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

30-015-10822

Release Notification and Corrective Action

1SEB 0829130697

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company **COG Operating LLC**	Contact **Kanicia Carrillo**
Address **550 W. Texas, Suite 1300 Midland, Texas 79701**	Telephone No. **(432) 685-4332**
Facility Name **GJ COOP Unit #47**	Facility Type **Injection well**

Surface Owner	Mineral Owner	Lease No. 30-015-10822

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	21	17S	29E	660	North	1980	West	Eddy

Latitude N 32°49.527 **Longitude** W 104°04.917

NATURE OF RELEASE

Type of Release Oil and /or produced water	Volume of Release **20 bbls**	Volume Recovered **8 bbls**
Source of Release **flowline**	Date and Hour of Occurrence Unknown **9/30/08 5:30 AM**	Date and Hour of Discovery **9/30/08 3:00 pm**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher**	
By Whom?	Date and Hour **10/1/08 9:10 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.*

Contractor truck turned too sharp and ran over steel swing in flowline. Replaced the damage piece of flowline.

Describe Area Affected and Cleanup Action Taken.*
Leak was contained to the side of the lease road and middle of lease road. All liquids were pick up and sand was spread on affected area on the lease road. Tetra Tech collected samples and defined extents. Impacted soil was removed above RRAL and hauled to proper disposal. Tetra Tech prepared 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	Approved by Signed By Supervisor:
Title: Project Manager	Approval Date: JUL 23 2009 Expiration Date: NA
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval: NA Attached ☐
Date: 7-13-09 Phone: (432) 682-4559	

* Attach Additional Sheets If Necessary

2RP-253

TETRA TECH

JUL 22 2009

July 13, 2009

Mr. Mike Bratcher
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1301 W. Grand Ave.
Artesia, New Mexico 88210

Re: 2 RP-253, Assessment and Closure Report for the COG Operating LLC, GJ West COOP Unit Well #47, Located in Unit Letter C, Section 21, Township 17 South, Range 29 East, Eddy County, New Mexico.

Dear Mr. Bratcher:

Tetra Tech, Inc. was contacted by COG Operating, LLC to investigate a spill that occurred at the GJ West COOP Unit #47 Well. The well is located in Unit Letter C, Section 21, Township 17 South, Range 29 East, Eddy County, New Mexico. The site coordinates are N 32°49.527, W 104°04.917. The Site is shown on Figures 1 and 2.

Background

The spill was discovered on September 30, 2008. According to the C-141 (Initial) included in Appendix A, the spill was caused when a contractor truck turned a corner too sharply on the lease road and ran over a steel swing in the flowline. The spill ran south along the lease road and then turned east along and beside the lease road. Approximately 20 barrels of oil and produced water was spilled and 8 barrels were recovered. The spill location is shown on Figure 3.

Groundwater and Regulatory

A water well located in Section 22, Township 18 South, Range 29 East, was measured using a steel tape to gauge the depth to water. The water well was not in use at the time and the static depth to water was measured at approximately 82.0' below ground surface (bgs).

A risk-based evaluation was performed for the Site in accordance with the 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

Tetra Tech
1910 North Big Spring Midland,TX 79705
Tel 432 682.4559 Fax 432.682 3946 www.tetratech.com

(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 on the regional groundwater data, the proposed RRAL for TPH is 1,000 mg/kg.

Assessment and Corrective Action

On January 20, 2009, Tetra Tech personnel inspected the site and collected samples. A total of three (3) auger holes were placed in the impacted area. Samples were collected to depths of 0.5' (AH-1 and AH-3) and 1.5' (AH-2). Deeper samples could not be collected with the hand auger due to a dense caliche layer. The laboratory report and chain of custody are enclosed in Appendix C. The analytical results are summarized in Table 1.

Referring to Table 1, AH-2 and AH-3, exceeded the RRAL for TPH in the 0-`1.0' and 0-0.5' samples, respectively. The TPH impact was define in AH-2 at 1.0' to less than the RRAL. Chloride concentrations were elevated in all three shallow samples and were only defined in AH-2. Based on the results, COG supervised the removal of 1.0' of impacted soil from the areas around the three auger holes. The soils were hauled offsite for proper disposal.

On February 12, 2009, Tetra Tech personnel supervised the installation of two (2) backhoe trenches to define the vertical extents of the chloride impact in the vicinity of AH-1 and AH-3. Referring to Table 1, the chloride concentrations were 323 mg/kg at 1.0' in the vicinity of AH-1 (Trench T-2) and <200 at 2.0' in the vicinity of AH-3 (Trench T-1). Additionally, TPH was below the RRAL in the vicinity of AH-3 at 1.0'.

Conclusions

The impacted area was defined and the impacted soils above the RRAL were excavated and hauled offsite for disposal. No TPH concentrations exceed the RRAL, and chloride concentrations range from <200 mg/Kg to 323 mg/Kg. Based upon the results of the assessment work and remediation performed at this site, COG requests closure of this site. The final C-141 is enclosed in Appendix B. If you have any question or comments concerning the assessment or the activities performed at the Site, please call me at (432) 682-4559.

Respectfully submitted,
Tetra Tech Inc.

