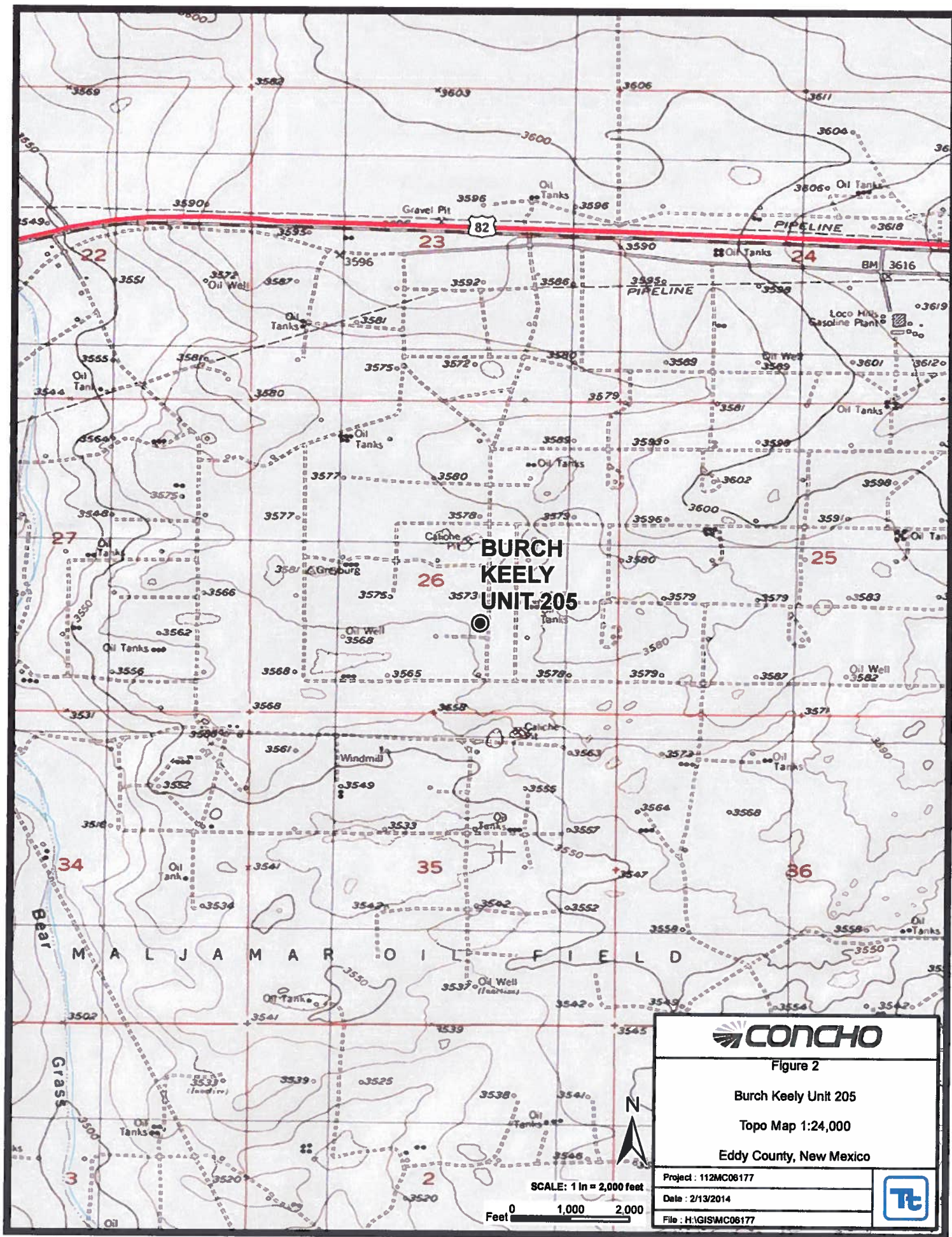
Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10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

Acceptable Soil RRAL (mg/kg)

Benzene	Total BTEX	TPH
10	50	5,000

Figures





NORTH



LEASE ROAD

LEASE ROAD

FIBERGLASS
WATERLINE
10' DEEP

OPEN EXCAVATION
10' DEEP

50'

25'

NEW LINE
8' - 10' DEEP

POLYLINE
(10' DEEP)

AH-1

LEGEND

- AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA

0 10 20
Scale: 1" = 20'-0"



Figure 3

Burch Keely Unit 205

Spill Assessment Map

Eddy County, New Mexico

Project: 112MC06177

Date: 7/30/2014

File: H:\COG\112MC06177\BKU 205



Tables

Table 1
COG Operating LLC.
Birch Keely Unit 205 (Spill 2)
Eddy County, New Mexico

