CONCHO

March 27, 2019

Mike Bratcher
Oil Conservation Division, District 2
811 S First St.
Artesia, NM 88210

Crystal Weaver
Bureau of Land Management, CFO
620 E. Green Street
Carlsbad, NM 88220

Closure Report
Michalada Federal #3D
API#: 30-015-35157
RP#: 2RP-4246
DOR: June 9, 2017
GPS: 32.4255753, -104.3826447
Unit Letter B, Section 03, Township 22 South, Range 25 East
Eddy County, New Mexico

Mr. Bratcher/Ms. Weaver,

COG Operating, LLC (COG) is pleased to submit the following closure report in response to a release that occurred at the Michalada Federal #003D. The release is located in Unit Letter B, Section 03, Township 22 South and Range 25 East in Eddy County, New Mexico. More specifically the latitude and longitude for the release are 32.4255753 North and -104.35157 West.

BACKGROUND

The release was discovered on June 9, 2017. A C-141 initial report was submitted to the New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM). The initial C-141 is presented in Appendix A. The release was due to a suspected bullet hole in the tank resulted in the release of approximately six (6) barrels (bbls) of produced water. Vacuum trucks were utilized to recover approximately two (2) bbls of produced water. The release was within an unlined berm. A hand auger and drilling rig were utilized to collect soil samples from this area.

Remediation activities were conducted in accordance with the NMOCD/BLM approved work plan which is provided as Appendix II.

REMEDIAL ACTIONS

- The impacted area was excavated to a depth of three (3) feet BGS.
- On September 11, 2018, one confirmation sample was collect from the floor of the excavation and analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) by EPA Method 8021B, total petroleum hydrocarbons (TPH) by EPA Method 8015 modified and chloride SM4500 Cl B. Bottom Hole-1 3' exhibited BTEX concentrations below the method detection limit of <0.300 mg/kg, TPH concentrations of 36.6 mg/kg, and a chloride concentration of 1,260 mg/kg.
- All of the excavated material was hauled to an NMOCD approved solid waste disposal facility.
- The excavation was backfilled with clean "like" material and contoured to match the surrounding terrain.

DEFERMENT REQUEST

The facility is currently active. During initial delineation activities the impacts were defined. Due to safety issues due to proximity to the tanks and other associated equipment, COG requests deferment of the impacted soil until abandonment of the facility. The signed C-141 Final is included herein.

Should you have any questions or concerns please do not hesitate to contact me.

Sincerely,

Rebecca Haskell

Rebecca Haskell
Senior HSE Coordinator
rhaskell@concho.com

Enclosed:

Appendix I: Site Diagram with Confirmation Sample Point
Appendix II: Laboratory Analytical Report and Chain-of Custody Documentation for Confirmation Samples
Appendix III: Approved Work Plan
Appendix IV: Initial C-141 (Copy)
Appendix V: Final C-141

Michalada Federal #3D

32.4255753 -104.35157

CARDINAL Laboratories

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

September 13, 2018

SHELDON HITCHCOCK

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: MICHALADA #3 D

Enclosed are the results of analyses for samples received by the laboratory on 09/12/18 12:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	09/12/2018	Sampling Date:	09/11/2018
Reported:	09/13/2018	Sampling Type:	Soil
Project Name:	MICHALADA #3 D	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: BOTTOM HOLE - 1 3' (H802582-01)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/13/2018	ND	2.04	102	2.00	1.48	
Toluene*	<0.050	0.050	09/13/2018	ND	1.91	95.7	2.00	1.35	
Ethylbenzene*	<0.050	0.050	09/13/2018	ND	1.92	96.0	2.00	1.08	
Total Xylenes*	<0.150	0.150	09/13/2018	ND	5.74	95.6	6.00	1.20	
Total BTEX	<0.300	0.300	09/13/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *90.3 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1260**	16.0	09/13/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/12/2018	ND	205	103	200	3.31	
DRO >C10-C28*	**36.6**	10.0	09/12/2018	ND	205	102	200	1.23	
EXT DRO >C28-C36	<10.0	10.0	09/12/2018	ND					

Surrogate: 1-Chlorooctane *95.6 %* *41-142*

Surrogate: 1-Chlorooctadecane *94.8 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Concho Resources	**BILL TO**	
Project Manager:	Sheldon Hitchcock	P.O. #:	
Address:	2407 Pecos Avenue	Company:	COG
City:	Artesia	State: NM Zip: 88210	Attn: Robert McNeill
Phone #:	575-703-6475	Fax #:	Address:
Project #:		Project Owner: Concho	City:
Project Name:	MICHALADA 3D		State: Zip:
Project Location:			Phone #:
Sampler Name:	DAKOTA NEEL		Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: TPH EXTENDED	BTEX	CHLORIDES
H802582-1	BOTTOM HOLE - 1 3rd		1			X					X		9-11-18	9:30AM	X	X	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: DTO	Date: 9-12-18 Time: 12:00 PM	Received By: Tamara Oldaker	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	2.1° #97	Sample Condition Cool: ☐ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) TO

REMARKS: RUSH

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

SITE INFORMATION

Report Type: Work Plan 2RP-4246

General Site Information:						
Site:	**Michalada Federal #3D**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit B**	**Sec. 03**	**T 22S**	**R 25E**		
Lease Number:	**API No. 30-015-35157**					
County:	**Eddy County**					
GPS:	**32.4255753º N**			**104.3826447º W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of NM 524 and Jones St, travel west on Jones Rd for approx. 4.3 miles, turn north onto lease road for 1.1 miles, turn north onto lease road for 2.10 mi to location					

Release Data:	
Date Released:	6/9/2017
Type Release:	Produced Water
Source of Contamination:	Tank
Fluid Released:	6 bbls
Fluids Recovered:	2 bbls

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

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	***0***	*100'-125'*
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	***0***	*0*
Total Ranking Score:	***0***	

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

TETRA TECH

April 16, 2018

Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating LLC., Michalada Federal #3D, Unit B, Section 03, Township 22 South, Range 25 East, Eddy County, New Mexico.
2RP-4246.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess and evaluate a release that occurred at Michalada Federal #3D, Unit B, Section 03, Township 22 South, Range 25 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.4255753º, W 104.3826447º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on June 9, 2017, and released approximately six (6) barrels of produced water due to a suspected bullet hole in the water tank. A vacuum truck was used to remove all freestanding fluids, recovering approximately two (2) barrels of produced water. All of the fluids remained inside the unlined berm and impacted an area measuring approximately 6' x 15'. The Initial C-141 Form is included in Appendix A.