Tim Reed

Tim Reed, P.G.
Senior Project Manager

cc: Pat Ellis – COG

FIGURES

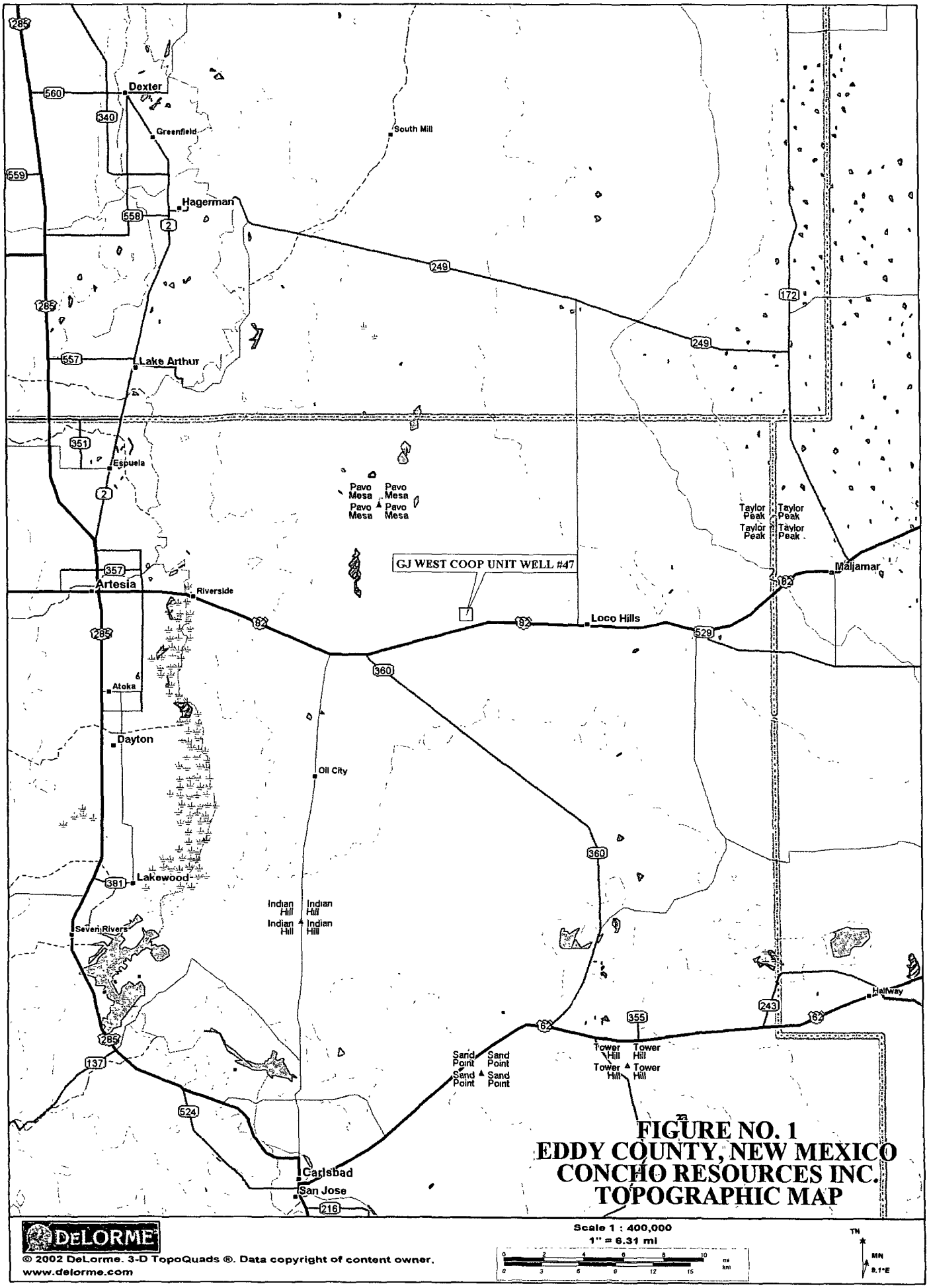

FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
CONCHO RESOURCES INC.
TOPOGRAPHIC MAP