Sample ID	Sample Date	Excavation Bottom Depth (ft)	BEB Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-1	1/20/2014	10	0-1	X		1,420	3,720	5,140	13.6	59.4	38.2	34.1	145	11,800
	"	10	1-1.5	X		87.3	101	188	<0.200	0.222	0.776	1.49	2.49	10,000
	"	10	2-2.5	X		79.3	143	222	-	-	-	-	-	3,970
	"	10	3-3.5	X		<40.0	<50.0	<50.0	-	-	-	-	-	5,660
	"	10	4-4.5	X		-	-	-	-	-	-	-	-	1,690
	"	10	5-5.5	X		-	-	-	-	-	-	-	-	1,890
	"	10	6-6.5	X		-	-	-	-	-	-	-	-	2,110

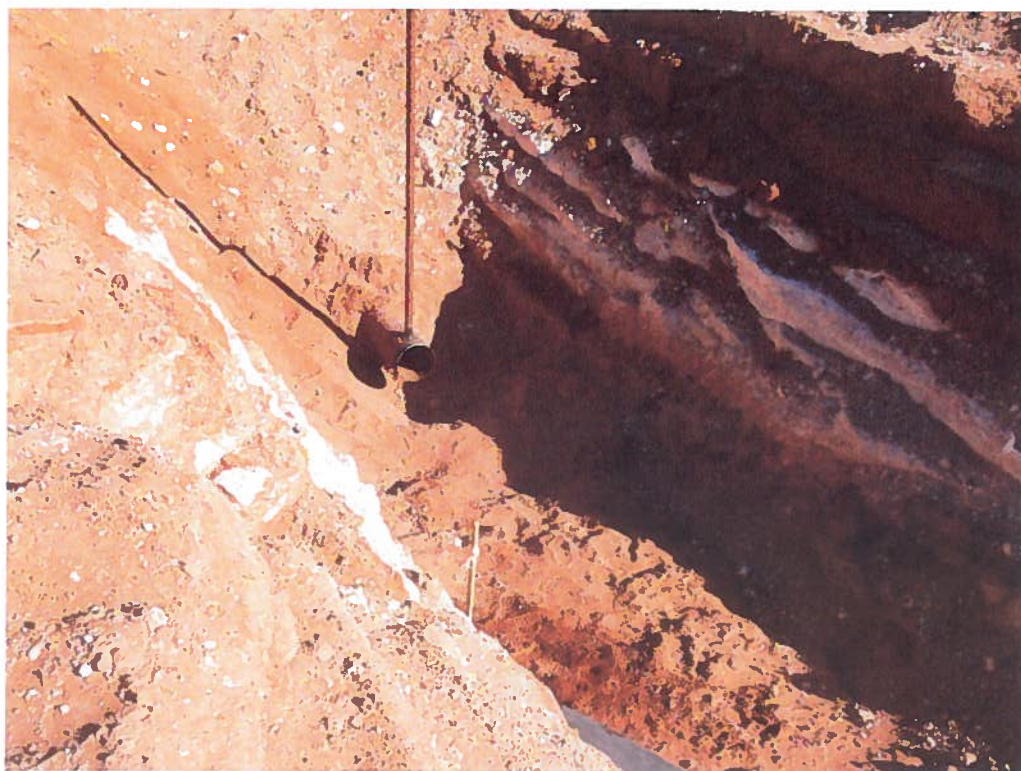
(-) Not Analyzed

(BEB) Below Excavation Bottom

Photos



View West – Trench Area



View Southeast – Area of AH-1

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Robert McNeill
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Burch Keely Unit #205	Facility Type	Tank Battery

Surface Federal	Mineral Owner	Lease No. (API#) 30-015-031333
-----------------	---------------	--------------------------------

LOCATION OF RELEASE

Unit Letter Q	Section 26	Township 17S	Range E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
------------------	---------------	-----------------	------------	---------------	------------------	---------------	----------------	----------------

Latitude 32.80008 Longitude 104.04331

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 50bbls	Volume Recovered 40bbls
Source of Release Water line	Date and Hour of Occurrence 01-02-2013	Date and Hour of Discovery 01-02-2013 11:30am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Michelle Mullins	Date and Hour 01-03-2014 09:13am	
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.*

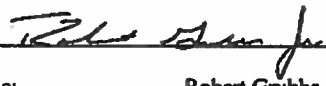
Pipeline crew hit water line. Replace the section of pipe.

