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Work Plan approved.

Sampling plan variance denied. OCD approves for confirmation samples to be collected every 400 square feet for sidewalls and base.

November 9, 2018

**APPROVED**

By Ashley Maxwell at 1:51 pm, Dec 08, 2022

Olivia Yu and Christina Hernandez  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division, District 1  
1625 French Drive  
Hobbs, NM 88240

**Re: Site Assessment Summary and Proposed Remediation Plan**  
**Mas Federal Com #002H**  
**API No. 30-015-44214**  
**GPS: Latitude 32.53632 Longitude -103.54164**  
**UL "A", Sec. 34, T20S, R34E**  
**Lea County, NM**  
**NMOCD Ref. No. 1RP-5138**

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG), has prepared this *Site Assessment Summary and Proposed Remediation Plan* for the Release Site known as the **Mas Federal Com #002H**. Details of the release are summarized below:

RELEASE DETAILS			
Type of Release: Crude Oil & Produced Water		Volume of Release: 2 bbls Oil, 4 bbls Produced Water	
		Volume Recovered: 0 bbls	
Source of Release: Flowline		Date of Release: 7/29/18	Date of Discovery: 7/29/18
Was Immediate Notice Given?	No	If, YES, to Whom? NA	
Was a Watercourse Reached?	No	If YES, Volume Impacting the Watercourse: NA	
Surface Owner: D. Berry		Mineral Owner: Federal	
Describe Cause of Problem and Remedial Action Taken:			
The release was attributed to a hole in the housing. The affected housing has been repaired.			

The release was limited to an area measuring approximately 5,200 sq. ft. on an active caliche production pad.

Topographical and Aerial Maps are provided as Attachments #1 and #2. General Site Photographs are provided as Attachment #8. A Copy of the Initial Release Notification and Corrective Action (NMODC Form C-141) is provided as Attachment #9.

## REGULATORY FRAMEWORK

Surface impacts from unauthorized releases of crude oil, gases, produced water, condensate or other oil field waste which occur during normal oilfield operations are generally regulated by the New Mexico Oil Conservation Division (NMOCD) in accordance with 19.15.29 of the New Mexico Administrative Code (NMAC). 19.15.29 NMAC establishes reporting, site assessment, remediation and closure procedures based on the type and volume of the release and site characterizations, including proximity to sensitive receptors and depth to groundwater, which may be used to determine a Total Ranking Score as follows:

SITE RANKING CRITERIA		
General Site Characteristics		Score
Within 300 ft. of any continuously flowing or significant watercourse; Within 200 ft. of any lakebed, sinkhole, or playa lake; Within 300 ft. of an occupied permanent residence, school, hospital, or institution; Within 500 ft. of a spring or private, domestic fresh water well; Within 1,000 ft. of any fresh water well;	Yes	20
Within the incorporated municipal boundaries or within a municipal well field; Within 300 ft. of a wetland; Within the area overlying a subsurface mine; Within an unstable area; or Within a 100-year floodplain.	No	0
Minimum distance between any point within the horizontal boundary of the release and groundwater:	≤ 50 ft.	20
	51-100 ft.	10
	> 100 ft.	0

A search of a groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) was conducted to determine the average depth to groundwater within a 1 Mile radius of the release site and identify any registered water wells within a 1/2 Mile of the release site. If none were identified, the approximate depth to groundwater was extrapolated from a Depth to Groundwater Map utilized by the NMOCD. Depth to groundwater information is provided as Attachment #4.

TOTAL RANKING SCORE		
Ranking Score Criteria		Score
Within 300 ft. of any continuously flowing or significant watercourse?	No	0
Within 200 ft. of any lakebed, sinkhole, or playa lake?	No	0
Within 300 ft. of an occupied permanent residence, school, hospital, or institution?	No	0
Within 500 ft. of a spring or private, domestic fresh water well?	No	0
Within 1,000 ft. of any fresh water well?	No	0
Within the incorporated municipal boundaries or within a municipal well field?	No	0
Within 300 ft. of a wetland?	No	0
Within the area overlying a subsurface mine?	No	0
Within an unstable area?	No	0
Within a 100-year floodplain?	No	0
Private or domestic water sources within 1/2 Mile? If yes, what is the distance?	No	0
Significant watercourse within 1/2 Mile? If yes, what is the distance?	No	0
Inferred depth to groundwater	75-100 ft.	10
TOTAL RANKING SCORE FOR SITE		10

The NMOCD guidelines indicated the Site has a Total Ranking Score of **10 points**. The NMOCD Closure Criteria for Soil Impacted by a Release for a Site with a Total Ranking Score of **10 points** are as follows:

Closure Criteria for Soil Impacted by a Release	
Benzene	<b>10 mg/kg</b>
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	<b>50 mg/kg</b>
Total Petroleum Hydrocarbons (TPH)	<b>2,500 mg/kg</b>
Combined GRO and DRO	<b>1,000 mg/kg</b>
Chloride	<b>10,000 mg/kg</b>

### INITIAL SITE ASSESSMENT

On **June 20, 2018**, an initial site assessment was conducted at the Site. During the initial site assessment, **six (6) soil samples** were collected from multiple locations within the release margins in an effort to determine the vertical extent of soil impact. In addition, **six (6) soil samples** were collected from the inferred edges of the release margins in an effort to determine the horizontal extent of soil impact. The collected soil samples were submitted to an NMOCD-approved laboratory for analysis of BTEX, TPH and/or Chloride. A table summarizing laboratory analytical results from soil samples collected during the initial site assessment is provided below:

Concentrations of BTEX, TPH and/or Chloride in Soil											
Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					E 300
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C <sub>6</sub> -C <sub>10</sub> (mg/kg)	DRO C <sub>10</sub> -C <sub>28</sub> (mg/kg)	GRO + DRO C <sub>6</sub> -C <sub>28</sub> (mg/kg)	ORO C <sub>28</sub> -C <sub>35</sub> (mg/kg)	TPH C <sub>6</sub> -C <sub>35</sub> (mg/kg)	Chloride (mg/kg)
HA-1 @ 6"	8/6/2018	6"	In-Situ	<0.0193	<0.0193	<3.86	631	631	99.2	730.2	798
HA-1 @ 1'	8/6/2018	1'	In-Situ	<0.0200	<0.0200	<4.00	76.5	76.5	<25.1	76.5	76.4
HA-1 @ 2'	8/6/2018	2'	In-Situ	<0.0196	<0.0196	<3.91	<25.2	<25.2	<25.2	<25.2	17.0
HA-2 @ 6"	8/6/2018	6"	In-Situ	<0.0880	<0.088	<17.6	4,370	<b>4,370</b>	278	<b>4,648</b>	2,910
HA-2 @ 1'	8/6/2018	1'	In-Situ	<0.0181	<0.0181	<3.62	251	251	<24.9	251	1,330
HA-2 @ 2'	8/6/2018	2'	In-Situ	<0.0184	<0.0184	<3.68	136	136	<24.9	136	141
N @ 1'	8/6/2018	1'	In-Situ	<0.0192	<0.0192	<3.85	<25.1	<25.1	<25.1	<25.1	76.0
E1 @ 1'	8/6/2018	1'	In-Situ	<0.0193	<0.0193	<3.86	<24.9	<24.9	<24.9	<24.9	20.6
E2 @ 1'	8/6/2018	1'	In-Situ	<0.0174	<0.0174	<3.48	32.5	32.5	<25.2	32.5	53.5
S @ 1'	8/6/2018	1'	In-Situ	<0.0193	<0.0193	<3.85	130	130	<24.9	130	198
W1 @ 1'	8/6/2018	1'	In-Situ	<0.0194	<0.0194	<3.88	<25.2	<25.2	<25.2	<25.2	93.3
W2 @ 1'	8/6/2018	1'	In-Situ	<0.0172	<0.0172	<3.44	<25.1	<25.1	<25.1	<25.1	165
Closure Criteria				<b>10</b>	<b>50</b>	<b>-</b>	<b>-</b>	<b>1,000</b>	<b>-</b>	<b>2,500</b>	<b>10,000</b>

Field Data, if applicable, is provided as Attachment #5. Laboratory analytical reports are provided as Attachment #6. A "Site & Sample Location Map" is provided as Attachment #3.