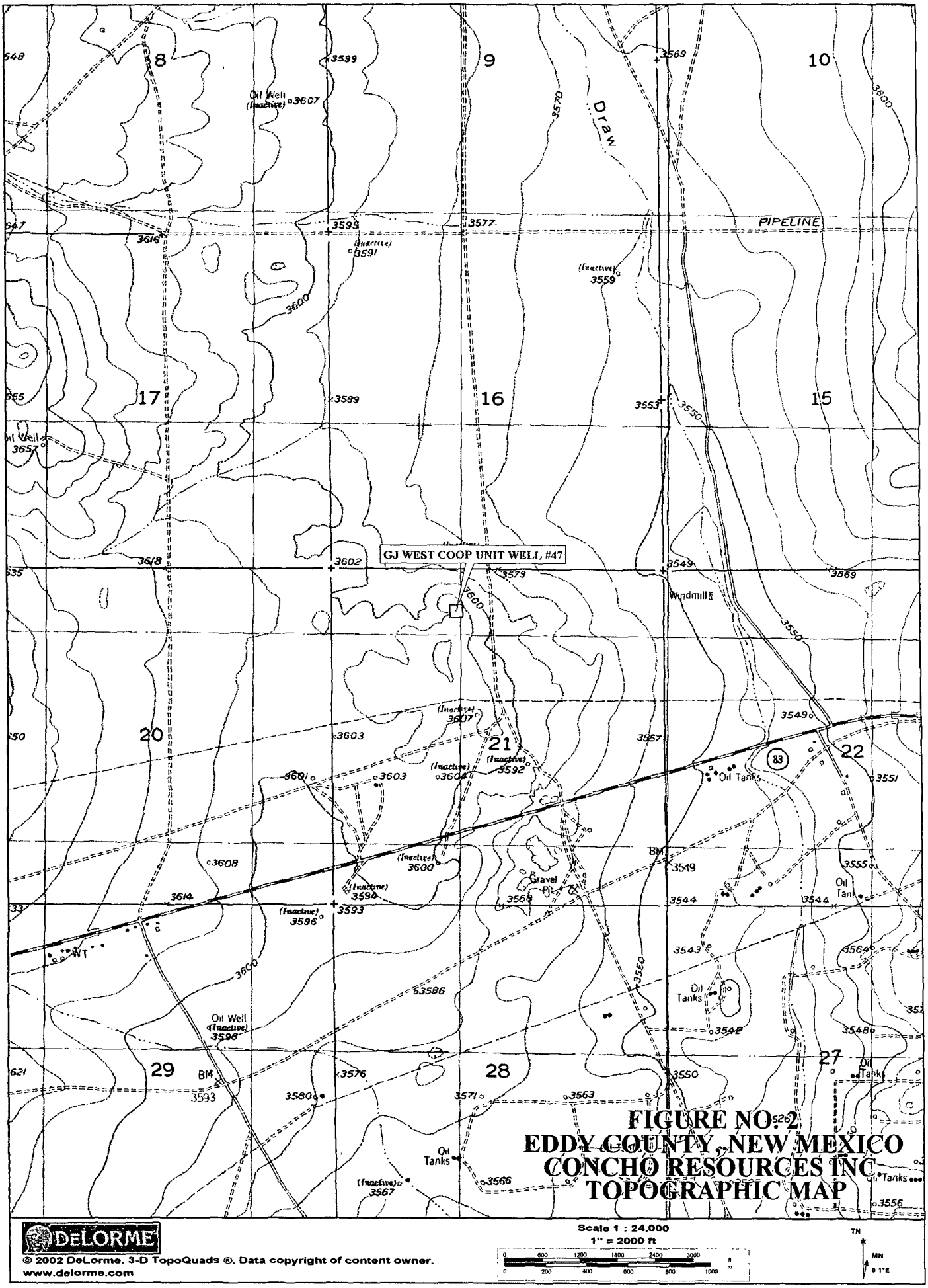

FIGURE NO. 2
EDDY COUNTY, NEW MEXICO
CONCHO RESOURCES INC.
TOPOGRAPHIC MAP

Scale 1 : 24,000
1" = 2000 ft

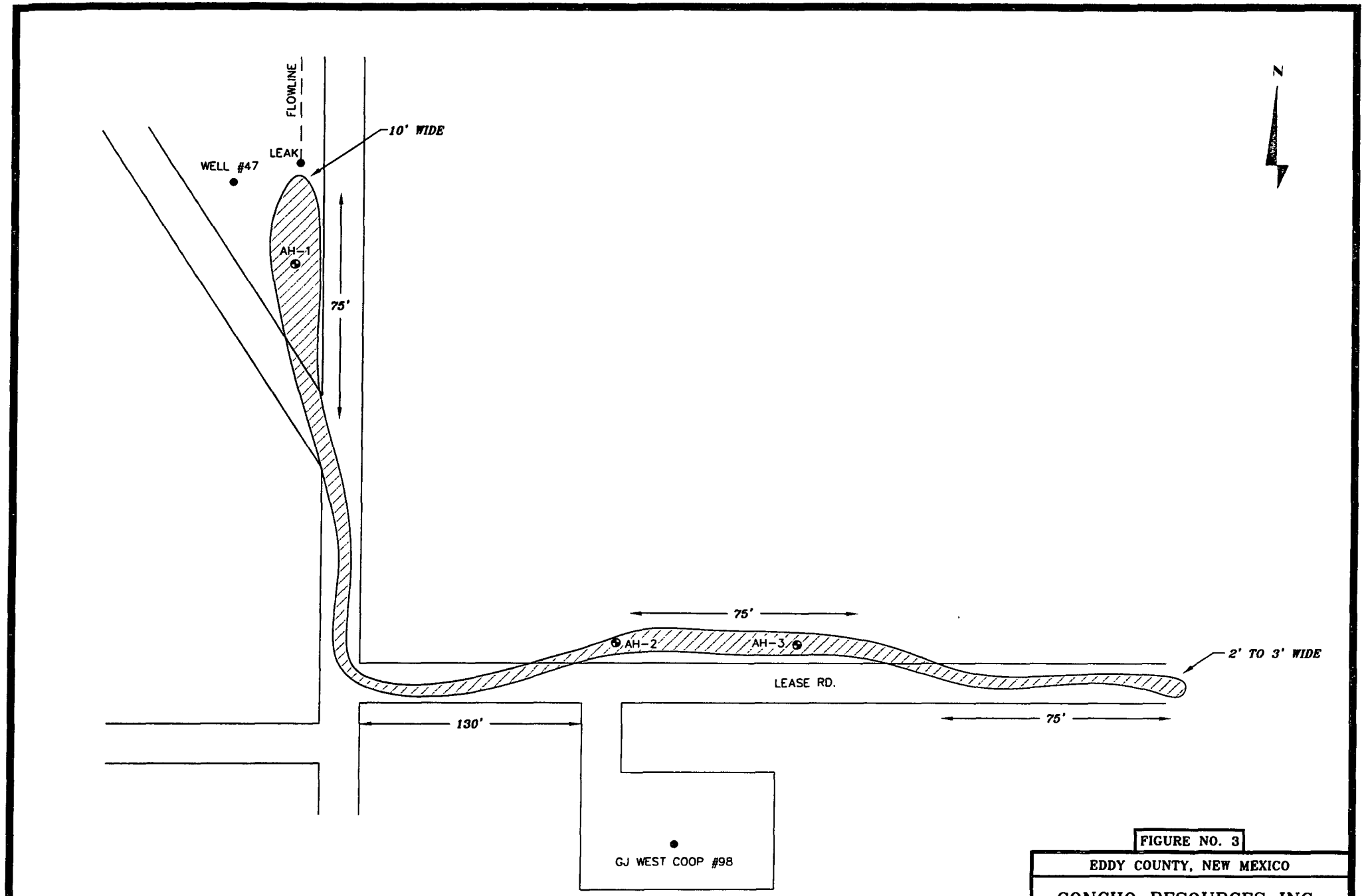

FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

CONCHO RESOURCES INC.