Describe Area Affected and Cleanup Action Taken.*

Initially 50bbls of produced water were released when a pipeline crew hit our line. We were able to recover 40bbls with a vacuum truck. All free fluids have been recovered. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM 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: 	Approved by District Supervisor:		
Printed Name: Robert Grubbs Jr.	Approval Date:		
Title: Senior Environmental Coordinator	Expiration Date:		Attached ☐
E-mail Address: rgrubbs@concho.com	Conditions of Approval:		
Date: 01-14-2014	Phone: 432-661-6601		

* Attach Additional Sheets If Necessary

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

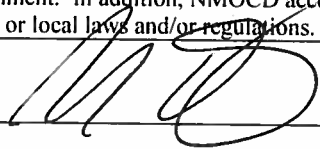
Name of Company	COG Operating LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No.	(432) 685-4332
Facility Name	Burch Keely Unit #205	Facility Type	Tank Battery
Surface Owner: Federal		Mineral Owner	Lease No. (API #) 30-015-031333

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
Q	26	17S	29E					

Latitude N 32.80008° Longitude W 104.04331°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 50 bbls	Volume Recovered 40 bbls
Source of Release: Water line	Date and Hour of Occurrence 01-02-2014	Date and Hour of Discovery 01-02-2013 11:30 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Michelle Mullins	Date and Hour 01-03-2014 09:13 am	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.* N/A		
Describe Cause of Problem and Remedial Action Taken.* Pipeline crew hit water line. Section of pipe was replaced.		
Describe Area Affected and Cleanup Action Taken.* Tetra Tech inspected site and collected samples to define spills extent. Due to multiple lines in the area, the limited impact will be deferred. Tetra Tech prepared closure report and submitted to NMOCD for review.		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.		
Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 2-30-14 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

Appendix B

Continued from page 10

Water Well Data
Average Depth to Groundwater (ft)
COG - Burch Keely Unit #205
Eddy County, New Mexico

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

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

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

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

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

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

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

18 South			30 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23 44	24
30	29	28	27	26	25
31	32	33	34	35	36

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System

Appendix C

Summary Report

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

Report Date: February 3, 2014

Work Order: 14012203



Project Location: Eddy Co, NM
Project Name: COG/Birch Keely Unit 205 (Spill 2)
Project Number: 112MC06177

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
352077	AH-1 0-1' BEB (10' EB)	soil	2014-01-20	00:00	2014-01-21
352078	AH-1 1-1.5' BEB	soil	2014-01-20	00:00	2014-01-21
352079	AH-1 2-2.5' BEB	soil	2014-01-20	00:00	2014-01-21
352080	AH-1 3-3.5' BEB	soil	2014-01-20	00:00	2014-01-21
352081	AH-1 4-4.5' BEB	soil	2014-01-20	00:00	2014-01-21
352082	AH-1 5-5.5' BEB	soil	2014-01-20	00:00	2014-01-21
352083	AH-1 6-6.5' BEB	soil	2014-01-20	00:00	2014-01-21

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)
352077 - AH-1 0-1' BEB (10' EB)	13.6 _{Qr}	59.4 _{Qr}	38.2 _{Qr}	34.1 _{Qr}	3720 _{Qr, Qs}	1420
352078 - AH-1 1-1.5' BEB	<0.200 ¹	0.222	0.776	1.49	101	87.3
352079 - AH-1 2-2.5' BEB					143	79.3
352080 - AH-1 3-3.5' BEB					<50.0	<40.0 ²

Sample: 352077 - AH-1 0-1' BEB (10' EB)

Param	Flag	Result	Units	RL
Chloride		11800	mg/Kg	4

Sample: 352078 - AH-1 1-1.5' BEB

¹Dilution due to hydrocarbons.

²Dilution due to hydrocarbons.

Report Date: February 3, 2014

Work Order: 14012203

Page Number: 2 of 2

Param	Flag	Result	Units	RL
Chloride		10000	mg/Kg	4

Sample: 352079 - AH-1 2-2.5' BEB

Param	Flag	Result	Units	RL
Chloride		3970	mg/Kg	4

Sample: 352080 - AH-1 3-3.5' BEB

Param	Flag	Result	Units	RL
Chloride		5660	mg/Kg	4

Sample: 352081 - AH-1 4-4.5' BEB

Param	Flag	Result	Units	RL
Chloride		1690	mg/Kg	4

Sample: 352082 - AH-1 5-5.5' BEB

Param	Flag	Result	Units	RL
Chloride		1890	mg/Kg	4

Sample: 352083 - AH-1 6-6.5' BEB

Param	Flag	Result	Units	RL
Chloride		2110	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: February 3, 2014

Work Order: 14012203



Project Location: Eddy Co, NM
Project Name: COG/Birch Keely Unit 205 (Spill 2)
Project Number: 112MC06177

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
352077	AH-1 0-1' BEB (10' EB)	soil	2014-01-20	00:00	2014-01-21
352078	AH-1 1-1.5' BEB	soil	2014-01-20	00:00	2014-01-21
352079	AH-1 2-2.5' BEB	soil	2014-01-20	00:00	2014-01-21
352080	AH-1 3-3.5' BEB	soil	2014-01-20	00:00	2014-01-21
352081	AH-1 4-4.5' BEB	soil	2014-01-20	00:00	2014-01-21
352082	AH-1 5-5.5' BEB	soil	2014-01-20	00:00	2014-01-21
352083	AH-1 6-6.5' BEB	soil	2014-01-20	00:00	2014-01-21

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

This report consists of a total of 29 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive, flowing style.