## REMEDIATION PLAN

Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment, COG proposes the following remediation activities designed to advance the Release Site toward an NMOCD-approved closure:

- Excavate impacted soil within the release margins in the area characterized by sample point HA-2 to a depth of two (2) ft. bgs, or until laboratory analytical results from confirmation soil samples indicate concentrations of TPH and chloride are below the NMOCD Closure Criteria.
- Excavated soil will be temporarily stockpiled on-site, atop a poly liner, pending transportation under manifest to an NMOCD-approved disposal facility.
- Upon receiving favorable laboratory analytical results from confirmation soil samples (below the NMOCD Closure Criteria) excavated areas will be backfilled with locally sourced, non-impacted "like" material at or near original relative positions. The affected area will be contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable.

## SAMPLING PLAN

Upon completion of excavation activities, representative five-point composite excavation confirmation soil samples will be collected from the excavation sidewalls in each cardinal direction, representing no more than 100 linear ft. A minimum of one (1) representative five-point composite excavation confirmation soil sample will be collected from the base of the excavated area representing every 1,225 square feet, or an approximate 35 ft. by 35 ft. grid. For larger releases, the site will be divided into approximate quadrants and/or representative five-point composite excavation confirmation soil samples will be collected from the base of the excavated area representing every 2,500 square feet, or an approximate 50 ft. by 50 ft. grid. Additional "discrete" confirmation soil samples will be collected from wet or visibly stained areas inferred to have been affected by the release, as necessary. Excavation confirmation soil samples will be analyzed for constituents of concern present above the NMOCD Closure Criteria as determined during the Initial Site Assessment.

## TIMELINE AND ESTIMATED VOLUME OF SOIL TO BE REMEDIATED

Remediation activities are expected to be completed within 90 days of receiving necessary approval(s) of this *Site Assessment Summary and Proposed Remediation Plan*. Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment it is estimated that approximately **180 cubic yards** of soil has been affected above the NMOCD Closure Criteria.

## RESTORATION, RECLAMATION AND RE-VEGETATION

Areas affected by the release and associated remediation activities will be substantially restored to the condition which existed prior to the release to the maximum extent practicable. Excavated areas will be backfilled with locally sourced, non-impacted "like" material placed at or near original relative positions.

Final reclamation will consist of removing a maximum of four (4) ft. bgs of affected soil exhibiting chloride concentrations above 600 mg/kg, or the background concentration, which ever is greater. Soil samples will be collected from the excavation sidewalls for confirmation analysis. Upon reclaiming the affected area, the site will be reseeded in accordance with the landowner and/or applicable regulatory agency.

If you have any questions, or if additional information is required, please feel free to contact Becky Haskell or either of the undersigned by phone or email.

Respectfully,

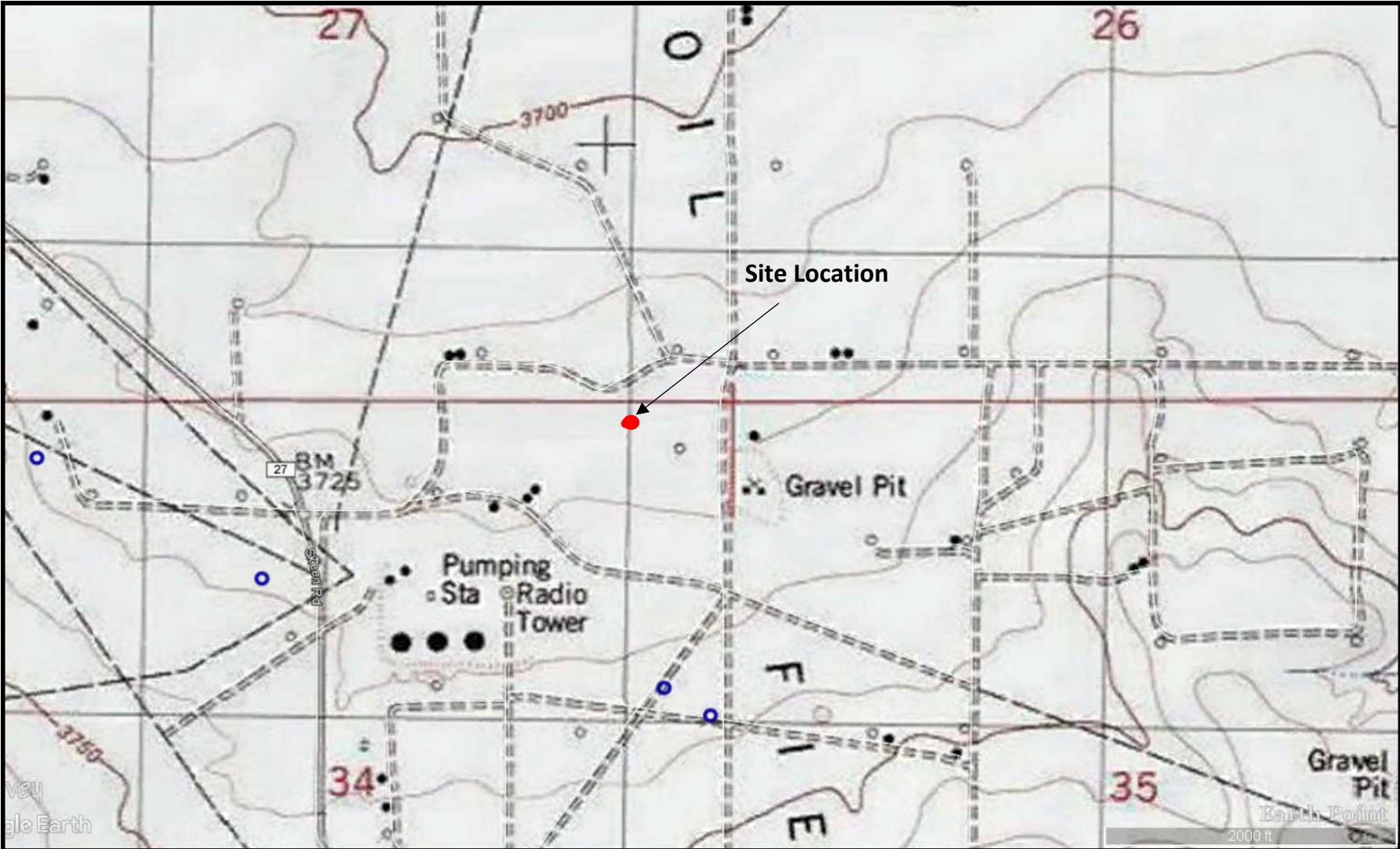



Joel Lowry  
Senior Project Manager  
TRC Environmental Corp.



Curt Stanley  
Senior Project Manager  
TRC Environmental Corp.