GJ COOP #47

DATE: 10/13/08

DWN. BY. JJ

FILE: H:\COC\3610\GJ COOP #47

TETRA TECH, INC.
MIDLAND, TEXAS

TABLE

Table 1
COG
G J West Co-op Unit Well #47
Eddy County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	DRO	GRO	Total					
AH-1	1/20/2009	0-0.5		X	<50.0	<1.00	<50.0	-	-	-	-	858
T-2	2/12/2009	1.0	X		-	-	-	-	-	-	-	323
AH-2	1/20/2009	0-1		X	2,920	89.9	3,009.9	<0.0200	<0.0200	0.175	0.618	1,190
	1/20/2009	1-1.5	X		138	38.7	176.7	-	-	-	-	<200
AH-3	1/20/2009	0-0.5		X	4,620	262	4,882	<0.0500	0.326	0.809	2.37	1,200
T-1	2/12/2009	1.0	X		<50.0	<1.00	<50.0	-	-	-	-	323
T-1	2/21/2009	2.0	X		-	-	-	-	-	-	-	<200

(-) Not Analyzed

APPENDIX A
NMOCD FORM C-141

District I
1625 N French Dr, Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
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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

OCT 01 2008
OCD-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 229137	Contact Kanicia Carrillo
Address 550 W. Texas, Suite 1300 Midland, TX 79701	Telephone No. 432-685-4332
Facility Name - GJ WEST COOP UNIT #47	Facility Type- Injection well

Surface Owner S	Mineral Owner	Lease No.API# 30-015-10822

30-015-10822

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	21	17-S	29-E	660	North	1980	West	Eddy

Latitude_____ Longitude_____

NATURE OF RELEASE

Type of Release- **Water/oil**	Volume of Release- **20bbls**	Volume Recovered- **8bbls**
Source of Release- **Flowline**	Date and Hour of Occurrence- **9/30/08 5:30am**	Date and Hour of Discovery **9/30/08 3:00 pm**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher**	
By Whom? **Kanicia Carrillo**	Date and Hour **10/01/2008 9:10 am**	
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.*
Contractor Truck turned corner too sharp and ran over steel swing in flowline.
We replaced the damaged piece of flowline.

Describe Area Affected and Cleanup Action Taken.*
Leak was contained to side of lease road and middle of lease road. All liquid was picked up and sand was spread on affected area on the road. Tetra Tech will submit soil samples and our final report.

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: K. C

Printed Name: Kanicia Carrillo

Title: Regulatory Analyst

E-mail Address: kcarrillo@conchoresources.com

Date: 10/01/2008 Phone: 432-685-4332

* Attach Additional Sheets If Necessary

OIL CONSERVATION DIVISION

Approved by District Supervisor: TGumby SB

Approval Date: 10-17-08 Expiration Date: 12-18-08

Conditions of Approval: STIPULATIONS

Attached ☑

Within 30 days, on or before 11-18-08, completion of a remediation work plan based on delineation should be finalized and submitted for approval to the Division summarizing all actions taken and/or to be taken to mitigate environmental damage

Remediation Actions to be completed and Final C-141 submitted with confirmation analyses/documentation on or before the Expiration Date.

2RP - 253

Notify OCD 48 hours prior to obtaining samples where analyses are to be presented to OCD

APPENDIX B
GROUNDWATER DATA

Water Well Data
Average Depth to Groundwater (ft)
COG - GJ Co-op Unit Well #47, 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	13
19 **110**	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 30 East

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

17 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **79**	23	24
30	29	28	27	26	25
31	32	33	34 **53**	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 **SITE**	22 **80**	23	24
30	29 **210** **208**	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

18 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 **65**	36

18 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	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

88 New Mexico State Engineers Well Reports
105 USGS Well Reports
90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
Geology and Groundwater Resources of Eddy County, NM (Report 3)
34 NMOCD - Groundwater Data
121 Abandoned Waterwell (recently measured)

APPENDIX C
SUMMARY REPORT
February 3, 2009

Summary Report

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

Report Date: February 3, 2009

Work Order: 9012121

Project Location: Eddy Co., NM
Project Name: COG/GJ West Co-op Unit Well #47
Project Number: 115-6403610

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
185449	AH-1 0-0.5'	soil	2009-01-20	00:00	2009-01-21
185450	AH-2 0-1.0'	soil	2009-01-20	00:00	2009-01-21
185451	AH-2 1'-1.5'	soil	2009-01-20	00:00	2009-01-21
185452	AH-3 0-0.5'	soil	2009-01-20	00:00	2009-01-21

	BTEX				TPH DRO	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
185449 - AH-1 0-0.5'					<50.0	<1.00
185450 - AH-2 0-1.0'	<0.0200	<0.0200	**0.175**	**0.618**	**2920**	**89.9**
185451 - AH-2 1'-1.5'					**138**	**38.7**
185452 - AH-3 0-0.5'	<0.0500	**0.326**	**0.809**	**2.37**	**4620**	**262**

Sample: 185449 - AH-1 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**858**	mg/Kg	4.00

Sample: 185450 - AH-2 0-1.0'

Param	Flag	Result	Units	RL
Chloride		**1190**	mg/Kg	4.00

Sample: 185451 - AH-2 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 185452 - AH-3 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**1200**	mg/Kg	4.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: February 3, 2009

Work Order: 9012121

Project Location: Eddy Co., NM
Project Name: COG/GJ West Co-op Unit Well #47
Project Number: 115-6403610

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
185449	AH-1 0-0.5'	soil	2009-01-20	00:00	2009-01-21
185450	AH-2 0-1.0'	soil	2009-01-20	00:00	2009-01-21
185451	AH-2 1'-1.5'	soil	2009-01-20	00:00	2009-01-21
185452	AH-3 0-0.5'	soil	2009-01-20	00:00	2009-01-21

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.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/GJ West Co-op Unit Well #47 were received by TraceAnalysis, Inc. on 2009-01-21 and assigned to work order 9012121. Samples for work order 9012121 were received intact at a temperature of 3.8 deg. 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	48254	2009-01-29 at 11:17	56465	2009-01-29 at 11:17
Chloride (Titration)	SM 4500-Cl B	48078	2009-01-23 at 09:14	56291	2009-01-23 at 16:45
TPH DRO	Mod. 8015B	48081	2009-01-23 at 09:00	56255	2009-01-23 at 11:15
TPH GRO	S 8015B	48254	2009-01-29 at 11:17	56469	2009-01-29 at 11:17

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 9012121 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 185449 - AH-1 0-0.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56291	Date Analyzed:	2009-01-23	Analyzed By:	AR
Prep Batch:	48078	Sample Preparation:	2009-01-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**858**	mg/Kg	50	4.00