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

Report Contents

Case Narrative	5
Analytical Report	6
Sample 352077 (AH-1 0-1' BEB (10' EB))	6
Sample 352078 (AH-1 1-1.5' BEB)	7
Sample 352079 (AH-1 2-2.5' BEB)	8
Sample 352080 (AH-1 3-3.5' BEB)	9
Sample 352081 (AH-1 4-4.5' BEB)	10
Sample 352082 (AH-1 5-5.5' BEB)	11
Sample 352083 (AH-1 6-6.5' BEB)	11
Method Blanks	12
QC Batch 108575 - Method Blank (1)	12
QC Batch 108577 - Method Blank (1)	12
QC Batch 108641 - Method Blank (1)	12
QC Batch 108647 - Method Blank (1)	12
QC Batch 108648 - Method Blank (1)	13
QC Batch 108705 - Method Blank (1)	13
QC Batch 108848 - Method Blank (1)	14
Laboratory Control Spikes	15
QC Batch 108575 - LCS (1)	15
QC Batch 108577 - LCS (1)	15
QC Batch 108641 - LCS (1)	16
QC Batch 108647 - LCS (1)	16
QC Batch 108648 - LCS (1)	17
QC Batch 108705 - LCS (1)	17
QC Batch 108848 - LCS (1)	18
QC Batch 108575 - MS (1)	18
QC Batch 108577 - MS (1)	19
QC Batch 108641 - MS (1)	19
QC Batch 108647 - xMS (1)	20
QC Batch 108648 - MS (1)	21
QC Batch 108705 - MS (1)	21
QC Batch 108848 - MS (1)	21
Calibration Standards	23
QC Batch 108575 - CCV (1)	23
QC Batch 108575 - CCV (2)	23
QC Batch 108575 - CCV (3)	23
QC Batch 108577 - CCV (1)	23
QC Batch 108577 - CCV (2)	24
QC Batch 108577 - CCV (3)	24
QC Batch 108641 - CCV (1)	24
QC Batch 108641 - CCV (2)	24
QC Batch 108641 - CCV (3)	25

QC Batch 108647 - CCV (1)	25
QC Batch 108647 - CCV (2)	25
QC Batch 108647 - CCV (3)	25
QC Batch 108648 - CCV (1)	26
QC Batch 108648 - CCV (2)	26
QC Batch 108648 - CCV (3)	26
QC Batch 108705 - CCV (1)	26
QC Batch 108705 - CCV (2)	27
QC Batch 108848 - CCV (1)	27
QC Batch 108848 - CCV (2)	27
Appendix	28
Report Definitions	28
Laboratory Certifications	28
Standard Flags	28
Result Comments	28
Attachments	29

Case Narrative

Samples for project COG/Birch Keely Unit 205 (Spill 2) were received by TraceAnalysis, Inc. on 2014-01-21 and assigned to work order 14012203. Samples for work order 14012203 were received intact at a temperature of 6.8 C. Samples on ice.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	91798	2014-01-22 at 14:44	108575	2014-01-23 at 14:57
BTEX	S 8021B	91850	2014-01-23 at 16:26	108647	2014-01-24 at 06:50
Chloride (Titration)	SM 4500-Cl B	91922	2014-01-28 at 07:46	108705	2014-01-28 at 15:29
TPH DRO - NEW	S 8015 D	91898	2014-01-24 at 16:30	108641	2014-01-27 at 10:35
TPH DRO - NEW	S 8015 D	92064	2014-02-02 at 13:00	108848	2014-02-02 at 13:00
TPH GRO	S 8015 D	91798	2014-01-22 at 14:44	108577	2014-01-23 at 15:01
TPH GRO	S 8015 D	91850	2014-01-23 at 16:26	108648	2014-01-24 at 06:50

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 14012203 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.

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 6 of 29
Eddy Co, NM

Analytical Report

Sample: 352077 - AH-1 0-1' BEB (10' EB)

Laboratory: Midland
Analysis: BTEX
QC Batch: 108575
Prep Batch: 91798

Analytical Method: S 8021B
Date Analyzed: 2014-01-23
Sample Preparation: 2014-01-22

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr	2	13.6	mg/Kg	100	0.0200
Toluene	Qr	2	59.4	mg/Kg	100	0.0200
Ethylbenzene	Qr	2	38.2	mg/Kg	100	0.0200
Xylene	Qr	2	34.1	mg/Kg	100	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.84	mg/Kg	100	2.00	142	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	10.9	mg/Kg	100	2.00	545	70 - 130

Sample: 352077 - AH-1 0-1' BEB (10' EB)