<b>Attachments:</b>	Attachment #1-	Figure 1 - Topographical Map
	Attachment #2-	Figure 2 - Aerial Map
	Attachment #3-	Figure 3 - Site & Sample Location Map
	Attachment #4-	Depth to Groundwater Information
	Attachment #5	Field Data
	Attachment #6-	Laboratory Analytical Reports
	Attachment #7-	Soil Profile
	Attachment #8-	General Site Photographs
	Attachment #9-	Release Notification and Corrective Action (FORM C-141)




LEGEND:  ● Site Location	<b>Figure 1</b>  Topographical Map COG Operating, LLC Mas Federal Com #002H Lea County, NM		 Results you can rely on
		Drafted by: ZC   Checked by: JL	
		Draft: March 7, 2018	
		GPS: 32.53632 -103.54164	
		UL "A", Sec. 34, T20S, R34E	
		TRC Proj. No: 312112	



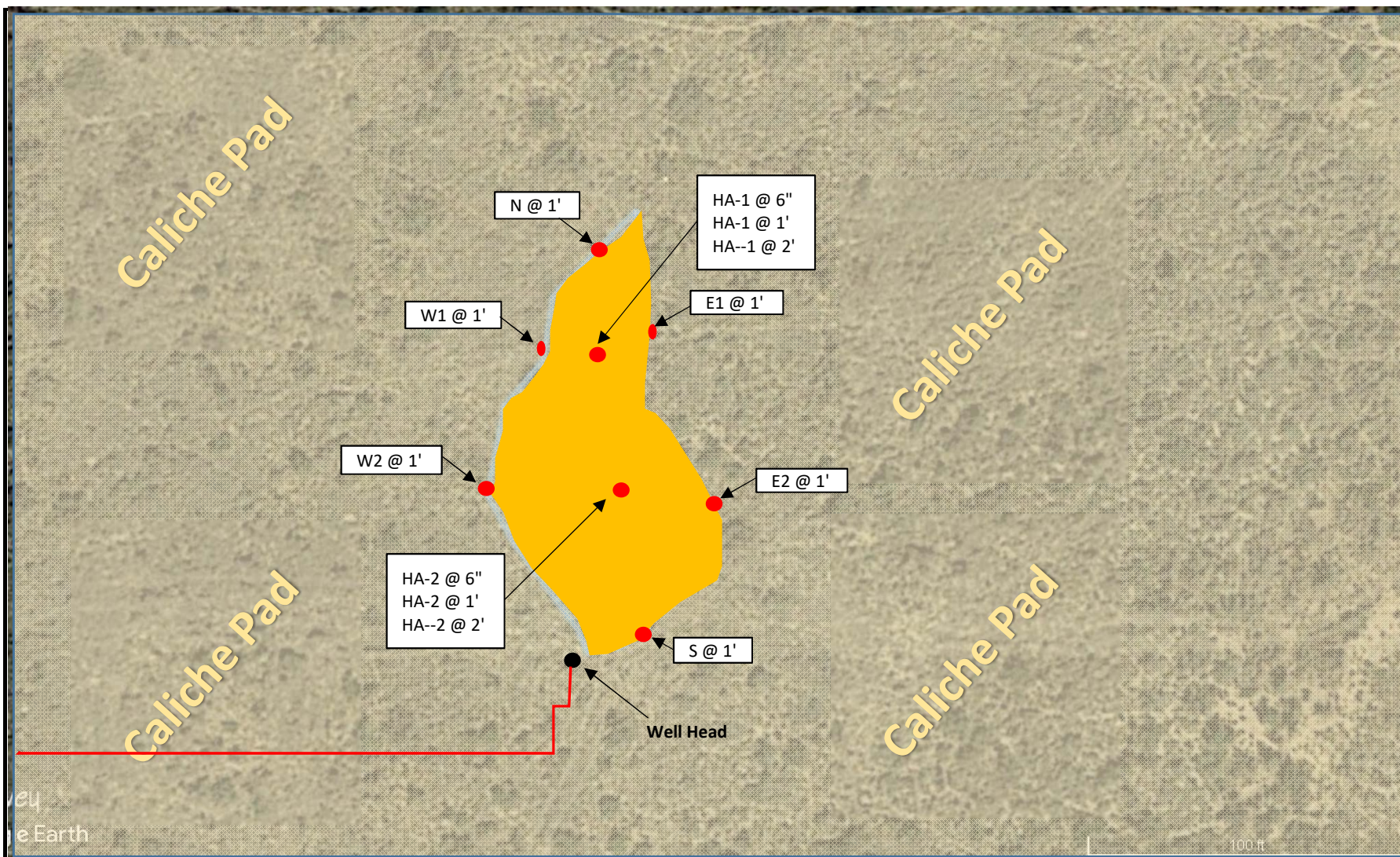


<b>LEGEND:</b>		<b>Figure 2</b>			
	Site Location		Non-Industrial Building	Drafted by: ZC   Checked by: JL	
	Fresh Water Well		Municipal Well Field	Draft: March 7, 2018	
	100-Year Floodplain		Subsurface Mine	GPS: 32.53632 -103.54164	
	High/Critical Karst		1/2 Mile Radius	UL "A", Sec. 34, T20S, R34E	
				TRC Proj. No: 312112	







Results you can rely on





**LEGEND:**

-  Inferred Release Margins
-  Soil Sample Location
-  Well Head
-  Pipeline

**Figure 3**

Site & Sample Location Map  
COG Operating, LLC  
Mas Federal Com #002H  
Lea County, NM

Scale 1" = 50'