Groundwater

No wells are listed within Section 6 in the New Mexico Office of the State Engineers database, the USGS National Water Information System, or the Geology and Groundwater Resources of Eddy County, NM (Report 3). The nearest well listed is located in Section 33, Township 21 South, Range 25 East, approximately 1.20 miles northwest of the site, and shows a depth to groundwater of 60' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 100' and 125' below surface. The groundwater data is shown in Appendix B.

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

TETRA TECH

Regulatory

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

Soil Assessment and Analytical Results

Hand Auger

On August 23, 2017, Tetra Tech personnel were onsite to evaluate and sample the release area. One (1) auger hole (AH-1) was installed inside the release footprint to a total depth of 1.0' below surface. Deeper samples were not collected due to a dense formation in the area. Selected samples were analyzed for TPH analysis by EPA method 8015 modified and BTEX by EPA Method 8021B. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The auger hole location is shown on Figure 3. The sampling results are summarized in Table 1.

Referring to Table 1, the area of auger hole (AH-1) showed a benzene concentration below the laboratory reporting limits and a total BTEX concentration below the RRAL of 1.17 mg/kg. Additionally, a total TPH concentration of 4,960 mg/kg was detected at 0-1' below surface. The area of auger hole (AH-1) showed an elevated chloride concentration of 2,940 mg/kg at 0-1'.

Borehole Installation

Based on the laboratory results, Tetra Tech returned to the site on December 13, 2017 to install a borehole (BH-1) to the vertically define extents. Selected samples were analyzed for TPH analysis by EPA method 8015 modified and BTEX by EPA Method 8021B. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The borehole location is shown on Figure 3. The sampling results are summarized in Table 1.

Referring to Table 1, none of the borehole samples showed benzene concentrations above the RRAL. However, the total BTEX concentration spiked at 4-5.0' below surface to 787 mg/kg, before declining with depth to 5.05 mg/kg at 6.0'-7.0' and 0.0947 mg/kg at 9.0'-10' below surface. In addition, the total TPH concentrations were below the RRALs, with a TPH high of 1,090 mg/kg at 4-5.0' below surface. A chloride high of 4,460 mg/kg was detected at 0-1', which declined with depth to 1,630 mg/kg at 2-3.0' and 66.5 mg/kg at 4-5.0', and showed a bottom hole concentration of 408 mg/kg at 9-10' below surface.

TETRA TECH

Work Plan

The lithology in the area of borehole (BH-1) consisted of sand, limestone and chert in the upper soils to an approximate depth of 2-3.0' and is underlain by a sandy clay to a depth of approximately 4-5.0' below surface. The lithology of the deeper soils consists of primarily a dense limestone encountered below the clay layer. The elevated total BTEX concentration detected at 4-5.0' below surface appears to be limited and confined on the top of the clay formation (thin layer), which is preventing further vertical migration. The limited impact does not appear to be an environmental concern.

Based on the laboratory results and investigation, COG proposes to excavate the area of borehole (BH-1) to approximately 2-3.0' below surface, as practicable due to the tanks, lines and the dense formation in the area. Once the excavation is complete, the areas will then be backfilled with clean material to surface grade. All of the excavated material will be transported offsite for proper disposal.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

Conclusion

Upon completion, a final report detailing the remediation activities will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call at (432) 682-4559.

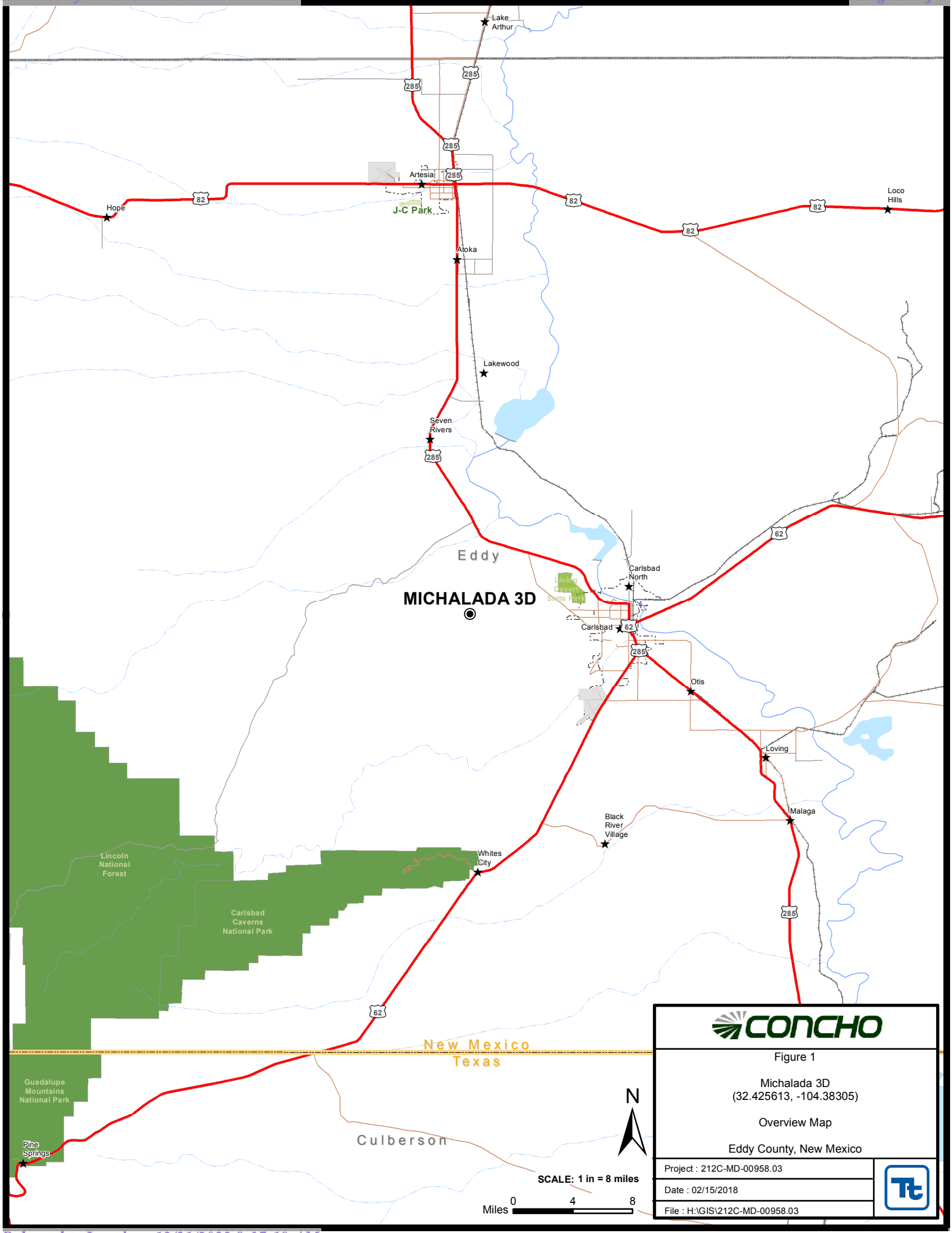
Respectfully submitted,
TETRA TECH

Clair Gonzales,
Project Manager

Ike Tavarez,
Senior Project Manager, P.G.