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108705
Prep Batch: 91922

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-28
Sample Preparation: 2014-01-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11800	mg/Kg	10	4.00

Sample: 352077 - AH-1 0-1' BEB (10' EB)

Laboratory: Lubbock
Analysis: TPH DRO - NEW
QC Batch: 108641
Prep Batch: 91898

Analytical Method: S 8015 D
Date Analyzed: 2014-01-27
Sample Preparation: 2014-01-24

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	3720	mg/Kg	5	50.0

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 7 of 29
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	317	mg/Kg	5	100	317	70 - 130

Sample: 352077 - AH-1 0-1' BEB (10' EB)

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 108577
Prep Batch: 91798

Analytical Method: S 8015 D
Date Analyzed: 2014-01-23
Sample Preparation: 2014-01-22

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	1420	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	0.00	mg/Kg	100	2.00	0	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	26.0	mg/Kg	100	2.00	1300	70 - 130

Sample: 352078 - AH-1 1-1.5' BEB

Laboratory: Midland
Analysis: BTEX
QC Batch: 108647
Prep Batch: 91850

Analytical Method: S 8021B
Date Analyzed: 2014-01-24
Sample Preparation: 2014-01-23

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	2	<0.200	mg/Kg	10	0.0200
Toluene		2	0.222	mg/Kg	10	0.0200
Ethylbenzene		2	0.776	mg/Kg	10	0.0200
Xylene		2	1.49	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	10	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	3.06	mg/Kg	10	2.00	153	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 8 of 29
Eddy Co, NM

Sample: 352078 - AH-1 1-1.5' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-28	Analyzed By:	AR
QC Batch:	108705	Sample Preparation:	2014-01-28	Prepared By:	AR
Prep Batch:	91922				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			10000	mg/Kg	10	4.00

Sample: 352078 - AH-1 1-1.5' BEB

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2014-02-02	Analyzed By:	DS
QC Batch:	108848	Sample Preparation:	2014-02-02	Prepared By:	DS
Prep Batch:	92064				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B	1	101	mg/Kg	1	50.0

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

Sample: 352078 - AH-1 1-1.5' BEB

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2014-01-24	Analyzed By:	AK
QC Batch:	108648	Sample Preparation:	2014-01-23	Prepared By:	AK
Prep Batch:	91850				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	87.3	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)	Q _{sr}	Q _{sr}	2.88	mg/Kg	10	2.00	144	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 9 of 29
Eddy Co, NM

Sample: 352079 - AH-1 2-2.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108705 Date Analyzed: 2014-01-28 Analyzed By: AR
Prep Batch: 91922 Sample Preparation: 2014-01-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3970	mg/Kg	10	4.00

Sample: 352079 - AH-1 2-2.5' BEB

Laboratory: Lubbock
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 108848 Date Analyzed: 2014-02-02 Analyzed By: DS
Prep Batch: 92064 Sample Preparation: 2014-02-02 Prepared By: DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B	1	143	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	70 - 130

Sample: 352079 - AH-1 2-2.5' BEB

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 108648 Date Analyzed: 2014-01-24 Analyzed By: AK
Prep Batch: 91850 Sample Preparation: 2014-01-23 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	79.3	mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	10	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	4.56	mg/Kg	10	2.00	228	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 10 of 29
Eddy Co, NM

Sample: 352080 - AH-1 3-3.5' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-28	Analyzed By:	AR
QC Batch:	108705	Sample Preparation:	2014-01-28	Prepared By:	AR
Prep Batch:	91922				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5660	mg/Kg	10	4.00

Sample: 352080 - AH-1 3-3.5' BEB

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2014-02-02	Analyzed By:	DS
QC Batch:	108848	Sample Preparation:	2014-02-02	Prepared By:	DS
Prep Batch:	92064				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			118	mg/Kg	1	100	118	70 - 130

Sample: 352080 - AH-1 3-3.5' BEB

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2014-01-24	Analyzed By:	AK
QC Batch:	108648	Sample Preparation:	2014-01-23	Prepared By:	AK
Prep Batch:	91850				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	10	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.29	mg/Kg	10	2.00	114	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 11 of 29
Eddy Co, NM

Sample: 352081 - AH-1 4-4.5' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-28	Analyzed By:	AR
QC Batch:	108705	Sample Preparation:	2014-01-28	Prepared By:	AR
Prep Batch:	91922				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1690	mg/Kg	10	4.00

Sample: 352082 - AH-1 5-5.5' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-28	Analyzed By:	AR
QC Batch:	108705	Sample Preparation:	2014-01-28	Prepared By:	AR
Prep Batch:	91922				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1890	mg/Kg	10	4.00

Sample: 352083 - AH-1 6-6.5' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-28	Analyzed By:	AR
QC Batch:	108705	Sample Preparation:	2014-01-28	Prepared By:	AR
Prep Batch:	91922				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2110	mg/Kg	10	4.00