Sample: 185449 - AH-1 0-0.5'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	56255	Date Analyzed:	2009-01-23	Analyzed By:	LD
Prep Batch:	48081	Sample Preparation:	2009-01-23	Prepared By:	LD

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		80.0	mg/Kg	1	100	80	10 - 250.4

Sample: 185449 - AH-1 0-0.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	56469	Date Analyzed:	2009-01-29	Analyzed By:	ME
Prep Batch:	48254	Sample Preparation:	2009-01-29	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.904	mg/Kg	1	1.00	90	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.700	mg/Kg	1	1.00	70	56 - 142.8

Sample: 185450 - AH-2 0-1.0'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	56465	Date Analyzed:	2009-01-29	Analyzed By:	ME
Prep Batch:	48254	Sample Preparation:	2009-01-29	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0200	mg/Kg	2	0.0100
Toluene		<0.0200	mg/Kg	2	0.0100
Ethylbenzene		**0.175**	mg/Kg	2	0.0100
Xylene		**0.618**	mg/Kg	2	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.93	mg/Kg	2	2.00	96	49 - 129.7
4-Bromofluorobenzene (4-BFB)		2.01	mg/Kg	2	2.00	100	45.2 - 144.3

Sample: 185450 - AH-2 0-1.0'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56291	Date Analyzed:	2009-01-23	Analyzed By:	AR
Prep Batch:	48078	Sample Preparation:	2009-01-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1190**	mg/Kg	50	4.00

Sample: 185450 - AH-2 0-1.0'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	56255	Date Analyzed:	2009-01-23	Analyzed By:	LD
Prep Batch:	48081	Sample Preparation:	2009-01-23	Prepared By:	LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**2920**	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[1]	416	mg/Kg	1	100	416	10 - 250.4

[1] High surrogate recovery due to peak interference.

Sample: 185450 - AH-2 0-1.0'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	56469	Date Analyzed:	2009-01-29	Analyzed By:	ME
Prep Batch:	48254	Sample Preparation:	2009-01-29	Prepared By:	ME

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		**89.9**		mg/Kg	2	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.74	mg/Kg	2	2.00	87	75 - 117.2
4-Bromofluorobenzene (4-BFB)	[2]	3.28	mg/Kg	2	2.00	164	56 - 142.8

Sample: 185451 - AH-2 1'-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56291	Date Analyzed:	2009-01-23	Analyzed By:	AR
Prep Batch:	48078	Sample Preparation:	2009-01-23	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		<200		mg/Kg	50	4.00

Sample: 185451 - AH-2 1'-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	56255	Date Analyzed:	2009-01-23	Analyzed By:	LD
Prep Batch:	48081	Sample Preparation:	2009-01-23	Prepared By:	LD

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**138**		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		88.6	mg/Kg	1	100	89	10 - 250.4

[2]High surrogate recovery due to peak interference.

Sample: 185451 - AH-2 1'-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	56469	Date Analyzed:	2009-01-29	Analyzed By:	ME
Prep Batch:	48254	Sample Preparation:	2009-01-29	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**38.7**	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.916	mg/Kg	1	1.00	92	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.780	mg/Kg	1	1.00	78	56 - 142.8

Sample: 185452 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	56465	Date Analyzed:	2009-01-29	Analyzed By:	ME
Prep Batch:	48254	Sample Preparation:	2009-01-29	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0500	mg/Kg	5	0.0100
Toluene		**0.326**	mg/Kg	5	0.0100
Ethylbenzene		**0.809**	mg/Kg	5	0.0100
Xylene		**2.37**	mg/Kg	5	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		4.61	mg/Kg	5	5.00	92	49 - 129.7
4-Bromofluorobenzene (4-BFB)		5.58	mg/Kg	5	5.00	112	45.2 - 144.3

Sample: 185452 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56291	Date Analyzed:	2009-01-23	Analyzed By:	AR
Prep Batch:	48078	Sample Preparation:	2009-01-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1200**	mg/Kg	50	4.00

Sample: 185452 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	56255	Date Analyzed:	2009-01-23	Analyzed By:	LD
Prep Batch:	48081	Sample Preparation:	2009-01-23	Prepared By:	LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**4620**	mg/Kg	5	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[3]	845	mg/Kg	5	100	845	10 - 250.4

Sample: 185452 - AH-3 0-0.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	56469	Date Analyzed:	2009-01-29	Analyzed By:	ME
Prep Batch:	48254	Sample Preparation:	2009-01-29	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**262**	mg/Kg	5	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		4.28	mg/Kg	5	5.00	86	75 - 117.2
4-Bromofluorobenzene (4-BFB)	[4]	8.10	mg/Kg	5	5.00	162	56 - 142.8

Method Blank (1) QC Batch: 56255

QC Batch:	56255	Date Analyzed:	2009-01-23	Analyzed By:	LD
Prep Batch:	48081	QC Preparation:	2009-01-23	Prepared By:	LD

Parameter	Flag	MDL Result	Units	RL
DRO		<12.0	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		61.3	mg/Kg	1	100	61	30.9 - 146.4

[3] High surrogate recovery due to peak interference.
[4] High surrogate recovery due to peak interference.