Drafted by: ZC | Checked by: JL

Draft: March 7, 2018

GPS: 32.53632 -103.54164

UL "A", Sec. 34, T20S, R34E

TRC Proj. No: 312112





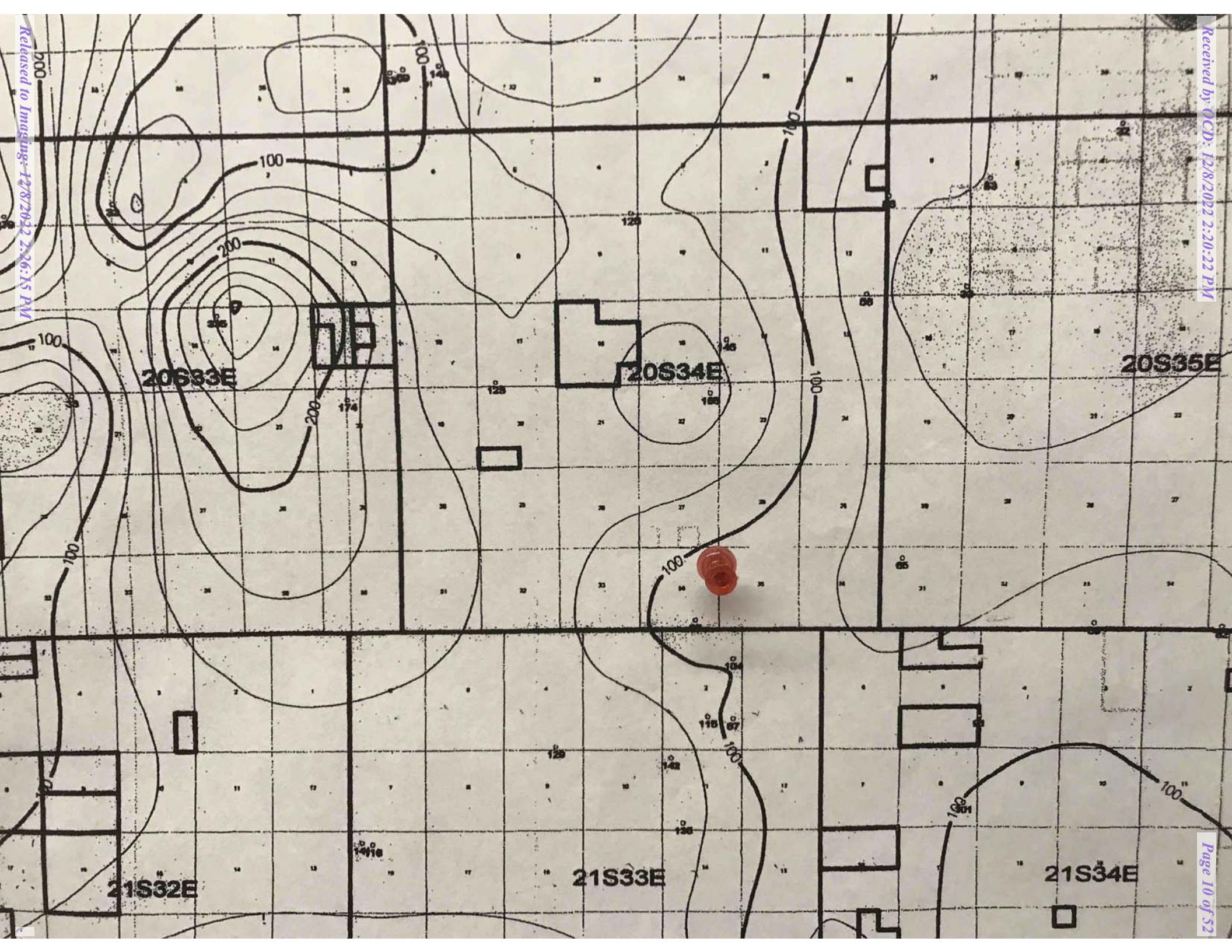


(In feet)

Maximum Depth: **1005 feet**

**Radius:** 1610

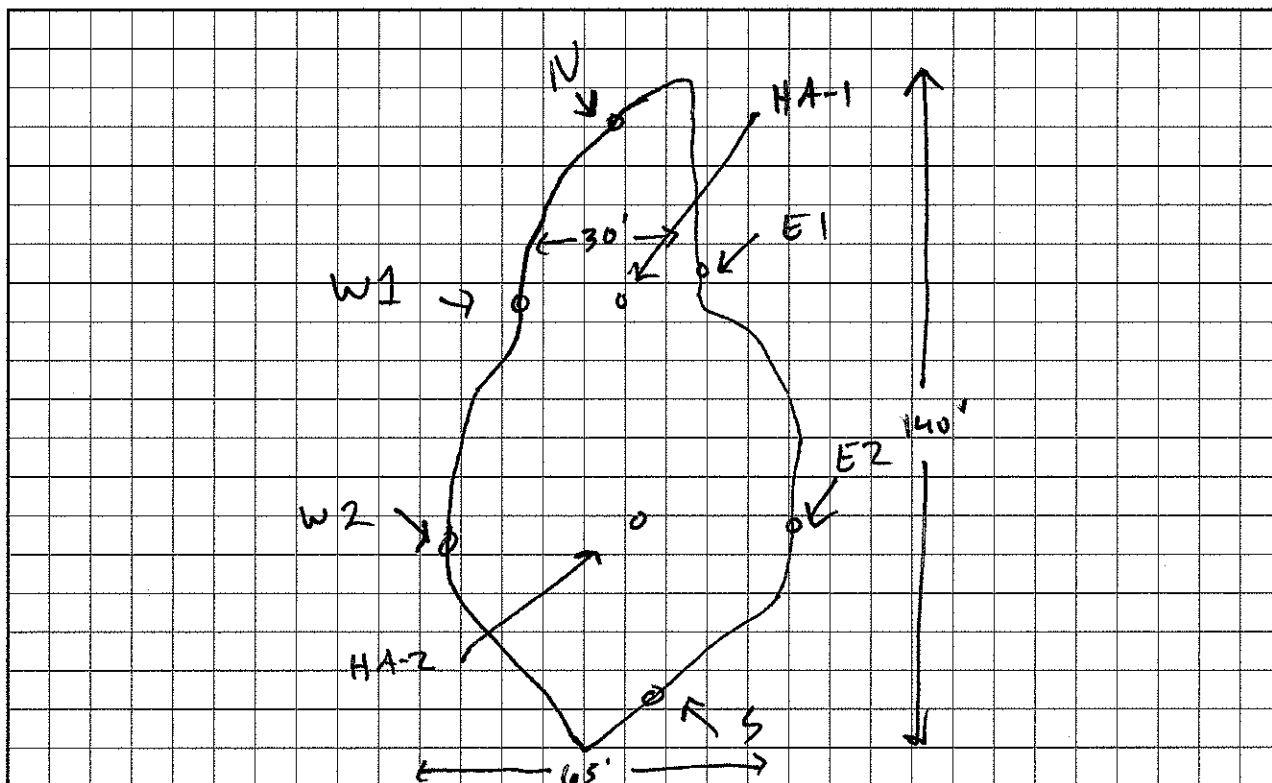
WATER COLUMN/ AVERAGE DEPTH TO  
WATER





Site Name: Mas Federal Com #002HDate: 8/6/2018

## Field Observation Log



ID	CI-	Odor/PID
HA-1-0'	798	Slight
HA-1-1'	76.4	None
HA-1-2'	17.0	None
GPS:		

ID	CI-	Odor/PID
HA-2-0'	2,910	Moderate
HA-2-1'	141	Slight
HA-2-2'	28.7	None
GPS:		

ID	CI-	Odor/PID
N01'	76.0	None
GPS:		

ID	CI-	Odor/PID
E101'	20.6	None
GPS:		

ID	CI-	Odor/PID
E201'	58.5	None
GPS:		

ID	CI-	Odor/PID
S01'	13.3	None
GPS:		

ID	CI-	Odor/PID
W101'	93.3	None
GPS:		

ID	CI-	Odor/PID
W201'	165	None
GPS:		

ID	CI-	Odor/PID
GPS:		



# Analytical Report 595034

for  
**TRC Solutions, Inc**

**Project Manager: Joel Lowry**

**Mas Federal Com #002H**

**22-AUG-18**

Collected By: Client



**6701 Aberdeen, Suite 9 Lubbock, TX 79424**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-27), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-13)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-17)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-16)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



22-AUG-18

Project Manager: **Joel Lowry**  
**TRC Solutions, Inc**  
2057 Commerce  
Midland, TX 79703

Reference: XENCO Report No(s): **595034**  
**Mas Federal Com #002H**  
Project Address:

**Joel Lowry:**

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) 595034. 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. 595034 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,

A handwritten signature in black ink, appearing to read 'Kelsey Brooks', written over a horizontal line.

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

**Sample Cross Reference 595034****TRC Solutions, Inc, Midland, TX**

Mas Federal Com #002H

<b>Sample Id</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Sample Depth</b>	<b>Lab Sample Id</b>
HA-1 @ 6"	S	08-06-18 09:00	6 In	595034-001
HA-1 @ 1'	S	08-06-18 09:05	1 ft	595034-002
HA-1 @ 2'	S	08-06-18 09:10	2 ft	595034-003
HA-2 @ 6"	S	08-06-18 09:15	6 In	595034-004
HA-2 @ 1'	S	08-06-18 09:20	1 ft	595034-005
HA-2 @ 2'	S	08-06-18 09:25	2 ft	595034-006
N @ 1'	S	08-06-18 09:30	1 ft	595034-007
E1 @ 1'	S	08-06-18 09:35	1 ft	595034-008
E2 @ 1'	S	08-06-18 09:40	1 ft	595034-009
S @ 1'	S	08-06-18 09:45	1 ft	595034-010
W1 @ 1'	S	08-06-18 09:50	1 ft	595034-011
W2 @ 1'	S	08-06-18 09:55	1 ft	595034-012



**CASE NARRATIVE****Client Name: TRC Solutions, Inc****Project Name: Mas Federal Com #002H**

Project ID:

Work Order Number(s): 595034

Report Date: 22-AUG-18

Date Received: 08/07/2018

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**Sample receipt non conformances and comments:**None

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**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3059752 BTEX by EPA 8021B

Sample 595034-004 was diluted due to hydrocarbons beyond xylenes.