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 12 of 29
Eddy Co, NM

Method Blanks

Method Blank (1) QC Batch: 108575

QC Batch: 108575
Prep Batch: 91798

Date Analyzed: 2014-01-23
QC Preparation: 2014-01-22

Analyzed By: AK
Prepared By: AK

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

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

Method Blank (1) QC Batch: 108577

QC Batch: 108577
Prep Batch: 91798

Date Analyzed: 2014-01-23
QC Preparation: 2014-01-22

Analyzed By: AK
Prepared By: AK

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

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

Method Blank (1) QC Batch: 108641

QC Batch: 108641
Prep Batch: 91898

Date Analyzed: 2014-01-27
QC Preparation: 2014-01-24

Analyzed By: DS
Prepared By: CM

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 13 of 29
Eddy Co, NM

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

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

Method Blank (1) QC Batch: 108647

QC Batch: 108647
Prep Batch: 91850

Date Analyzed: 2014-01-24
QC Preparation: 2014-01-23

Analyzed By: AK
Prepared By: AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70 - 130

Method Blank (1) QC Batch: 108648

QC Batch: 108648
Prep Batch: 91850

Date Analyzed: 2014-01-24
QC Preparation: 2014-01-23

Analyzed By: AK
Prepared By: AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 14 of 29
Eddy Co, NM

Method Blank (1) QC Batch: 108705

QC Batch: 108705
Prep Batch: 91922

Date Analyzed: 2014-01-28
QC Preparation: 2014-01-28

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 108848

QC Batch: 108848
Prep Batch: 92064

Date Analyzed: 2014-02-02
QC Preparation: 2014-02-02

Analyzed By: DS
Prepared By: DS

Parameter	Flag	Cert	MDL Result	Units	RL
DRO			39.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			126	mg/Kg	1	100	126	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 15 of 29
Eddy Co, NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 108575
Prep Batch: 91798

Date Analyzed: 2014-01-23
QC Preparation: 2014-01-22

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	1.61	mg/Kg	1	2.00	<0.00533	80	70 - 130
Toluene		2	1.72	mg/Kg	1	2.00	<0.00645	86	70 - 130
Ethylbenzene		2	1.85	mg/Kg	1	2.00	<0.0116	92	70 - 130
Xylene		2	5.68	mg/Kg	1	6.00	<0.00874	95	70 - 130

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

Param				LCSD			Spike	Matrix		Rec.		RPD
	F	C		Result	Units	Dil.	Amount	Result	Rec.	Limit		Limit
Benzene	qr	qr	2	2.07	mg/Kg	1	2.00	<0.00533	104	70 - 130	25	20
Toluene	qr	qr	2	2.28	mg/Kg	1	2.00	<0.00645	114	70 - 130	28	20
Ethylbenzene	qr	qr	2	2.56	mg/Kg	1	2.00	<0.0116	128	70 - 130	32	20
Xylene	qr	qr	2	7.79	mg/Kg	1	6.00	<0.00874	130	70 - 130	31	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.68	2.22	mg/Kg	1	2.00	84	111	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	2.45	mg/Kg	1	2.00	97	122	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108577
Prep Batch: 91798

Date Analyzed: 2014-01-23
QC Preparation: 2014-01-22

Analyzed By: AK
Prepared By: AK

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

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

continued ...

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 16 of 29
Eddy Co, NM

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	17.2	mg/Kg	1	20.0	<2.32	86	70 - 130	5	20

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

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

Laboratory Control Spike (LCS-1)

QC Batch: 108641
Prep Batch: 91898

Date Analyzed: 2014-01-27
QC Preparation: 2014-01-24

Analyzed By: DS
Prepared By: CM

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

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	209	mg/Kg	1	250	<5.22	84	70 - 130	3	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
n-Tricosane	88.7	90.7	mg/Kg	1	100	89	91	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108647
Prep Batch: 91850

Date Analyzed: 2014-01-24
QC Preparation: 2014-01-23

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	1.81	mg/Kg	1	2.00	<0.00533	90	70 - 130

continued ...