Method Blank (1) QC Batch: 56291

QC Batch: 56291 | Date Analyzed: 2009-01-23 | Analyzed By: AR
Prep Batch: 48078 | QC Preparation: 2009-01-23 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.01	mg/Kg	4

Method Blank (1) QC Batch: 56465

QC Batch: 56465 | Date Analyzed: 2009-01-29 | Analyzed By: ME
Prep Batch: 48254 | QC Preparation: 2009-01-29 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00800	mg/Kg	0.01
Toluene		<0.00800	mg/Kg	0.01
Ethylbenzene		<0.00820	mg/Kg	0.01
Xylene		<0.00960	mg/Kg	0.01

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.960	mg/Kg	1	1.00	96	65.6 - 130.6
4-Bromofluorobenzene (4-BFB)		0.731	mg/Kg	1	1.00	73	51.9 - 128.1

Method Blank (1) QC Batch: 56469

QC Batch: 56469 | Date Analyzed: 2009-01-29 | Analyzed By: ME
Prep Batch: 48254 | QC Preparation: 2009-01-29 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
GRO		<0.171	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.922	mg/Kg	1	1.00	92	58.3 - 129.3
4-Bromofluorobenzene (4-BFB)		0.607	mg/Kg	1	1.00	61	57 - 124.9

Laboratory Control Spike (LCS-1)

QC Batch: 56255 | Date Analyzed: 2009-01-23 | Analyzed By: LD
Prep Batch: 48081 | QC Preparation: 2009-01-23 | Prepared By: LD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	237	mg/Kg	1	250	<12.0	95	27.8 - 152.1

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	242	mg/Kg	1	250	<12.0	97	27.8 - 152.1	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
n-Triacontane	73.0	74.1	mg/Kg	1	100	73	74	38 - 130.4

Laboratory Control Spike (LCS-1)

QC Batch: 56291 | Date Analyzed: 2009-01-23 | Analyzed By: AR
Prep Batch: 48078 | QC Preparation: 2009-01-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.2	mg/Kg	1	100	<2.01	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.7	mg/Kg	1	100	<2.01	100	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: 56465 | Date Analyzed: 2009-01-29 | Analyzed By: ME
Prep Batch: 48254 | QC Preparation: 2009-01-29 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.761	mg/Kg	1	1.00	<0.00800	76	72.7 - 129.8
Toluene	0.903	mg/Kg	1	1.00	<0.00800	90	71.6 - 129.6
Ethylbenzene	1.20	mg/Kg	1	1.00	<0.00820	120	70.8 - 129.7
Xylene	3.68	mg/Kg	1	3.00	<0.00960	123	70.9 - 129.4

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

continued ...

control spikes continued ...

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.800	mg/Kg	1	1.00	<0.00800	80	72.7 - 129.8	5	20
Toluene	0.956	mg/Kg	1	1.00	<0.00800	96	71.6 - 129.6	6	20
Ethylbenzene	0.997	mg/Kg	1	1.00	<0.00820	100	70.8 - 129.7	18	20
Xylene	3.03	mg/Kg	1	3.00	<0.00960	101	70.9 - 129.4	19	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)	0.903	0.943	mg/Kg	1	1.00	90	94	65.9 - 132
4-Bromofluorobenzene (4-BFB)	1.08	0.812	mg/Kg	1	1.00	108	81	55.2 - 128.9

Laboratory Control Spike (LCS-1)

QC Batch: 56469 | Date Analyzed: 2009-01-29 | Analyzed By: ME
Prep Batch: 48254 | QC Preparation: 2009-01-29 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	7.78	mg/Kg	1	10.0	<0.171	78	70 - 130

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	7.83	mg/Kg	1	10.0	<0.171	78	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.982	0.937	mg/Kg	1	1.00	98	94	70 - 130
4-Bromofluorobenzene (4-BFB)	0.728	0.744	mg/Kg	1	1.00	73	74	70 - 130

Matrix Spike (MS-1) Spiked Sample: 185481

QC Batch: 56255 | Date Analyzed: 2009-01-23 | Analyzed By: LD
Prep Batch: 48081 | QC Preparation: 2009-01-23 | Prepared By: LD

continued ...

matrix spikes continued ...

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	216	mg/Kg	1	250	126.49	36	18 - 179.5

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	213	mg/Kg	1	250	126.49	35	18 - 179.5	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-Triacontane	80.9	77.0	mg/Kg	1	100	81	77	34.1 - 158

Matrix Spike (MS-1) Spiked Sample: 185645

QC Batch: 56291 | Date Analyzed: 2009-01-23 | Analyzed By: AR
Prep Batch: 48078 | QC Preparation: 2009-01-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	6690	mg/Kg	50	5000	1630	101	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	6610	mg/Kg	50	5000	1630	100	85 - 115	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: 185904

QC Batch: 56465 | Date Analyzed: 2009-01-29 | Analyzed By: ME
Prep Batch: 48254 | QC Preparation: 2009-01-29 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.894	mg/Kg	1	1.00	<0.00800	89	58.6 - 165.2
Toluene	1.08	mg/Kg	1	1.00	0.1169	96	64.2 - 153.8
Ethylbenzene	1.14	mg/Kg	1	1.00	<0.00820	114	61.6 - 159.4
Xylene	3.44	mg/Kg	1	3.00	<0.00960	115	64.4 - 155.3

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.864	mg/Kg	1	1.00	<0.00800	86	58.6 - 165.2	3	20
Toluene	1.04	mg/Kg	1	1.00	0.1169	92	64.2 - 153.8	4	20
Ethylbenzene	1.07	mg/Kg	1	1.00	<0.00820	107	61.6 - 159.4	6	20
Xylene	3.27	mg/Kg	1	3.00	<0.00960	109	64.4 - 155.3	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)	0.942	0.942	mg/Kg	1	1	94	94	76 - 127.9
4-Bromofluorobenzene (4-BFB)	0.991	1.06	mg/Kg	1	1	99	106	72 - 127.8

Matrix Spike (MS-1) Spiked Sample: 185450

QC Batch: 56469 | Date Analyzed: 2009-01-29 | Analyzed By: ME
Prep Batch: 48254 | QC Preparation: 2009-01-29 | Prepared By: ME

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	[5]	120	mg/Kg	2	20.0	87.9226	160	22.3 - 134.6

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

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	[6]	142	mg/Kg	2	20.0	87.9226	270	22.3 - 134.6	17	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)		1.97	1.64	mg/Kg	2	2	98	82	68.4 - 113.1
4-Bromofluorobenzene (4-BFB)	[7] [8]	3.16	3.44	mg/Kg	2	2	158	172	66.7 - 134.3

Standard (ICV-1)

QC Batch: 56255 | Date Analyzed: 2009-01-23 | Analyzed By: LD

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	250	100	85 - 115	2009-01-23

[5] Matrix spike recovery out of control limits due to peak interference. Use LCS to demonstrate analysis is under control.
[6] Matrix spike recovery out of control limits due to peak interference. Use LCSD to demonstrate analysis is under control.
[7] High surrogate recovery due to peak interference.
[8] High surrogate recovery due to peak interference.