cc: Robert McNeill – COG
Dakota Neel – COG
Rebecca Haskell – COG
Crystal Weaver - NMOCD
Shelly Tucker - BLM

Figures



CONCHO

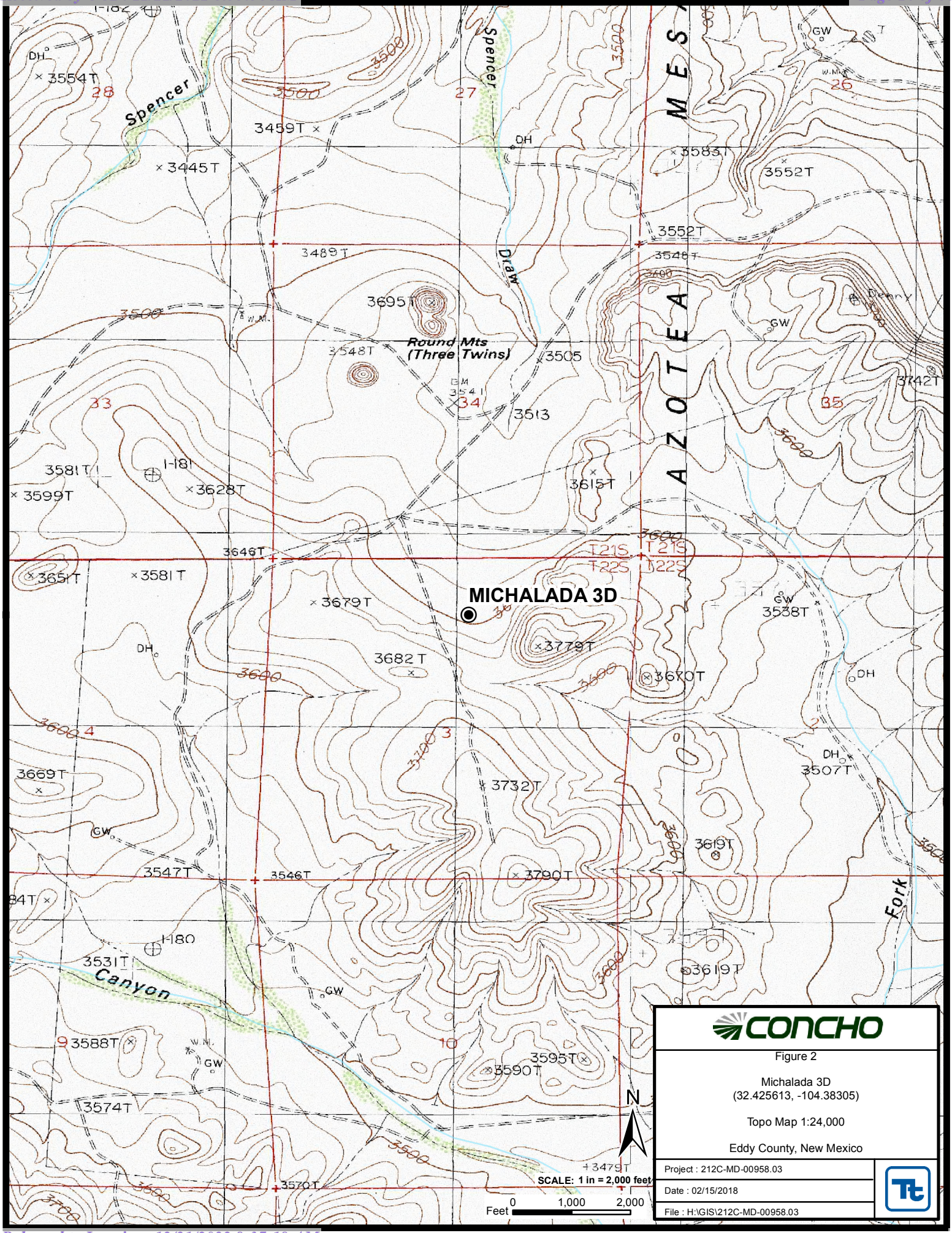
Figure 1

Michalada 3D
(32.425613, -104.38305)

Overview Map

Eddy County, New Mexico

Project : 212C-MD-00958.03	
Date : 02/15/2018	
File : H:\GIS\212C-MD-00958.03	



CONCHO

Figure 2

Michalada 3D
(32.425613, -104.38305)

Topo Map 1:24,000

Eddy County, New Mexico

Project : 212C-MD-00958.03

Date : 02/15/2018

File : H:\GIS\212C-MD-00958.03


SPILL AREA
6'x15'
Above Ground Line
Above Ground Line
BH-1
AH-1
N
SCALE: 1 IN = 20 FEET
Feet 0 10 20
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BOREHOLE SAMPLE LOCATIONS
SPILL AREA
CONCHO
Figure 3
Michalada 3D
(32.425613, -104.38305)
Spill Assessment Map
Eddy County, New Mexico
Project : 212C-MD-00958.03
Date : 02/15/2018
File : H:\GIS\212C-MD-00958.03


SPILL AREA
6'x15'
Above Ground Line
Above Ground Line
BH-1
AH-1
2' - 3' DEEP
N
SCALE: 1 IN = 20 FEET
Feet 0 10 20
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BOREHOLE SAMPLE LOCATIONS
PROPOSED EXCAVATION AREA
CONCHO
Figure 4
Michalada 3D
(32.425613, -104.38305)
Proposed Excavation Area & Depths Map
Eddy County, New Mexico
Project : 212C-MD-00958.03
Date : 02/15/2018
File : H:\GIS\212C-MD-00958.03

Tables

Table 1
COG Operating LLC.
Michalada Federal #3D
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	C6-C10	C10-C28	C28-C35	Total						
AH-1	8/23/2017	0-1	X		704	3,800	459	4,960	<0.00200	0.1570	0.0991	0.911	1.170	**2,940**
BH-1	12/13/2017	0-1	X		16.5	115	<15.0	132	<0.00200	<0.00200	<0.00200	0.018	0.0178	**4,460**
	"	2-3	X		218	466	26.0	710	<0.00201	0.0653	0.159	0.983	1.21	**1,630**
	"	4-5	X		555	509	24.7	1,090	0.0445	50.8	97.3	639	**787**	66.5
	"	6-7	X		-	-	-	-	<0.0101	0.0225	0.497	4.53	5.05	370
	"	9-10	X		-	-	-	-	<0.0101	<0.0101	<0.0101	0.0947	0.0947	408

Proposed Excavation Depths

(-) Not Analyzed

Photos

COG Operating LLC
Michalada Federal #3D
Eddy County, New Mexico

TETRA TECH

View North – Release Area

View Northwest – Release Area

COG Operating LLC
Michalada Federal #3D
Eddy County, New Mexico

TETRA TECH

View Southeast – Release Area

View North – Area of BH-1

Appendix A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Repo

Name of Company: COG Operating LLC OGRID # 229137	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Michalada Federal #003D	Facility Type: Tank Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-35157

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	03	22S	25E	990	North	2287	East	Eddy

Latitude 32.4255753 **Longitude** -104.3826447

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 6 bbls	Volume Recovered: 2 bbls
Source of Release: Tank	Date and Hour of Occurrence: June 9, 2017 6:30 am	Date and Hour of Discovery: June 9, 2017 6:30 am
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The release was due to suspected bullet hole in the tank. The tank was repaired.