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 17 of 29
Eddy Co, NM

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		2	1.97	mg/Kg	1	2.00	<0.00645	98	70 - 130
Ethylbenzene		2	2.04	mg/Kg	1	2.00	<0.0116	102	70 - 130
Xylene		2	6.26	mg/Kg	1	6.00	<0.00874	104	70 - 130

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		2	1.99	mg/Kg	1	2.00	<0.00533	100	70 - 130	10	20
Toluene		2	2.12	mg/Kg	1	2.00	<0.00645	106	70 - 130	7	20
Ethylbenzene		2	2.26	mg/Kg	1	2.00	<0.0116	113	70 - 130	10	20
Xylene		2	6.47	mg/Kg	1	6.00	<0.00874	108	70 - 130	3	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.83	2.12	mg/Kg	1	2.00	92	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.07	2.32	mg/Kg	1	2.00	104	116	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 108648
Prep Batch: 91850

Date Analyzed: 2014-01-24
QC Preparation: 2014-01-23

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	16.0	mg/Kg	1	20.0	<2.32	80	70 - 130

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		2	16.2	mg/Kg	1	20.0	<2.32	81	70 - 130	1	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.76	1.72	mg/Kg	1	2.00	88	86	70 - 130
4-Bromofluorobenzene (4-BFB)	2.10	2.09	mg/Kg	1	2.00	105	104	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 18 of 29
Eddy Co, NM

Laboratory Control Spike (LCS-1)

QC Batch: 108705
Prep Batch: 91922

Date Analyzed: 2014-01-28
QC Preparation: 2014-01-28

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2510	mg/Kg	1	2500	<3.85	100	89.7 - 115.9

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2600	mg/Kg	1	2500	<3.85	104	89.7 - 115.9	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 108848
Prep Batch: 92064

Date Analyzed: 2014-02-02
QC Preparation: 2014-02-02

Analyzed By: DS
Prepared By: DS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO			249	mg/Kg	1	250	39.6	84	70 - 130

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
DRO			279	mg/Kg	1	250	39.6	96	70 - 130	11	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
n-Tricosane	121	130	mg/Kg	1	100	121	130	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352019

QC Batch: 108575
Prep Batch: 91798

Date Analyzed: 2014-01-23
QC Preparation: 2014-01-22

Analyzed By: AK
Prepared By: AK

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 19 of 29
Eddy Co, NM

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

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	1.70	mg/Kg	1	2.00	<0.00533	85	70 - 130	4	20
Toluene		2	1.84	mg/Kg	1	2.00	<0.00645	92	70 - 130	2	20
Ethylbenzene		2	2.01	mg/Kg	1	2.00	<0.0116	100	70 - 130	7	20
Xylene		2	6.14	mg/Kg	1	6.00	<0.00874	102	70 - 130	7	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.67	1.74	mg/Kg	1	2	84	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.82	1.94	mg/Kg	1	2	91	97	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352019

QC Batch: 108577
Prep Batch: 91798

Date Analyzed: 2014-01-23
QC Preparation: 2014-01-22

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	16.2	mg/Kg	1	20.0	<2.32	81	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	16.1	mg/Kg	1	20.0	<2.32	80	70 - 130	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.75	1.68	mg/Kg	1	2	88	84	70 - 130
4-Bromofluorobenzene (4-BFB)	2.04	2.00	mg/Kg	1	2	102	100	70 - 130

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 20 of 29
Eddy Co, NM

Matrix Spike (MS-1) Spiked Sample: 352056

QC Batch: 108641
Prep Batch: 91898

Date Analyzed: 2014-01-27
QC Preparation: 2014-01-24

Analyzed By: DS
Prepared By: CM

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

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Q _r , Q _s	Q _r , Q _s	1	881	mg/Kg	1	250	865	6	70 - 130	47 20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	109	133	mg/Kg	1	100	109	133	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 352063

QC Batch: 108647
Prep Batch: 91850

Date Analyzed: 2014-01-24
QC Preparation: 2014-01-23

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	3.38	mg/Kg	1	4.00	<0.00533	84	70 - 130
Toluene		2	3.66	mg/Kg	1	4.00	<0.00645	92	70 - 130
Ethylbenzene		2	3.81	mg/Kg	1	4.00	<0.0116	95	70 - 130
Xylene		2	11.5	mg/Kg	1	12.0	<0.00874	96	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	3.27	mg/Kg	1	4.00	<0.00533	82	70 - 130	3	20
Toluene		2	3.55	mg/Kg	1	4.00	<0.00645	89	70 - 130	3	20
Ethylbenzene		2	3.71	mg/Kg	1	4.00	<0.0116	93	70 - 130	3	20
Xylene		2	11.3	mg/Kg	1	12.0	<0.00874	94	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
Trifluorotoluene (TFT)	3.43	3.35	mg/Kg	1	4	86	84	70 - 130

continued ...