Standard (CCV-1)

QC Batch: 56255 | Date Analyzed: 2009-01-23 | Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	235	94	85 - 115	2009-01-23

Standard (CCV-2)

QC Batch: 56255 | Date Analyzed: 2009-01-23 | Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	238	95	85 - 115	2009-01-23

Standard (ICV-1)

QC Batch: 56291 | Date Analyzed: 2009-01-23 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2009-01-23

Standard (CCV-1)

QC Batch: 56291 | Date Analyzed: 2009-01-23 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.7	99	85 - 115	2009-01-23

Standard (ICV-1)

QC Batch: 56465 | Date Analyzed: 2009-01-29 | Analyzed By: ME

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0856	86	85 - 115	2009-01-29
Toluene		mg/Kg	0.100	0.102	102	85 - 115	2009-01-29

continued ...

standard continued ...

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		mg/Kg	0.100	0.104	104	85 - 115	2009-01-29
Xylene		mg/Kg	0.300	0.293	98	85 - 115	2009-01-29

Standard (CCV-1)

QC Batch: 56465 Date Analyzed: 2009-01-29 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0910	91	85 - 115	2009-01-29
Toluene		mg/Kg	0.100	0.108	108	85 - 115	2009-01-29
Ethylbenzene		mg/Kg	0.100	0.111	111	85 - 115	2009-01-29
Xylene		mg/Kg	0.300	0.339	113	85 - 115	2009-01-29

Standard (ICV-1)

QC Batch: 56469 Date Analyzed: 2009-01-29 Analyzed By: ME

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.890	89	85 - 115	2009-01-29

Standard (CCV-1)

QC Batch: 56469 Date Analyzed: 2009-01-29 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.01	101	85 - 115	2009-01-29

Work Order #

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 115-640 3610

PROJECT NAME: COG/GJ West COOP Unit Well #47

Eddy County, NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
185447	11/20/09		S		X	AH-1 0-0.5'	1				X			X											X				
450	11/20/09		S		X	AH-2 0-1.0'	1				X			X											X				
451	11/20/09		S		X	AH-2 1'-1.5'	1				X			X											X				
452	11/20/09		S		X	AH-3 0-0.5'	1				X			X											X				

RELINQUISHED BY: (Signature) — Date: 11/21/09 Time: 4:30
RECEIVED BY: (Signature) — Date: 11-21-09 Time: 4:30
SAMPLED BY: (Print & Initial) Ray Taylor RAT — Date: 11/21/09 Time:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.8°C, Intact

REMARKS: Run 2 BTEX on the highest TPH All tests Midland

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

Summary Report

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

Report Date: February 18, 2009

Work Order: 9021330

Project Location: Eddy Co., NM
Project Name: COG/GJ West Co-op Unit Well #47
Project Number: 115-6403610

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
187522	T-1 1.0' Bottom	soil	2009-02-12	00:00	2009-02-13
187523	T-1 2.0' (1.0' BEB)	soil	2009-02-12	00:00	2009-02-13
187524	T-2 1.0'	soil	2009-02-12	00:00	2009-02-13

Sample - Field Code		TPH DRO DRO (mg/Kg)		TPH GRO GRO (mg/Kg)
187522 - T-1 1.0' Bottom		<50.0		<1.00

Sample: 187522 - T-1 1.0' Bottom

Param	Flag	Result	Units	RL
Chloride		**323**	mg/Kg	4.00

Sample: 187523 - T-1 2.0' (1.0' BEB)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 187524 - T-2 1.0'

Param	Flag	Result	Units	RL
Chloride		**323**	mg/Kg	4.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft Worth, Texas 76132 817•201•5260
E-Mail lab@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: February 18, 2009

Work Order: 9021330

Project Location: Eddy Co., NM
Project Name: COG/GJ West Co-op Unit Well #47
Project Number: 115-6403610

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
187522	T-1 1.0' Bottom	soil	2009-02-12	00:00	2009-02-13
187523	T-1 2.0' (1.0' BEB)	soil	2009-02-12	00:00	2009-02-13
187524	T-2 1.0'	soil	2009-02-12	00:00	2009-02-13

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

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/GJ West Co-op Unit Well #47 were received by TraceAnalysis, Inc. on 2009-02-13 and assigned to work order 9021330. Samples for work order 9021330 were received intact at a temperature of 5.4 deg. C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	48592	2009-02-16 at 10:56	56886	2009-02-16 at 14:43
TPH DRO	Mod. 8015B	48608	2009-02-16 at 10:00	56899	2009-02-16 at 16:03
TPH GRO	S 8015B	48575	2009-02-15 at 13:00	56885	2009-02-15 at 13:26

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 9021330 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 187522 - T-1 1.0' Bottom

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56886	Date Analyzed:	2009-02-16	Analyzed By:	AR
Prep Batch:	48592	Sample Preparation:	2009-02-16	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**323**		mg/Kg	50	4.00

Sample: 187522 - T-1 1.0' Bottom

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	56899	Date Analyzed:	2009-02-16	Analyzed By:	LD
Prep Batch:	48608	Sample Preparation:	2009-02-16	Prepared By:	LD

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		111	mg/Kg	1	100	111	10 - 250.4

Sample: 187522 - T-1 1.0' Bottom

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	56885	Date Analyzed:	2009-02-15	Analyzed By:	AG
Prep Batch:	48575	Sample Preparation:	2009-02-15	Prepared By:	AG

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		<1.00		mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.829	mg/Kg	1	1.00	83	68.5 - 119.4
4-Bromofluorobenzene (4-BFB)		1.12	mg/Kg	1	1.00	112	52 - 117