Describe Area Affected and Cleanup Action Taken.*

The release was within an unlined berm. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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: Rebecca Haskell	OIL CONSERVATION DIVISION
Printed Name: Rebecca Haskell	Approved by Environmental Specialist:
Title: Senior HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: rhaskell@concho.com	Conditions of Approval: / Attached ☐
Date: June 12, 2017 Phone: 432-683-7443	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG Michalada Federal #3D
Eddy County, New Mexico

21 South 24 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

21 South 25 East

6	5	4	3 65	2	1
7	8	9	10	11	12
18	17 220	16	15	14	13
19	20	21	22 260	23	24
30	29	28	27	26 90	25
31	32	33 60	34	35	36

21 South 26 East

6	5 65	4	3 140	2 120	1 89
7 66	8 170	9 150	10 115	11	12
18 150 240	17 174 178 35	16 139 65	15 93 65	14	13 76 170
19 254	20 210	21 70	22 55	23 36 34	24 50 43
30 115	29 220	28 75 190	27	26 40	25 41 40
31 200	32 164	33 45 120	34	35 90	36 23 26

22 South 24 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

22 South 25 East

6	5	4	3	2	1 20
7	8 30 43	9 150	10	11	12
18	17	16	15 150	14	13 20
19 60 59 75	20	21	22	23	24
30	29 60 50	28 52	27 100	26	25
31	32	33	34	35	36

22 South 26 East

6	5	4 68	3 140 135	2 105	1 32 41
7	8	9 73	10 95	11 60 60	12 32 45
18	17	16	15	14 68 30	13 45 60
19	20 180	21	22	23 78	24 85 108
30	29	28 140	27 96	26 71	25 96
31 105	32	33	34	35 150	36 115

23 South 24 East

6	5	4	3	2	1
7	8	9	10	11 238	12
18	17	16 175	15	14 18 20	13
19	20	21	22	23	24
30	29 170	28 663	27	26	25
31	32	33 90	34	35	36

23 South 25 East

6 485	5	4	3	2	1
7	8	9 593	10 75 55	11	12 90
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 511	36

23 South 26 East

6	5	4	3 220	2	1
7	8 267	9	10	11	12
18	17	16	15	14	13
19	20	21	22 224	23	24
30 99	29	28	27	26	25
31	32 223	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

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 00959		C	ED	1	1	1	27	22S	25E	557349	3581495*			
C 00960		C	ED	3	1	2	28	22S	25E	556534	3581303*	69	52	17
C 00961		C	ED	4	1	2	19	22S	25E	553461	3582890*	80	60	20
C 00988		C	ED			4	01	22S	25E	561503	3586854*	55	20	35
C 01288		C	ED		1	4	20	22S	25E	554996	3582193*	800		
C 01492		C	ED	1	2	4	30	22S	25E	553689	3580659*			
C 01738		C	ED	4	2	3	16	22S	25E	556273	3583728*	204		
C 01758		C	ED	4	2	3	16	22S	25E	556273	3583728*			
C 01856		C	ED			4	09	22S	25E	556774	3585236*	460		
C 02362			ED	1	3	3	29	22S	25E	554108	3580247*	83	60	23
C 02874		C	ED	4	3	2	11	22S	25E	559796	3585738*	740	385	355
C 03552 POD1		C	ED	4	4	2	15	22S	25E	558548	3584192	250	150	100

Average Depth to Water: **121 feet**

Minimum Depth: **20 feet**

Maximum Depth: **385 feet**

Record Count: 12

PLSS Search:

Township: 22S **Range:** 25E

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
C 00107		CUB	ED	4	3	3	09	21S	25E	555822	3594647*	300		
C 00384		C	ED	1	4	1	17	21S	25E	554431	3593935	994	220	774
C 00384 CLW201180	O		ED	3	2	1	17	21S	25E	554411	3594236*	994	220	774
C 00384 CLW201207	O		ED	3	2	1	17	21S	25E	554411	3594236*	994	220	774
C 00550		C	ED	1	1	2	11	21S	25E	559689	3596136*	97		
C 00885		C	ED	3	4	2	05	21S	25E	555204	3597091*	348		
C 00885 POD2		C	ED	3	4	2	05	21S	25E	555204	3597091*	379	348	31
C 01041		C	ED	3	3	3	03	21S	25E	557260	3596343*	85	65	20
C 01166		C	ED		1	3	11	21S	25E	558976	3595176*	550		
C 01399		C	LE	3	3	2	15	21S	25E	558068	3593839*	200		
C 01451		C	ED		3	3	22	21S	25E	557373	3591507*	290	260	30
C 01455		C	ED		3	2	26	21S	25E	559780	3590713*	125	90	35
C 01456	R	C	ED		2	2	33	21S	25E	557012	3589339	60	17	43
C 01456 POD2		C	ED	4	2	2	33	21S	25E	557012	3589339	80	60	20
C 01470		C	ED		2	4	06	21S	25E	553698	3596774*	284	264	20
C 02066		C	ED	3	3	3	04	21S	25E	555616	3596280*	120	97	23
C 02268			ED	1	4	3	11	21S	25E	559277	3594853*	30	25	5
C 02643		C	ED		3	3	03	21S	25E	557361	3596444*	145	33	112
C 02731		C	ED	1	3	4	18	21S	25E	553218	3593208*	233	60	173
C 03618 POD1		C	ED	2	2	1	03	21S	25E	557943	3597754	160	80	80

Average Depth to Water: **137 feet**
Minimum Depth: **17 feet**
Maximum Depth: **348 feet**

Record Count: 20

PLSS Search:

Township: 21S **Range:** 25E

***UTM location was derived from PLSS - see Help**

Appendix C

Analytical Report 561388

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

COG- Michalda Federal #3D

212C-MD-00958

31-AUG-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

31-AUG-17

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **561388**
COG- Michalda Federal #3D
Project Address: Eddy County, New Mexico