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 21 of 29
Eddy Co, NM

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	3.98	3.87	mg/Kg	1	4	100	97	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352063

QC Batch: 108648
Prep Batch: 91850

Date Analyzed: 2014-01-24
QC Preparation: 2014-01-23

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	15.7	mg/Kg	1	20.0	<2.32	78	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	16.1	mg/Kg	1	20.0	<2.32	80	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
Trifluorotoluene (TFT)	1.66	1.66	mg/Kg	1	2	83	83	70 - 130
4-Bromofluorobenzene (4-BFB)	2.00	2.04	mg/Kg	1	2	100	102	70 - 130

Matrix Spike (MS-1) Spiked Sample: 352672

QC Batch: 108705
Prep Batch: 91922

Date Analyzed: 2014-01-28
QC Preparation: 2014-01-28

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			30800	mg/Kg	10	2500	28300	100	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			31000	mg/Kg	10	2500	28300	108	78.9 - 121	1	20

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

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 22 of 29
Eddy Co, NM

Matrix Spike (MS-1) Spiked Sample: 353064

QC Batch: 108848
Prep Batch: 92064

Date Analyzed: 2014-02-02
QC Preparation: 2014-02-02

Analyzed By: DS
Prepared By: DS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	320	mg/Kg	1	250	94.2	90	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	302	mg/Kg	1	250	94.2	83	70 - 130	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
n-Tricosane	121	119	mg/Kg	1	100	121	119	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 108575

Date Analyzed: 2014-01-23

Analyzed By: AK

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

Standard (CCV-2)

QC Batch: 108575

Date Analyzed: 2014-01-23

Analyzed By: AK

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

Standard (CCV-3)

QC Batch: 108575

Date Analyzed: 2014-01-23

Analyzed By: AK

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

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 24 of 29
Eddy Co, NM

Standard (CCV-1)

QC Batch: 108577

Date Analyzed: 2014-01-23

Analyzed By: AK

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

Standard (CCV-2)

QC Batch: 108577

Date Analyzed: 2014-01-23

Analyzed By: AK

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

Standard (CCV-3)

QC Batch: 108577

Date Analyzed: 2014-01-23

Analyzed By: AK

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

Standard (CCV-1)

QC Batch: 108641

Date Analyzed: 2014-01-27

Analyzed By: DS

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

Standard (CCV-2)

QC Batch: 108641

Date Analyzed: 2014-01-27

Analyzed By: DS

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 25 of 29
Eddy Co, NM

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

Standard (CCV-3)

QC Batch: 108641

Date Analyzed: 2014-01-27

Analyzed By: DS

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

Standard (CCV-1)

QC Batch: 108647

Date Analyzed: 2014-01-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0989	99	80 - 120	2014-01-24
Toluene		2	mg/kg	0.100	0.104	104	80 - 120	2014-01-24
Ethylbenzene		2	mg/kg	0.100	0.102	102	80 - 120	2014-01-24
Xylene		2	mg/kg	0.300	0.312	104	80 - 120	2014-01-24

Standard (CCV-2)

QC Batch: 108647

Date Analyzed: 2014-01-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0958	96	80 - 120	2014-01-24
Toluene		2	mg/kg	0.100	0.100	100	80 - 120	2014-01-24
Ethylbenzene		2	mg/kg	0.100	0.0993	99	80 - 120	2014-01-24
Xylene		2	mg/kg	0.300	0.300	100	80 - 120	2014-01-24

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 26 of 29
Eddy Co, NM

Standard (CCV-3)

QC Batch: 108647

Date Analyzed: 2014-01-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0949	95	80 - 120	2014-01-24
Toluene		2	mg/kg	0.100	0.0992	99	80 - 120	2014-01-24
Ethylbenzene		2	mg/kg	0.100	0.0963	96	80 - 120	2014-01-24
Xylene		2	mg/kg	0.300	0.294	98	80 - 120	2014-01-24

Standard (CCV-1)

QC Batch: 108648

Date Analyzed: 2014-01-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	0.976	98	80 - 120	2014-01-24

Standard (CCV-2)

QC Batch: 108648

Date Analyzed: 2014-01-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	0.924	92	80 - 120	2014-01-24

Standard (CCV-3)

QC Batch: 108648

Date Analyzed: 2014-01-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	0.998	100	80 - 120	2014-01-24

Report Date: February 3, 2014
112MC06177

Work Order: 14012203
COG/Birch Keely Unit 205 (Spill 2)

Page Number: 27 of 29
Eddy Co, NM

Standard (CCV-1)

QC Batch: 108705

Date Analyzed: 2014-01-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	94.7	95	85 - 115	2014-01-28

Standard (CCV-2)

QC Batch: 108705

Date Analyzed: 2014-01-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	105	105	85 - 115	2014-01-28

Standard (CCV-1)

QC Batch: 108848

Date Analyzed: 2014-02-02

Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	239	96	80 - 120	2014-02-02

Standard (CCV-2)

QC Batch: 108848

Date Analyzed: 2014-02-02

Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	230	92	80 - 120	2014-02-02

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock
2	NELAP	T104704392-13-7	Midland

Standard Flags

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

Result Comments

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

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: 1

OF:

ANALYSIS REQUEST

(Circle or Specify Method No.)



TETRA TECH

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

[illegible]

Please fill out all copies - Laboratory retains Yellow copy - Return Original to the

Labrador retains Yellow copy - Return Original copy to Tetra-Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

QVCO