Batch: LBA-3059761 TPH GRO by EPA 8015 Mod.

Surrogate a,a,a-Trifluorotoluene recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7660258-1-BLK. Sample 595034-004 was diluted due to excessive hydrocarbons beyond xylenes.

Batch: LBA-3059782 DRO-ORO By SW8015B

Surrogate Tricosane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 595034-002 S, 595034-002 SD, 595034-004, 595034-002, 595034-001, 595034-005, 595034-009, 595034-010, 595034-006.

Surrogate n-Triacontane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 595034-004, 595034-005, 595034-010.



# Certificate of Analysis Summary 595034

TRC Solutions, Inc, Midland, TX

Project Name: Mas Federal Com #002H

Project Id:

Contact: Joel Lowry

Project Location:

Date Received in Lab: Tue Aug-07-18 05:10 pm

Report Date: 22-AUG-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	595034-001	595034-002	595034-003	595034-004	595034-005	595034-006
	<i>Field Id:</i>	HA-1 @ 6"	HA-1 @ 1'	HA-1 @ 2'	HA-2 @ 6"	HA-2 @ 1'	HA-2 @ 2'
	<i>Depth:</i>	6- In	1- ft	2- ft	6- In	1- ft	2- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Aug-06-18 09:00	Aug-06-18 09:05	Aug-06-18 09:10	Aug-06-18 09:15	Aug-06-18 09:20	Aug-06-18 09:25
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00
	<i>Analyzed:</i>	Aug-11-18 22:29	Aug-12-18 01:10	Aug-12-18 01:37	Aug-12-18 07:24	Aug-12-18 07:50	Aug-12-18 02:03
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.0193 0.0193	<0.0200 0.0200	<0.0196 0.0196	<0.0880 0.0880	<0.0181 0.0181	<0.0184 0.0184
Toluene		<0.0193 0.0193	<0.0200 0.0200	<0.0196 0.0196	<0.0880 0.0880	<0.0181 0.0181	<0.0184 0.0184
Ethylbenzene		<0.0193 0.0193	<0.0200 0.0200	<0.0196 0.0196	<0.0880 0.0880	<0.0181 0.0181	<0.0184 0.0184
m,p-Xylenes		<0.0386 0.0386	<0.0400 0.0400	<0.0391 0.0391	<0.176 0.176	<0.0362 0.0362	<0.0368 0.0368
o-Xylene		<0.0193 0.0193	<0.0200 0.0200	<0.0196 0.0196	<0.0880 0.0880	<0.0181 0.0181	<0.0184 0.0184
Total Xylenes		<0.0193 0.0193	<0.02 0.02	<0.0196 0.0196	<0.088 0.088	<0.0181 0.0181	<0.0184 0.0184
Total BTEX		<0.0193 0.0193	<0.02 0.02	<0.0196 0.0196	<0.088 0.088	<0.0181 0.0181	<0.0184 0.0184
<b>Chloride by EPA 300 SUB: TX104704215-18-27</b>	<i>Extracted:</i>	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00
	<i>Analyzed:</i>	Aug-13-18 20:10	Aug-13-18 20:21	Aug-13-18 20:32	Aug-13-18 20:42	Aug-13-18 16:46	Aug-13-18 17:19
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		798 9.88	76.4 9.94	17.0 9.98	2910 9.94	1330 9.86	141 9.96
<b>DRO-ORO By SW8015B</b>	<i>Extracted:</i>	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00
	<i>Analyzed:</i>	Aug-10-18 23:05	Aug-10-18 23:38	Aug-11-18 01:18	Aug-13-18 09:54	Aug-11-18 02:24	Aug-11-18 02:57
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Diesel Range Organics (DRO)		631 25.1	76.5 25.1	<25.2 25.2	4370 126	251 24.9	136 24.9
Oil Range Hydrocarbons (ORO)		99.2 25.1	<25.1 25.1	<25.2 25.2	278 126	<24.9 24.9	<24.9 24.9
<b>TPH GRO by EPA 8015 Mod.</b>	<i>Extracted:</i>	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00
	<i>Analyzed:</i>	Aug-11-18 22:29	Aug-12-18 01:10	Aug-12-18 01:37	Aug-12-18 07:24	Aug-12-18 07:50	Aug-12-18 02:03
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
TPH-GRO		<3.86 3.86	<4.00 4.00	<3.91 3.91	<17.6 17.6	<3.62 3.62	<3.68 3.68

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 595034

TRC Solutions, Inc, Midland, TX

Project Name: Mas Federal Com #002H

Project Id:

Contact: Joel Lowry

Project Location:

Date Received in Lab: Tue Aug-07-18 05:10 pm

Report Date: 22-AUG-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	595034-007	595034-008	595034-009	595034-010	595034-011	595034-012
	<i>Field Id:</i>	N @ 1'	E1 @ 1'	E2 @ 1'	S @ 1'	W1 @ 1'	W2 @ 1'
	<i>Depth:</i>	1- ft	1- ft	1- ft	1- ft	1- ft	1- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Aug-06-18 09:30	Aug-06-18 09:35	Aug-06-18 09:40	Aug-06-18 09:45	Aug-06-18 09:50	Aug-06-18 09:55
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00
	<i>Analyzed:</i>	Aug-12-18 02:30	Aug-12-18 02:57	Aug-12-18 03:24	Aug-12-18 03:50	Aug-12-18 04:17	Aug-12-18 04:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.0192 0.0192	<0.0193 0.0193	<0.0174 0.0174	<0.0193 0.0193	<0.0194 0.0194	<0.0172 0.0172
Toluene		<0.0192 0.0192	<0.0193 0.0193	<0.0174 0.0174	<0.0193 0.0193	<0.0194 0.0194	<0.0172 0.0172
Ethylbenzene		<0.0192 0.0192	<0.0193 0.0193	<0.0174 0.0174	<0.0193 0.0193	<0.0194 0.0194	<0.0172 0.0172
m,p-Xylenes		<0.0385 0.0385	<0.0386 0.0386	<0.0348 0.0348	<0.0385 0.0385	<0.0388 0.0388	<0.0344 0.0344
o-Xylene		<0.0192 0.0192	<0.0193 0.0193	<0.0174 0.0174	<0.0193 0.0193	<0.0194 0.0194	<0.0172 0.0172
Total Xylenes		<0.0192 0.0192	<0.0193 0.0193	<0.0174 0.0174	<0.0193 0.0193	<0.0194 0.0194	<0.0172 0.0172
Total BTEX		<0.0192 0.0192	<0.0193 0.0193	<0.0174 0.0174	<0.0193 0.0193	<0.0194 0.0194	<0.0172 0.0172
<b>Chloride by EPA 300 SUB: TX104704215-18-27</b>	<i>Extracted:</i>	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00	Aug-13-18 10:00
	<i>Analyzed:</i>	Aug-13-18 17:30	Aug-13-18 17:41	Aug-13-18 17:52	Aug-13-18 18:02	Aug-13-18 18:13	Aug-13-18 18:24
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		76.0 9.88	20.6 9.96	53.5 9.84	198 9.82	93.3 9.88	165 9.96
<b>DRO-ORO By SW8015B</b>	<i>Extracted:</i>	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00	Aug-10-18 12:00
	<i>Analyzed:</i>	Aug-11-18 03:31	Aug-11-18 04:03	Aug-11-18 04:36	Aug-11-18 05:11	Aug-11-18 05:45	Aug-11-18 06:19
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Diesel Range Organics (DRO)		<25.1 25.1	<24.9 24.9	32.5 25.2	130 24.9	<25.2 25.2	<25.1 25.1
Oil Range Hydrocarbons (ORO)		<25.1 25.1	<24.9 24.9	<25.2 25.2	<24.9 24.9	<25.2 25.2	<25.1 25.1
<b>TPH GRO by EPA 8015 Mod.</b>	<i>Extracted:</i>	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00	Aug-09-18 09:00
	<i>Analyzed:</i>	Aug-12-18 02:30	Aug-12-18 02:57	Aug-12-18 03:24	Aug-12-18 03:50	Aug-12-18 04:17	Aug-12-18 04:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
TPH-GRO		<3.85 3.85	<3.86 3.86	<3.48 3.48	<3.85 3.85	<3.88 3.88	<3.44 3.44