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 561388. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 561388 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 561388

Tetra Tech- Midland, Midland, TX

COG- Michalda Federal #3D

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH#1 (0-1')	S	08-23-17 00:00		561388-001

CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: COG- Michalda Federal #3D

Project ID: *212C-MD-00958*
Work Order Number(s): *561388*

Report Date: *31-AUG-17*
Date Received: *08/25/2017*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3026156 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 561388

Tetra Tech- Midland, Midland, TX

Project Name: COG- Michalda Federal #3D

Project Id: 212C-MD-00958
Contact: Ike Tavarez
Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Aug-25-17 12:30 pm
Report Date: 31-AUG-17
Project Manager: Kelsey Brooks

Analysis Requested								
	Lab Id:	561388-001						
	Field Id:	AH#1 (0-1')						
	Depth:							
	Matrix:	SOIL						
	Sampled:	Aug-23-17 00:00						
BTEX by EPA 8021B	***Extracted:***	Aug-28-17 16:00						
	Analyzed:	Aug-29-17 08:05						
	Units/RL:	mg/kg	RL					
Benzene		<0.00200	0.00200					
Toluene		0.157	0.00200					
Ethylbenzene		0.0991	0.00200					
m,p-Xylenes		0.664	0.00399					
o-Xylene		0.247	0.00200					
Total Xylenes		0.911	0.00200					
Total BTEX		1.17	0.00200					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-29-17 16:15						
	Analyzed:	Aug-30-17 00:48						
	Units/RL:	mg/kg	RL					
Chloride		2940	24.7					
TPH By SW8015 Mod	***Extracted:***	Aug-28-17 16:00						
	Analyzed:	Aug-29-17 06:02						
	Units/RL:	mg/kg	RL					
Gasoline Range Hydrocarbons (GRO)		704	15.0					
Diesel Range Organics (DRO)		3800	15.0					
Oil Range Hydrocarbons (ORO)		459	15.0					
Total TPH		4960	15.0					

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

Final 1.000

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: COG- Michalda Federal #3D

Work Orders : 561388,

Project ID: 212C-MD-00958

Lab Batch #: 3026146 **Sample:** 561388-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/29/17 06:02

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.8	102	70-135	
o-Terphenyl	47.7	49.9	96	70-135	

Lab Batch #: 3026156 **Sample:** 561388-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/29/17 08:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0268	0.0300	89	80-120	
4-Bromofluorobenzene	0.0337	0.0300	112	80-120	

Lab Batch #: 3026156 **Sample:** 730048-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/28/17 22:01

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0241	0.0300	80	80-120	

Lab Batch #: 3026146 **Sample:** 730045-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/29/17 01:51

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.4	100	93	70-135	
o-Terphenyl	47.5	50.0	95	70-135	

Lab Batch #: 3026156 **Sample:** 730048-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/28/17 20:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0274	0.0300	91	80-120	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG- Michalda Federal #3D

Work Orders : 561388,

Project ID: 212C-MD-00958

Lab Batch #: 3026146 **Sample:** 730045-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/29/17 02:12

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.6	100	92	70-135	
o-Terphenyl	44.5	50.0	89	70-135	

Lab Batch #: 3026156 **Sample:** 730048-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/28/17 20:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0292	0.0300	97	80-120	
4-Bromofluorobenzene	0.0260	0.0300	87	80-120	

Lab Batch #: 3026146 **Sample:** 730045-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/29/17 02:33

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.6	100	100	70-135	
o-Terphenyl	50.1	50.0	100	70-135	

Lab Batch #: 3026156 **Sample:** 561227-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/28/17 21:06

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0295	0.0300	98	80-120	
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Lab Batch #: 3026146 **Sample:** 561389-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/29/17 03:14

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	99.8	111	70-135	
o-Terphenyl	49.3	49.9	99	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG- Michalda Federal #3D

Work Orders : 561388,

Project ID: 212C-MD-00958

Lab Batch #: 3026156 **Sample:** 561227-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/28/17 21:23

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0282	0.0300	94	80-120	
4-Bromofluorobenzene	0.0251	0.0300	84	80-120	

Lab Batch #: 3026146 **Sample:** 561389-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/29/17 03:35

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	88.4	99.8	89	70-135	
o-Terphenyl	41.0	49.9	82	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: COG- Michalda Federal #3D

Work Order #: 561388 **Project ID:** 212C-MD-00958

Analyst: ALJ **Date Prepared:** 08/28/2017 **Date Analyzed:** 08/28/2017

Lab Batch ID: 3026156 **Sample:** 730048-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0994	0.116	117	0.100	0.119	119	3	70-130	35	
Toluene	<0.00199	0.0994	0.113	114	0.100	0.115	115	2	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.112	113	0.100	0.114	114	2	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.220	111	0.200	0.225	113	2	70-135	35	
o-Xylene	<0.00199	0.0994	0.106	107	0.100	0.109	109	3	71-133	35	

Analyst: MNV **Date Prepared:** 08/29/2017 **Date Analyzed:** 08/29/2017

Lab Batch ID: 3026248 **Sample:** 730075-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	247	99	250	247	99	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: COG- Michalda Federal #3D

Work Order #: 561388 **Project ID:** 212C-MD-00958

Analyst: ARM **Date Prepared:** 08/28/2017 **Date Analyzed:** 08/29/2017

Lab Batch ID: 3026146 **Sample:** 730045-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	898	90	1000	952	95	6	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	967	97	1000	1020	102	5	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: COG- Michalda Federal #3D

Work Order # : 561388 **Project ID:** 212C-MD-00958

Lab Batch ID: 3026156 **QC- Sample ID:** 561227-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/28/2017 **Date Prepared:** 08/28/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.100	99	0.101	0.0962	95	4	70-130	35	
Toluene	<0.00202	0.101	0.0908	90	0.101	0.0865	86	5	70-130	35	
Ethylbenzene	<0.00202	0.101	0.0785	78	0.101	0.0805	80	3	71-129	35	
m,p-Xylenes	<0.00403	0.202	0.151	75	0.202	0.154	76	2	70-135	35	
o-Xylene	<0.00202	0.101	0.0750	74	0.101	0.0786	78	5	71-133	35	

Lab Batch ID: 3026248 **QC- Sample ID:** 560863-007 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/29/2017 **Date Prepared:** 08/29/2017 **Analyst:** MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	998	247	1220	90	247	1200	82	2	90-110	20	X

Lab Batch ID: 3026248 **QC- Sample ID:** 561383-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/29/2017 **Date Prepared:** 08/29/2017 **Analyst:** MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1290	245	1560	110	245	1560	110	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: COG- Michalda Federal #3D