Sample: 187523 - T-1 2.0' (1.0' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56886	Date Analyzed:	2009-02-16	Analyzed By:	AR
Prep Batch:	48592	Sample Preparation:	2009-02-16	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 187524 - T-2 1.0'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56886	Date Analyzed:	2009-02-16	Analyzed By:	AR
Prep Batch:	48592	Sample Preparation:	2009-02-16	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**323**	mg/Kg	50	4.00

Method Blank (1) QC Batch: 56885

QC Batch:	56885	Date Analyzed:	2009-02-15	Analyzed By:	AG
Prep Batch:	48575	QC Preparation:	2009-02-15	Prepared By:	AG

Parameter	Flag	MDL Result	Units	RL
GRO		<0.482	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.851	mg/Kg	1	1.00	85	75.8 - 98.5
4-Bromofluorobenzene (4-BFB)		0.623	mg/Kg	1	1.00	62	56.5 - 109.5

Method Blank (1) QC Batch: 56886

QC Batch:	56886	Date Analyzed:	2009-02-16	Analyzed By:	AR
Prep Batch:	48592	QC Preparation:	2009-02-16	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.01	mg/Kg	4

Method Blank (1) QC Batch: 56899

QC Batch: 56899 Date Analyzed: 2009-02-16 Analyzed By: LD
Prep Batch: 48608 QC Preparation: 2009-02-16 Prepared By: LD

Parameter	Flag	MDL Result	Units	RL
DRO		<12.0	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		97.8	mg/Kg	1	100	98	30.9 - 146.4

Laboratory Control Spike (LCS-1)

QC Batch: 56885 Date Analyzed: 2009-02-15 Analyzed By: AG
Prep Batch: 48575 QC Preparation: 2009-02-15 Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	6.55	mg/Kg	1	10.0	<0.482	66	60.5 - 100.1

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	6.50	mg/Kg	1	10.0	<0.482	65	60.5 - 100.1	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)	0.927	0.913	mg/Kg	1	1.00	93	91	78.8 - 104.7
4-Bromofluorobenzene (4-BFB)	0.714	0.699	mg/Kg	1	1.00	71	70	66.1 - 107.3

Laboratory Control Spike (LCS-1)

QC Batch: 56886 Date Analyzed: 2009-02-16 Analyzed By: AR
Prep Batch: 48592 QC Preparation: 2009-02-16 Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.8	mg/Kg	1	100	<2.01	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	100	mg/Kg	1	100	<2.01	100	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: 56899 | Date Analyzed: 2009-02-16 | Analyzed By: LD
Prep Batch: 48608 | QC Preparation: 2009-02-16 | Prepared By: LD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	218	mg/Kg	1	250	<12.0	87	27.8 - 152.1

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	226	mg/Kg	1	250	<12.0	90	27.8 - 152.1	4	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-Triacontane	115	118	mg/Kg	1	100	115	118	38 - 130.4

Matrix Spike (MS-1) Spiked Sample: 187522

QC Batch: 56885 | Date Analyzed: 2009-02-15 | Analyzed By: AG
Prep Batch: 48575 | QC Preparation: 2009-02-15 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	9.71	mg/Kg	1	10.0	<0.482	97	12.8 - 175.2

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	11.0	mg/Kg	1	10.0	<0.482	110	12.8 - 175.2	12	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)	1.08	1.17	mg/Kg	1	1	108	117	60.8 - 132.1
4-Bromofluorobenzene (4-BFB)	1.27	1.26	mg/Kg	1	1	127	126	31.3 - 161.7

Matrix Spike (MS-1) Spiked Sample: 187522

QC Batch: 56886 | Date Analyzed: 2009-02-16 | Analyzed By: AR
Prep Batch: 48592 | QC Preparation: 2009-02-16 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	5750	mg/Kg	50	5000	323	108	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	5820	mg/Kg	50	5000	323	110	85 - 115	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: 187517

QC Batch: 56899 | Date Analyzed: 2009-02-16 | Analyzed By: LD
Prep Batch: 48608 | QC Preparation: 2009-02-16 | Prepared By: LD

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	235	mg/Kg	1	250	<12.0	94	18 - 179.5

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	268	mg/Kg	1	250	<12.0	107	18 - 179.5	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-Triacontane	129	136	mg/Kg	1	100	129	136	34.1 - 158

Standard (ICV-1)

QC Batch: 56885 | Date Analyzed: 2009-02-15 | Analyzed By: AG

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.907	91	85 - 115	2009-02-15

Standard (CCV-1)

QC Batch: 56885 Date Analyzed: 2009-02-15 Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.01	101	85 - 115	2009-02-15

Standard (ICV-1)

QC Batch: 56886 Date Analyzed: 2009-02-16 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	105	105	85 - 115	2009-02-16

Standard (CCV-1)

QC Batch: 56886 Date Analyzed: 2009-02-16 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	95.2	95	85 - 115	2009-02-16

Standard (ICV-1)

QC Batch: 56899 Date Analyzed: 2009-02-16 Analyzed By: LD

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	266	106	85 - 115	2009-02-16

Standard (CCV-1)

QC Batch: 56899 Date Analyzed: 2009-02-16 Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	248	99	85 - 115	2009-02-16

Work Order # 109130

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 115-6403610

PROJECT NAME: COG/ GJ West Coop Unit well #47

Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
187522	2/12/09		S		X	T-1 1.0' Bottom	1				X			X											X				
523	2/12/09		S		X	T-1 2.0' (1.0' BEB)	1				X														X				
52A	2/12/09		S		X	T-2 1.0'	1				X														X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 2/13/09 Time: 1410	RECEIVED BY: (Signature)	Date: 2-13-09 Time: 14:10
SAMPLED BY: (Print & Initial) Ray Tayl	Date: 2/12/09 Time:		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND-DELIVERED UPS	AIRBILL #: OTHER:		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez	Results by:		
RECEIVING LABORATORY: Trace ADDRESS: CITY: Midland STATE: TX ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE: TIME:		RUSH Charges Authorized: Yes No
SAMPLE CONDITION WHEN RECEIVED: 5.4°C, intact	REMARKS: All tests Midland.		

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