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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

**SMP** Client Sample      **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample      **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate      **MS** Matrix Spike      **MSD:** Matrix Spike Duplicate

+ 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059782

Sample: 595034-001 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/10/18 23:05

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	54.8	10.0	548	65-144	**
n-Triacontane	9.74	10.0	97	46-152	

Lab Batch #: 3059782

Sample: 595034-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/10/18 23:38

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	16.3	10.1	161	65-144	**
n-Triacontane	14.3	10.1	142	46-152	

Lab Batch #: 3059782

Sample: 595034-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 01:18

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	14.5	10.1	144	65-144	
n-Triacontane	13.1	10.1	130	46-152	

Lab Batch #: 3059782

Sample: 595034-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 02:24

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	21.5	9.95	216	65-144	**
n-Triacontane	16.7	9.95	168	46-152	**

Lab Batch #: 3059782

Sample: 595034-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 02:57

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	18.3	9.96	184	65-144	**
n-Triacontane	14.5	9.96	146	46-152	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059782

Sample: 595034-007 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 03:31

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	10.3	10.0	103	65-144	
n-Triacontane	10.5	10.0	105	46-152	

Lab Batch #: 3059782

Sample: 595034-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 04:03

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	8.43	9.96	85	65-144	
n-Triacontane	11.2	9.96	112	46-152	

Lab Batch #: 3059782

Sample: 595034-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 04:36

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	15.1	10.1	150	65-144	**
n-Triacontane	12.9	10.1	128	46-152	

Lab Batch #: 3059782

Sample: 595034-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 05:11

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	30.3	9.95	305	65-144	**
n-Triacontane	17.5	9.95	176	46-152	**

Lab Batch #: 3059782

Sample: 595034-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 05:45

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	13.3	10.1	132	65-144	
n-Triacontane	10.8	10.1	107	46-152	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059782

Sample: 595034-012 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 06:19

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	13.4	10.1	133	65-144	
n-Triacontane	11.3	10.1	112	46-152	

Lab Batch #: 3059752

Sample: 595034-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 22:29

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.106	0.100	106	68-120	
a,a,a-Trifluorotoluene	1.77	1.93	92	71-121	

Lab Batch #: 3059761

Sample: 595034-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 22:29

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.104	0.100	104	76-123	
a,a,a-Trifluorotoluene	1.55	1.93	80	69-120	

Lab Batch #: 3059752

Sample: 595034-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 01:10

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.110	0.100	110	68-120	
a,a,a-Trifluorotoluene	1.79	2.00	90	71-121	

Lab Batch #: 3059761

Sample: 595034-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 01:10

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.106	0.100	106	76-123	
a,a,a-Trifluorotoluene	1.55	2.00	78	69-120	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059752

Sample: 595034-003 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 01:37

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.110	0.100	110	68-120	
a,a,a-Trifluorotoluene	1.74	1.96	89	71-121	

Lab Batch #: 3059761

Sample: 595034-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 01:37

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.105	0.100	105	76-123	
a,a,a-Trifluorotoluene	1.54	1.96	79	69-120	

Lab Batch #: 3059752

Sample: 595034-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 02:03

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.110	0.100	110	68-120	
a,a,a-Trifluorotoluene	1.72	1.84	93	71-121	

Lab Batch #: 3059761

Sample: 595034-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 02:03

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.104	0.100	104	76-123	
a,a,a-Trifluorotoluene	1.40	1.84	76	69-120	

Lab Batch #: 3059752

Sample: 595034-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 02:30

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.110	0.100	110	68-120	
a,a,a-Trifluorotoluene	1.73	1.92	90	71-121	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059761

Sample: 595034-007 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 02:30

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.103	0.100	103	76-123	
a,a,a-Trifluorotoluene	1.46	1.92	76	69-120	

Lab Batch #: 3059752

Sample: 595034-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 02:57

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.110	0.100	110	68-120	
a,a,a-Trifluorotoluene	1.74	1.93	90	71-121	

Lab Batch #: 3059761

Sample: 595034-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 02:57

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.104	0.100	104	76-123	
a,a,a-Trifluorotoluene	1.51	1.93	78	69-120	

Lab Batch #: 3059752

Sample: 595034-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 03:24

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.112	0.100	112	68-120	
a,a,a-Trifluorotoluene	1.60	1.74	92	71-121	

Lab Batch #: 3059761

Sample: 595034-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 03:24

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.106	0.100	106	76-123	
a,a,a-Trifluorotoluene	1.30	1.74	75	69-120	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059752

Sample: 595034-010 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 03:50

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.108	0.100	108	68-120	
a,a,a-Trifluorotoluene	1.70	1.93	88	71-121	

Lab Batch #: 3059761

Sample: 595034-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 03:50

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.102	0.100	102	76-123	
a,a,a-Trifluorotoluene	1.54	1.93	80	69-120	

Lab Batch #: 3059752

Sample: 595034-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 04:17

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.109	0.100	109	68-120	
a,a,a-Trifluorotoluene	1.70	1.94	88	71-121	

Lab Batch #: 3059761

Sample: 595034-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 04:17

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.102	0.100	102	76-123	
a,a,a-Trifluorotoluene	1.50	1.94	77	69-120	

Lab Batch #: 3059752

Sample: 595034-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 04:44

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.110	0.100	110	68-120	
a,a,a-Trifluorotoluene	1.54	1.72	90	71-121	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059761

Sample: 595034-012 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 04:44

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.104	0.100	104	76-123	
a,a,a-Trifluorotoluene	1.34	1.72	78	69-120	

Lab Batch #: 3059752

Sample: 595034-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 07:24

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.104	0.100	104	68-120	
a,a,a-Trifluorotoluene	7.75	8.80	88	71-121	

Lab Batch #: 3059761

Sample: 595034-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 07:24

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0981	0.100	98	76-123	
a,a,a-Trifluorotoluene	7.55	8.80	86	69-120	

Lab Batch #: 3059752

Sample: 595034-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 07:50

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.116	0.100	116	68-120	
a,a,a-Trifluorotoluene	1.62	1.81	90	71-121	

Lab Batch #: 3059761

Sample: 595034-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 07:50

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.107	0.100	107	76-123	
a,a,a-Trifluorotoluene	1.38	1.81	76	69-120	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059782

Sample: 595034-004 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/13/18 09:54

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	104	10.0	1040	65-144	**
n-Triacontane	51.6	10.0	516	46-152	**

Lab Batch #: 3059782

Sample: 7660238-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/10/18 21:27

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	7.97	10.0	80	65-144	
n-Triacontane	8.26	10.0	83	46-152	

Lab Batch #: 3059752

Sample: 7660255-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/11/18 22:02

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0974	0.100	97	68-120	
a,a,a-Trifluorotoluene	1.80	2.00	90	71-121	

Lab Batch #: 3059761

Sample: 7660258-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/11/18 22:02

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0932	0.100	93	76-123	
a,a,a-Trifluorotoluene	2.54	2.00	127	69-120	**

Lab Batch #: 3059782

Sample: 7660238-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/10/18 21:59

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	9.58	10.0	96	65-144	
n-Triacontane	8.02	10.0	80	46-152	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059752