Work Order # : 561388 **Project ID:** 212C-MD-00958

Lab Batch ID: 3026146 **QC- Sample ID:** 561389-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/29/2017 **Date Prepared:** 08/28/2017 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	1050	105	998	893	89	16	70-135	35	
Diesel Range Organics (DRO)	99.9	998	1120	102	998	988	89	13	70-135	35	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

561388

Client Name: COG	**Site Manager:** Ike Tavarez
Project Name: Michalda Federal #3D	
Project Location: (county, state) Eddy County,New Mexico	**Project #:** 212C-MD-00958
Invoice to: COG	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:**
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2017 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance			Hold
	AH#1 (0-1')	8/23/2017			X				X			1	N	X		X												X						

Relinquished by: Date: 8-25-17 Time: 1230
Received by: Date: 8/25/17 Time: 12:30

Relinquished by: Date: Time:
Received by: Date: Time:

Relinquished by: Date: Time:
Received by: Date: Time:

ORIGINAL COPY

LAB USE ONLY

Sample Temperature

(Circle) HAND DELIV

REMARKS:

STANDARD

☐ RUSH: Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

Temp: 3.8 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 3.6

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 08/25/2017 12:30:00 PM

Work Order #: 561388

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.6
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**No**
#21 VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Shawnee Smith Date: 08/28/2017

Shawnee Smith

Checklist reviewed by: Kelsey Brooks Date: 08/29/2017

Kelsey Brooks

Analytical Report 571334

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

Michalada 3D

212C-MD-00958.03

04-JAN-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

04-JAN-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **571334**
Michalada 3D
Project Address: Eddy Co, NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 571334. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 571334 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 571334

Tetra Tech- Midland, Midland, TX

Michalada 3D

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1 0-1	S	12-13-17 00:00		571334-001
BH-1 2-3	S	12-13-17 00:00		571334-002
BH-1 4-5	S	12-13-17 00:00		571334-003
BH-1 6-7	S	12-13-17 00:00		571334-004
BH-1 9-10	S	12-13-17 00:00		571334-005
BH-1 14-15	S	12-13-17 00:00		Not Analyzed
BH-1 19-20	S	12-13-17 00:00		Not Analyzed
BH-1 24-25	S	12-13-17 00:00		Not Analyzed
BH-1 29-30	S	12-13-17 00:00		Not Analyzed

CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: Michalada 3D

Project ID: *212C-MD-00958.03*
Work Order Number(s): *571334*

Report Date: *04-JAN-18*
Date Received: *12/15/2017*

Sample receipt non conformances and comments:

01/02/18: added Btex to samples BH-1 @ 6-7 AND 9-10' per Clair Gonzales.

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3036930 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Surrogate 1,4-Difluorobenzene, Surrogate 4-Bromofluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 571334-003.

Batch: LBA-3037056 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3037292 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 571334

Tetra Tech- Midland, Midland, TX

Project Name: Michalada 3D

Project Id: 212C-MD-00958.03
Contact: Ike Tavarez
Project Location: Eddy Co, NM

Date Received in Lab: Fri Dec-15-17 01:00 pm
Report Date: 04-JAN-18
Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	571334-001		571334-002		571334-003		571334-004		571334-005	
	Field Id:	BH-1 0-1		BH-1 2-3		BH-1 4-5		BH-1 6-7		BH-1 9-10	
	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Dec-13-17 00:00		Dec-13-17 00:00		Dec-13-17 00:00		Dec-13-17 00:00		Dec-13-17 00:00	
BTEX by EPA 8021B	***Extracted:***	Dec-26-17 10:00		Dec-26-17 10:00		Dec-26-17 16:00		Jan-02-18 10:30		Jan-02-18 10:30	
	Analyzed:	Dec-26-17 16:14		Dec-26-17 16:33		Dec-27-17 06:48		Jan-02-18 18:16		Jan-02-18 15:33	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00200	0.00200	<0.00201	0.00201	0.0445	0.00200	<0.0101	0.0101	<0.0101	0.0101
Toluene		<0.00200	0.00200	0.0653	0.00201	50.8 D	2.50	0.0225 K	0.0101	<0.0101	0.0101
Ethylbenzene		<0.00200	0.00200	0.159	0.00201	97.3 D	2.50	0.497 K	0.0101	<0.0101	0.0101
m,p-Xylenes		0.0113	0.00399	0.745	0.00402	508 D	5.00	3.34 K	0.0202	0.0691 K	0.0201
o-Xylene		0.00646	0.00200	0.238	0.00201	131 D	2.50	1.19 K	0.0101	0.0256 K	0.0101
Total Xylenes		0.0178	0.00200	0.983	0.00201	639	2.50	4.53 K	0.0101	0.0947 K	0.0101
Total BTEX		0.0178	0.00200	1.21	0.00201	787	0.00200	5.05 K	0.0101	0.0947 K	0.0101
Inorganic Anions by EPA 300/300.1	***Extracted:***	Dec-20-17 08:30		Dec-20-17 08:30		Dec-20-17 08:30		Dec-20-17 08:30		Dec-20-17 08:30	
	Analyzed:	Dec-20-17 13:29		Dec-20-17 13:36		Dec-20-17 13:43		Dec-20-17 13:50		Dec-20-17 13:57	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4460	49.8	1630	24.8	66.5	4.96	370	4.95	408	4.95
TPH By SW8015 Mod	***Extracted:***	Dec-26-17 12:00		Dec-26-17 12:00		Dec-26-17 12:00					
	Analyzed:	Dec-26-17 21:31		Dec-26-17 21:51		Dec-26-17 22:10					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		16.5	15.0	218	15.0	555	15.0				
Diesel Range Organics (DRO)		115	15.0	466	15.0	509	15.0				
Oil Range Hydrocarbons (ORO)		<15.0	15.0	26.0	15.0	24.7	15.0				
Total TPH		132	15.0	710	15.0	1090	15.0				

Kelsey Brooks
Project Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: Michalada 3D

Work Orders : 571334,

Project ID: 212C-MD-00958.03

Lab Batch #: 3037056 **Sample:** 571334-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 16:14

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0251	0.0300	84	80-120	
4-Bromofluorobenzene	0.0275	0.0300	92	80-120	

Lab Batch #: 3037056 **Sample:** 571334-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 16:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0244	0.0300	81	80-120	
4-Bromofluorobenzene	0.0301	0.0300	100	80-120	

Lab Batch #: 3036940 **Sample:** 571334-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 21:31

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	77.3	100	77	70-135	
o-Terphenyl	40.9	50.0	82	70-135	

Lab Batch #: 3036940 **Sample:** 571334-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 21:51

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	78.9	100	79	70-135	
o-Terphenyl	41.3	50.0	83	70-135	

Lab Batch #: 3036940 **Sample:** 571334-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 22:10

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	85.8	100	86	70-135	
o-Terphenyl	42.7	50.0	85	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Michalada 3D

Work Orders : 571334,

Project ID: 212C-MD-00958.03

Lab Batch #: 3036930 **Sample:** 571334-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/27/17 06:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	<	0.0300	0	80-120	**
4-Bromofluorobenzene	<	0.0300	0	80-120	**

Lab Batch #: 3036930 **Sample:** 571334-003 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/27/17 16:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0279	0.0300	93	80-120	
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Lab Batch #: 3037292 **Sample:** 571334-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/02/18 15:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0246	0.0300	82	80-120	
4-Bromofluorobenzene	0.0250	0.0300	83	80-120	

Lab Batch #: 3037292 **Sample:** 571334-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/02/18 18:16

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0248	0.0300	83	80-120	
4-Bromofluorobenzene	0.0303	0.0300	101	80-120	

Lab Batch #: 3037056 **Sample:** 7636696-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/26/17 10:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0243	0.0300	81	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Michalada 3D

Work Orders : 571334,

Project ID: 212C-MD-00958.03

Lab Batch #: 3036940 **Sample:** 7636626-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/26/17 13:19

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	79.4	100	79	70-135	
o-Terphenyl	39.1	50.0	78	70-135	

Lab Batch #: 3036930 **Sample:** 7636627-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/27/17 10:23

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0288	0.0300	96	80-120	
4-Bromofluorobenzene	0.0253	0.0300	84	80-120	

Lab Batch #: 3037292 **Sample:** 7636850-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/02/18 12:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0252	0.0300	84	80-120	

Lab Batch #: 3037056 **Sample:** 7636696-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/26/17 08:31

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0339	0.0300	113	80-120	
4-Bromofluorobenzene	0.0325	0.0300	108	80-120	

Lab Batch #: 3036940 **Sample:** 7636626-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/26/17 13:38

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	89.5	100	90	70-135	
o-Terphenyl	44.0	50.0	88	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Michalada 3D

Work Orders : 571334,

Project ID: 212C-MD-00958.03

Lab Batch #: 3036930 **Sample:** 7636627-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/27/17 08:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0247	0.0300	82	80-120	

Lab Batch #: 3037292 **Sample:** 7636850-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/02/18 11:03

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0340	0.0300	113	80-120	
4-Bromofluorobenzene	0.0329	0.0300	110	80-120	

Lab Batch #: 3037056 **Sample:** 7636696-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/26/17 08:50

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0341	0.0300	114	80-120	
4-Bromofluorobenzene	0.0339	0.0300	113	80-120	

Lab Batch #: 3036940 **Sample:** 7636626-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/26/17 13:58

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	84.1	100	84	70-135	
o-Terphenyl	45.7	50.0	91	70-135	

Lab Batch #: 3036930 **Sample:** 7636627-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/27/17 08:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0242	0.0300	81	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Michalada 3D

Work Orders : 571334,

Project ID: 212C-MD-00958.03

Lab Batch #: 3037292 **Sample:** 7636850-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/02/18 11:22

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0325	0.0300	108	80-120	
4-Bromofluorobenzene	0.0337	0.0300	112	80-120	

Lab Batch #: 3037056 **Sample:** 572035-035 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 09:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0274	0.0300	91	80-120	
4-Bromofluorobenzene	0.0277	0.0300	92	80-120	

Lab Batch #: 3036940 **Sample:** 572053-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 14:40

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.5	100	91	70-135	
o-Terphenyl	39.0	50.0	78	70-135	

Lab Batch #: 3036930 **Sample:** 572053-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/27/17 09:06

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0274	0.0300	91	80-120	
4-Bromofluorobenzene	0.0285	0.0300	95	80-120	

Lab Batch #: 3037292 **Sample:** 572380-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/02/18 11:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0343	0.0300	114	80-120	
4-Bromofluorobenzene	0.0339	0.0300	113	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Michalada 3D

Work Orders : 571334,

Project ID: 212C-MD-00958.03

Lab Batch #: 3037056 **Sample:** 572035-035 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 09:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0287	0.0300	96	80-120	

Lab Batch #: 3036940 **Sample:** 572053-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/26/17 15:00

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	38.3	50.0	77	70-135	

Lab Batch #: 3036930 **Sample:** 572053-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/27/17 09:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0283	0.0300	94	80-120	

Lab Batch #: 3037292 **Sample:** 572380-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/02/18 12:00

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0345	0.0300	115	80-120	
4-Bromofluorobenzene	0.0354	0.0300	118	80-120	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: Michalada 3D

Work Order #: 571334 **Project ID:** 212C-MD-00958.03

Analyst: ALJ **Date Prepared:** 12/26/2017 **Date Analyzed:** 12/27/2017

Lab Batch ID: 3036930 **Sample:** 7636627-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.125	124	0.101	0.120	119	4	70-130	35	
Toluene	<0.00202	0.101	0.117	116	0.101	0.111	110	5	70-130	35	
Ethylbenzene	<0.00202	0.101	0.108	107	0.101	0.103	102	5	71-129	35	
m,p-Xylenes	<0.00404	0.202	0.214	106	0.201	0.203	101	5	70-135	35	
o-Xylene	<0.00202	0.101	0.102	101	0.101	0.0959	95	6	71-133	35	

Analyst: ALJ **Date Prepared:** 12/26/2017 **Date Analyzed:** 12/26/2017

Lab Batch ID: 3037056 **Sample:** 7636696-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0996	0.0748	75	0.100	0.0752	75	1	70-130	35	
Toluene	<0.00199	0.0996	0.0748	75	0.100	0.0765	77	2	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0759	76	0.100	0.0777	78	2	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.161	81	0.201	0.160	80	1	70-135	35	
o-Xylene	<0.00199	0.0996	0.0773	78	0.100	0.0791	79	2	71-133	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: Michalada 3D

Work Order #: 571334 **Project ID:** 212C-MD-00958.03

Analyst: ALJ **Date Prepared:** 01/02/2018 **Date Analyzed:** 01/02/2018

Lab Batch ID: 3037292 **Sample:** 7636850-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.0777	78	0.101	0.0798	79	3	70-130	35	
Toluene	<0.00200	0.100	0.0771	77	0.101	0.0795	79	3	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0922	92	0.101	0.0944	93	2	71-129	35	
m,p-Xylenes	<0.00401	0.200	0.180	90	0.201	0.185	92	3	70-135	35	
o-Xylene	<0.00200	0.100	0.0880	88	0.101	0.0899	89	2	71-133	35	

Analyst: LRI **Date Prepared:** 12/20/2017 **Date Analyzed:** 12/20/2017

Lab Batch ID: 3036429 **Sample:** 7636277-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	259	104	250	262	105	1	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: Michalada 3D