Sample: 7660255-1-BKS / BKS

Project ID:

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/11/18 19:22

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0962	0.100	96	68-120	
a,a,a-Trifluorotoluene	1.71	2.00	86	71-121	

Lab Batch #: 3059761

Sample: 7660258-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/11/18 20:15

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.101	0.100	101	76-123	
a,a,a-Trifluorotoluene	2.19	2.00	110	69-120	

Lab Batch #: 3059782

Sample: 7660238-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/10/18 22:33

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	10.6	10.0	106	65-144	
n-Triacontane	8.54	10.0	85	46-152	

Lab Batch #: 3059752

Sample: 7660255-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/11/18 19:48

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0959	0.100	96	68-120	
a,a,a-Trifluorotoluene	1.70	2.00	85	71-121	

Lab Batch #: 3059761

Sample: 7660258-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 08/11/18 20:42

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.105	0.100	105	76-123	
a,a,a-Trifluorotoluene	1.96	2.00	98	69-120	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Lab Batch #: 3059782

Sample: 595034-002 S / MS

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 00:12

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	16.5	10.0	165	65-144	**
n-Triacontane	13.5	10.0	135	46-152	

Lab Batch #: 3059752

Sample: 595034-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 22:56

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.105	0.100	105	68-120	
a,a,a-Trifluorotoluene	1.45	1.80	81	71-121	

Lab Batch #: 3059761

Sample: 595034-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 23:50

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.121	0.100	121	76-123	
a,a,a-Trifluorotoluene	1.23	1.78	69	69-120	

Lab Batch #: 3059782

Sample: 595034-002 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 00:44

## SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	18.7	10.0	187	65-144	**
n-Triacontane	14.9	10.0	149	46-152	

Lab Batch #: 3059752

Sample: 595034-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/11/18 23:23

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.105	0.100	105	68-120	
a,a,a-Trifluorotoluene	1.58	1.73	91	71-121	

\* 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: Mas Federal Com #002H

Work Orders : 595034,

Project ID:

Lab Batch #: 3059761

Sample: 595034-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 08/12/18 00:16

## SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.119	0.100	119	76-123	
a,a,a-Trifluorotoluene	1.24	1.77	70	69-120	

\* 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: Mas Federal Com #002H

Work Order #: 595034

Project ID:

Analyst: MIT

Date Prepared: 08/09/2018

Date Analyzed: 08/11/2018

Lab Batch ID: 3059752

Sample: 7660255-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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
Analytes											
Benzene	<0.0200	2.00	1.81	91	2.00	1.82	91	1	55-120	20	
Toluene	<0.0200	2.00	1.83	92	2.00	1.83	92	0	77-120	20	
Ethylbenzene	<0.0200	2.00	1.84	92	2.00	1.83	92	1	77-120	20	
m,p-Xylenes	<0.0400	4.00	3.68	92	4.00	3.67	92	0	78-120	20	
o-Xylene	<0.0200	2.00	1.83	92	2.00	1.82	91	1	78-120	20	

Analyst: MAB

Date Prepared: 08/13/2018

Date Analyzed: 08/13/2018

Lab Batch ID: 3059792

Sample: 7660277-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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
Analytes											
Chloride	<10.0	100	98.3	98	100	99.0	99	1	80-120	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: Mas Federal Com #002H

Work Order #: 595034

Project ID:

Analyst: PGM

Date Prepared: 08/10/2018

Date Analyzed: 08/10/2018

Lab Batch ID: 3059782

Sample: 7660238-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

DRO-ORO By SW8015B	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
<b>Analytes</b>											
Diesel Range Organics (DRO)	<25.0	100	95.3	95	100	93.2	93	2	63-139	20	

Analyst: MIT

Date Prepared: 08/09/2018

Date Analyzed: 08/11/2018

Lab Batch ID: 3059761

Sample: 7660258-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	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
<b>Analytes</b>											
TPH-GRO	<4.00	20.0	17.9	90	20.0	19.7	99	10	35-129	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



## Form 3 - MS / MSD Recoveries

Project Name: Mas Federal Com #002H

Work Order #: 595034

Project ID:

Lab Batch ID: 3059752

QC- Sample ID: 595034-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 08/11/2018

Date Prepared: 08/09/2018

Analyst: MIT

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	<0.0180	1.80	1.47	82	1.73	1.42	82	3	54-120	25	
Toluene	<0.0180	1.80	1.60	89	1.73	1.54	89	4	57-120	25	
Ethylbenzene	<0.0180	1.80	1.67	93	1.73	1.62	94	3	58-131	25	
m,p-Xylenes	<0.0360	3.60	3.33	93	3.45	3.21	93	4	62-124	25	
o-Xylene	<0.0180	1.80	1.68	93	1.73	1.61	93	4	62-124	25	

Lab Batch ID: 3059792

QC- Sample ID: 595034-005 S

Batch #: 1 Matrix: Soil

Date Analyzed: 08/13/2018

Date Prepared: 08/13/2018

Analyst: MAB

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 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	1330	99.0	1430	101	99.0	1430	101	0	80-120	20	

Lab Batch ID: 3059792

QC- Sample ID: 595077-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 08/13/2018

Date Prepared: 08/13/2018

Analyst: MAB

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 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	<9.96	99.6	98.8	99	99.6	99.1	99	0	80-120	20	

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

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

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: Mas Federal Com #002H

Work Order #: 595034

Project ID:

Lab Batch ID: 3059782

QC- Sample ID: 595034-002 S

Batch #: 1 Matrix: Soil

Date Analyzed: 08/11/2018

Date Prepared: 08/10/2018

Analyst: PGM

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

DRO-ORO By SW8015B 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
Diesel Range Organics (DRO)	76.5	100	186	110	100	195	119	5	63-139	20	

Lab Batch ID: 3059761

QC- Sample ID: 595034-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 08/11/2018

Date Prepared: 08/09/2018

Analyst: MIT

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH GRO by EPA 8015 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
TPH-GRO	<3.55	17.8	14.8	83	17.7	14.9	84	1	35-129	20	

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

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

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.



# Chain of Custody

Received by OCD: 12/8/2022 2:20:22 PM

Work Order No: 595034

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334  
Midland, TX (432-704-5440) EL Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296  
Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

Project Manager:	J. Lewis	Bill to: (if different)	LOG CO/ Becky H.
Company Name:	TRC	Company Name:	
Address:		Address:	
City, State ZIP:		City, State ZIP:	
Phone:		Email:	

Work Order Comments	
Program: UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting: Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other:	

ANALYSIS REQUEST										Work Order Notes		
Project Name:	Mas Federal Com #002 H	Turn Around										
Project Number:		Routine <input checked="" type="checkbox"/>										
P.O. Number:		Rush:										
Sampler's Name:	Zach Conder	Due Date:										
SAMPLE RECEIPT			Temp Blank:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Wet Ice:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						
Temperature (°C):			2.5			Thermometer ID						
Received Intact:			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			Correction Factor:			0			
Cooler Custody Seals:			Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			Total Containers:						
Sample Custody Seals:			Yes <input type="checkbox"/> No <input type="checkbox"/> N/A									
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers							
HA1 @ 6"	S	8-6-18	9:00	6 in.	X	X	X	X	X	X	X	X
HA1 @ 1'			9:05	1 ft.	X	X	X	X	X	X	X	X
HA1 @ 2'			9:10	2 ft.	X	X	X	X	X	X	X	X
HA2 @ 6"			9:15	6 in.	X	X	X	X	X	X	X	X
HA2 @ 1'			9:20	1 ft.	X	X	X	X	X	X	X	X
HA2 @ 2'			9:25	2 ft.	X	X	X	X	X	X	X	X
NE1			9:30	1 ft.	X	X	X	X	X	X	X	X
E1 @ 1'			9:35		X	X	X	X	X	X	X	X
E2 @ 1'			9:40		X	X	X	X	X	X	X	X
S @ 1'			9:45		X	X	X	X	X	X	X	X

Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11	Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag	SiO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U				

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	8/2/18	5:10	2		
3			4		
5			6		





## Chain of Custody

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334  
Midland, TX (432-704-5440) El Paso, TX (915)585-3443 Lubbock, TX (806)794-1296  
Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813)

**Work Order No.:**

595034

www.xenco.com

Page 2 of 2

Work Order Comments	
Program: UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting: Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other:	

Project Manager:	J Lowry	Bill to: (if different)	COG co/Berley H.
Company Name:	TRC	Company Name:	
Address:		Address:	
City, State ZIP:		City, State ZIP:	
Phone:		Email:	

Project Name:		Mes Federal Com #002H			
Project Number:					
P.O. Number:					
Sampler's Name:		Zak Conder			
		Routine <input checked="" type="checkbox"/>			
		Rush:			
		Due Date:			
<b>SAMPLE RECEIPT</b>					
Temp Blank:		Yes No	Wet Ice:	Yes No	
Temperature (°C):		Thermometer ID			
Received Intact:		Yes No			
Cooler Custody Seals:		Yes No N/A	Correction Factor:		
Sample Custody Seals:		Yes No N/A	Total Containers:		
Sample Identification		Date Sampled	Time Sampled	Depth	
w1 @ l'		8-6-18	9:50	1 ft.	
w2 @ l'		1	9:58	1 ft.	

Total	200.7 / 6010	200.8 / 6020:	8RCRA	13PPM	Texas	11	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	SiO <sub>2</sub>	Na	Sr	Ti	Sn	U	V	Zn				

Notice: Signature of this document constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
	Brenda Ward	8/7/18 5:10			

Revised Date 051418 Rev 2018 1



## Inter-Office Shipment

Page 1 of 1

IOS Number **111875**

Date/Time: 08/08/18 16:45

Created by: Ashley Derstine

Please send report to: Kelsey Brooks

Lab# From: **Lubbock**

Delivery Priority:

Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Lab# To: **Houston**

Air Bill No.: 772931996275

Phone:

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
595034-001	W	HA-1 @ 6"	08/06/18 09:00	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-002	W	HA-1 @ 1'	08/06/18 09:05	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-003	W	HA-1 @ 2'	08/06/18 09:10	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-004	W	HA-2 @ 6"	08/06/18 09:15	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-005	W	HA-2 @ 1'	08/06/18 09:20	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-006	W	HA-2 @ 2'	08/06/18 09:25	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-007	W	N @ 1'	08/06/18 09:30	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-008	W	E1 @ 1'	08/06/18 09:35	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-009	W	E2 @ 1'	08/06/18 09:40	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-010	W	S @ 1'	08/06/18 09:45	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-011	W	W1 @ 1'	08/06/18 09:50	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	
595034-012	W	W2 @ 1'	08/06/18 09:55	E300_CL	Chloride by EPA 300	08/13/18	09/03/18	KEB	CL	

Inter Office Shipment or Sample Comments:

Relinquished By

Ashley Derstine

Received By:

Monica Shakhshir

Date Relinquished: 08/08/2018

Date Received: 08/09/2018 08:50

Cooler Temperature: 3.5



# XENCO Laboratories

## Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 111875

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : hou-068

Sent By: Ashley Derstine

Date Sent: 08/08/2018 04:45 PM

Received By: Monica Shakhshir

Date Received: 08/09/2018 08:50 AM

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

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

NonConformance:

Corrective Action Taken:

### Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

Monica Shakhshir

Date: 08/09/2018



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: TRC Solutions, Inc

Date/ Time Received: 08/07/2018 05:10:00 PM

Work Order #: 595034

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-3

**Sample Receipt Checklist****Comments**

#1 *Temperature of cooler(s)?	2.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#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:

Brenda Ward  
Brenda Ward

Date: 08/08/2018

Checklist reviewed by:

Kelsey Brooks  
Kelsey Brooks

Date: 08/10/2018



Site Name: Mas Federal Com #002H

Date: 8/6/2018

## Soil Profile

Description	ft. bgs
	0
Caliche well pad	1
	2
Red Sand - Native	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16

Aug 6, 2018 10:21:56 AM  
32.53660297N 103.54157752W



Aug 6, 2018 10:22:11 AM  
32.53659457N 103.54158741W





Aug 6, 2018 10:24:30 AM  
32.53642599N 103.54156331W



Aug 6, 2018 10:24:39 AM  
32.53644073N 103.54156218W





Aug 6, 2018 10:28:41 AM  
32.5362946N 103.5415319W



Aug 6, 2018 10:28:51 AM  
32.53629516N 103.54159953W





Aug 6, 2018 10:32:03 AM  
32.53652882N 103.54172232W



Aug 6, 2018 10:32:10 AM  
32.5364711N 103.54173036W





Aug 6, 2018 10:34:42 AM  
32.5365739N 103.54179821W



Aug 6, 2018 10:34:50 AM  
32.53657649N 103.5417291W





Aug 6, 2018 9:56:43 AM  
32.53632234N 103.54160807W



Aug 6, 2018 9:56:47 AM  
32.53632202N 103.54160643W









Aug 6, 2018 10:11:38 AM  
32.53647098N 103.54163749W



Aug 6, 2018 10:11:50 AM  
32.53657095N 103.54165691W



Aug 6, 2018 10:18:54 AM  
32.53669151N 103.54168725W



Aug 6, 2018 10:19:05 AM  
32.53663708N 103.54166084W

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 April 3, 2017  
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 #)	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: <b>Mas Federal Com #002H</b>	Facility Type: Well
Surface Owner: Private	Mineral Owner: <b>Federal</b> API No. 30-025-44214

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	34	20S	34E	190	North	660	East	Lea

Latitude 32.536324 Longitude -103.54164 NAD83

### NATURE OF RELEASE

Type of Release: Oil & Produced Water	Volume of Release: 2 bbl. Oil 4 bbl. Produced Water	Volume Recovered: 0 bbl. Oil 0 bbl. Produced Water
Source of Release: Hole in housing	Date and Hour of Occurrence: July 29, 2018 8:00am	Date and Hour of Discovery: July 29, 2018 8:00am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		

**RECEIVED**

By CHernandez at 10:07 am, Jul 31, 2018

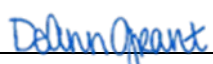

Describe Cause of Problem and Remedial Action Taken.\*

The release was caused by a hole in the housing, which is being repaired or replaced.

Describe Area Affected and Cleanup Action Taken.\*

The release was on location. 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: 	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: DeAnn Grant	Approved by Environmental Specialist: 	
Title: HSE Administrative Assistant	Approval Date: <b>7/31/2018</b>	Expiration Date:
E-mail Address: agrant@concho.com	Conditions of Approval: <b>See attached directive</b>	Attached <input checked="" type="checkbox"/>
Date: July 30, 2018	Phone: 432-253-4513	

\* Attach Additional Sheets If Necessary

**1RP-5138**

**nCH1821237385**

**pCH1821237601**

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 7/31/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1RP-5138 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 8/31/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted



for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

**Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.**

**Jim Griswold**

OCD Environmental Bureau Chief  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505-476-3465  
jim.griswold@state.nm.us

**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 165539

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 165539
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	Work plan approved.	12/8/2022
amaxwell	Sampling variance denied. OCD approves conformation samples to be collected every 400 square feet on the sidewalls and base.	12/8/2022
amaxwell	Submit closure report via the OCD permitting portal by March 10, 2023.	12/8/2022