Work Order #: 571334 **Project ID:** 212C-MD-00958.03

Analyst: JUM **Date Prepared:** 12/26/2017 **Date Analyzed:** 12/26/2017

Lab Batch ID: 3036940 **Sample:** 7636626-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	774	77	1000	804	80	4	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	796	80	1000	834	83	5	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Michalada 3D

Work Order # : 571334 **Project ID:** 212C-MD-00958.03

Lab Batch ID: 3036930 **QC- Sample ID:** 572053-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/27/2017 **Date Prepared:** 12/26/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.0890	89	0.100	0.0935	94	5	70-130	35	
Toluene	<0.00200	0.100	0.0748	75	0.100	0.0837	84	11	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0562	56	0.100	0.0670	67	18	71-129	35	X
m,p-Xylenes	<0.00401	0.200	0.102	51	0.201	0.132	66	26	70-135	35	X
o-Xylene	0.00312	0.100	0.0664	63	0.100	0.0734	70	10	71-133	35	X

Lab Batch ID: 3037056 **QC- Sample ID:** 572035-035 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/26/2017 **Date Prepared:** 12/26/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.0474	47	0.100	0.0528	53	11	70-130	35	X
Toluene	<0.00202	0.101	0.0426	42	0.100	0.0490	49	14	70-130	35	X
Ethylbenzene	<0.00202	0.101	0.0477	47	0.100	0.0538	54	12	71-129	35	X
m,p-Xylenes	<0.00403	0.202	0.0942	47	0.200	0.107	54	13	70-135	35	X
o-Xylene	<0.00202	0.101	0.0459	45	0.100	0.0504	50	9	71-133	35	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Michalada 3D

Work Order # : 571334 **Project ID:** 212C-MD-00958.03

Lab Batch ID: 3037292 **QC- Sample ID:** 572380-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/02/2018 **Date Prepared:** 01/02/2018 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.0656	66	0.101	0.0535	53	20	70-130	35	X
Toluene	<0.00200	0.100	0.0584	58	0.101	0.0455	45	25	70-130	35	X
Ethylbenzene	<0.00200	0.100	0.0587	59	0.101	0.0450	45	26	71-129	35	X
m,p-Xylenes	0.00547	0.200	0.114	54	0.201	0.0871	41	27	70-135	35	X
o-Xylene	0.00256	0.100	0.0617	59	0.101	0.0472	44	27	71-133	35	X

Lab Batch ID: 3036429 **QC- Sample ID:** 571265-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/20/2017 **Date Prepared:** 12/20/2017 **Analyst:** LRI

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	232	248	485	102	248	484	102	0	90-110	20	

Lab Batch ID: 3036429 **QC- Sample ID:** 571663-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/20/2017 **Date Prepared:** 12/20/2017 **Analyst:** LRI

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1010	250	1230	88	250	1240	92	1	90-110	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Michalada 3D

Work Order # : 571334 **Project ID:** 212C-MD-00958.03

Lab Batch ID: 3036940 **QC- Sample ID:** 572053-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/26/2017 **Date Prepared:** 12/26/2017 **Analyst:** JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	944	94	1000	955	96	1	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	775	78	1000	833	83	7	70-135	35	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

Page 1 of 1

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

571334

Client Name: COG

Site Manager: Ike Tavarez

Project Name: Michalada 3D

Project Location: (county, state) Eddy Co NM

Project #: 212C-MD-00958.03

Invoice to: COG

Receiving Laboratory: Xenco

Sampler Signature: Alan Cenzales

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)
	BH-1 0-1	12/13/17			X				X			1	
	" 2-3				X				X			1	
	" 4-5				X				X			1	
	" 6-7				X				X			1	
	" 9-10				X				X			1	
	" 14-15 HOLD				X				X			1	
	" 19-20 HOLD				X				X			1	
	" 24-25 HOLD				X				X			1	
	" 29-30 HOLD				X				X			1	
												1	

ANALYSIS REQUEST
(Circle or Specify Method No.)

BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Sulfate	TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	Hold
														X					
														X					
														X					
														X					
														X					

Temp: 2.0 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp:

Relinquished by: Date: 12/15/17 Time: 100
Received by: Date: 12-15-17 Time: 1:00

Relinquished by: Date: Time:
Received by: Date: Time:

Relinquished by: Date: Time:
Received by: Date: Time:

LAB USE ONLY
Sample Temperature

RUSH: Same Day 24 hr 48 hr 72 hr
Rush Charges Authorized
Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 12/15/2017 01:00:00 PM

Work Order #: 571334

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.1
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Connie Hernandez Date: 12/15/2017

Checklist reviewed by: Mike Kimmel Date: 12/21/2017

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Repo

Name of Company: COG Operating LLC OGRID # 229137	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Michalada Federal #003D	Facility Type: Tank Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-35157

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	03	22S	25E	990	North	2287	East	Eddy

Latitude 32.4255753 **Longitude** -104.3826447

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 6 bbls	Volume Recovered: 2 bbls
Source of Release: Tank	Date and Hour of Occurrence: June 9, 2017 6:30 am	Date and Hour of Discovery: June 9, 2017 6:30 am
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The release was due to suspected bullet hole in the tank. The tank was repaired.

Describe Area Affected and Cleanup Action Taken.*

The release was within an unlined berm. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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: Rebecca Haskell	OIL CONSERVATION DIVISION
Printed Name: Rebecca Haskell	Approved by Environmental Specialist:
Title: Senior HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: rhaskell@concho.com	Conditions of Approval: / Attached ☐
Date: June 12, 2017 Phone: 432-683-7443	

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: COG Operating LLC OGRID # 229137	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Michalada Federal #003D	Facility Type: Tank Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-35157

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	03	22S	25E	990	North	2287	East	Eddy

Latitude 32.4255753 **Longitude** -104.3826447

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 6 bbls	Volume Recovered: 2 bbls
Source of Release: Tank	Date and Hour of Occurrence: June 9, 2017 6:30 am	Date and Hour of Discovery: June 9, 2017 6:30 am
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The release was due to suspected bullet hole in the tank. The tank was repaired.

Describe Area Affected and Cleanup Action Taken.*

The release was within an unlined berm. A vacuum truck was dispatched to remove all freestanding fluids. Concho conducted remediation activities per the NMOCD approved work plan.

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: Rebecca Haskell	OIL CONSERVATION DIVISION Approved by Environmental Specialist: Brittany Hall
Printed Name: Rebecca Haskell	
Title: Senior HSE Coordinator	Approval Date: 12/21/2022 Expiration Date: N/A
E-mail Address: rhaskell@concho.com	Conditions of Approval: N/A Attached ☐
Date: June 12, 2017 Phone: 432-683-7443	

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 169233

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 169233
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
bhall	None	12/21/2022