2M
Environmental
Services, LLC
1219 W. University Blvd.
Odessa, TX 79764

June 22, 2018

Mike Bratcher
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Shelly Tucker
U.S Department of the Interior
Bureau of Land Management
620 E. Greene Street
Carlsbad, NM 88220
Stucker@blm.gov

Re: Soil Investigation Summary and Proposed Remediation Workplan
Jack Federal #004H (2RP-4653)
GPS: N 32.0930405° W 104.2281723°
Unit Letter "B", Section 31, Township 25 South, Range 27 East, NMPM
Eddy County, New Mexico

Dear Mr. Bratcher and Ms. Tucker,

2M Environmental Services, LLC. (2M), on behalf of COG Operating, LLC. (Concho), has prepared this Soil Investigation Summary and Proposed Remediation Workplan (Workplan) for the Jack Federal #004H Release Site (Release Site). The purpose of this Workplan is to propose remediation activities designed to advance the Jack Federal #004H Release Site toward a New Mexico Oil and Conservation District (NMOCD) approved Site Closure Status. The legal description of the Release Site is Unit Letter "B", Section 31, Township 25 South, Range 27 East, in Eddy County, New Mexico. The subject property is administered by the New Mexico U.S. Department of the Interior Bureau of Land Management (BLM). The GPS coordinates for the site are N 32.0930405° W 104.2281723°. A Site Location Map and Site Details and Soil Sample Location Map are provided as Figure 1 and Figure 2, respectively.

On March 6, 2018, a produced water release occurred at the Jack Federal #004H. The release was the result of corrosion on the flowline check valve, which resulted in the release of produced water outside of the earthen secondary containment east of the tank battery. On March 6, 2018, Concho reported the release to the NMOCD District 2 Office, located in Artesia, New Mexico, and BLM. The release was assigned an incident number 2RP-4653. A Release Notification and Corrective Action Form (Form C-141) was subsequently submitted to the NMOCD on March 7, 2018. The release was reported as approximately seven (7) barrels of produced water released with zero (0) barrels of produced water recovered, resulting in a net loss of approximately seven (7) barrels of produced water. A copy of the NMOCD Release Notification and Corrective Action Form C-141 is attached to this Workplan.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify the average depth to groundwater information in Section 31, Township 25 South, Range 27 East. A reference map utilized by the New Mexico Oil Conservation Division (NMOCD) Artisa District Office indicates groundwater should be encountered at approximately twenty-five (25) feet below ground surface (bgs). Based on the NMOCD site classification system, twenty (20) points will be assigned to the subject area ranking as a result of this criterion. No water wells were observed within one-thousand feet of the Release Site. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion. No surface water was observed within one thousand (1,000) feet of the release. Based on the NMOCD site classification system, twenty (20) points will be assigned to the subject area ranking as a result of this criterion.

Based on the NMOCD Site Classification criteria, the Release Site remediation levels are 10 mg/Kg for benzene, 50 mg/Kg for benzene, toluene, ethylbenzene and xylenes (BTEX) and 100 mg/Kg for total petroleum hydrocarbons (TPH). Chloride remediation levels for the Release Site will be 600 mg/Kg, per NMOCD request.

On March 13, 2018, 2M, on behalf of Concho, utilized a hand auger and/or a backhoe to collect six (6) delineation soil samples (T-1 @ 6", T-1 @ 2', T-1 @ 3', T-2 @ 6", T-2 @ 2' and T-2 @ 3') from the impacted area east of the secondary containment. In addition to the soil samples described above, eight (8) soil samples (NT-1 @ 6", NT-1 @ 1', ET-1 @ 6", ET-1 @ 1', ST-1 @ 6", ST-1 @ 1', WT-1 @ 6", and WT-1 @ 1') were collected utilizing a hand auger and/or backhoe approximately five (5) feet from the outer perimeter of the impacted area. The soil samples were submitted to Permian Basin Environmental Lab in Midland, Texas for determination of concentrations of BTEX using Method SW 846-8021B, TPH using Method SW 846-8015M, and chloride using Method E-300.1.

Based on the analytical results of the soil samples collected on March 13, 2018, Concho proposes the following field activities designed to remediate the Jack Federal #004H:

- Utilizing a backhoe, excavate the area represented by sample point T-1 to approximately two (2) feet bgs and the area represented by sample point T-2 to approximately three (3) feet bgs.
- Excavated soil will be stockpiled on a plastic liner adjacent to the excavation pending disposal.
- Concho will backfill the excavation with locally purchased non-impacted "like" soil or caliche. In addition, impacted soil will be transported under manifest to a NMOCD approved disposal facility.
- Prepare and submit a "Remediation Summary and Site Closure Request" to the NMOCD and BLM.

Concho is prepared to begin the activities outlined in this Proposed Remediation Workplan on NMOCD and BLM approval.

If you have any questions, or if additional information is required, please feel free to call me at 432-614-6793 (office) or 432-230-3763 (cell).

Thank you,

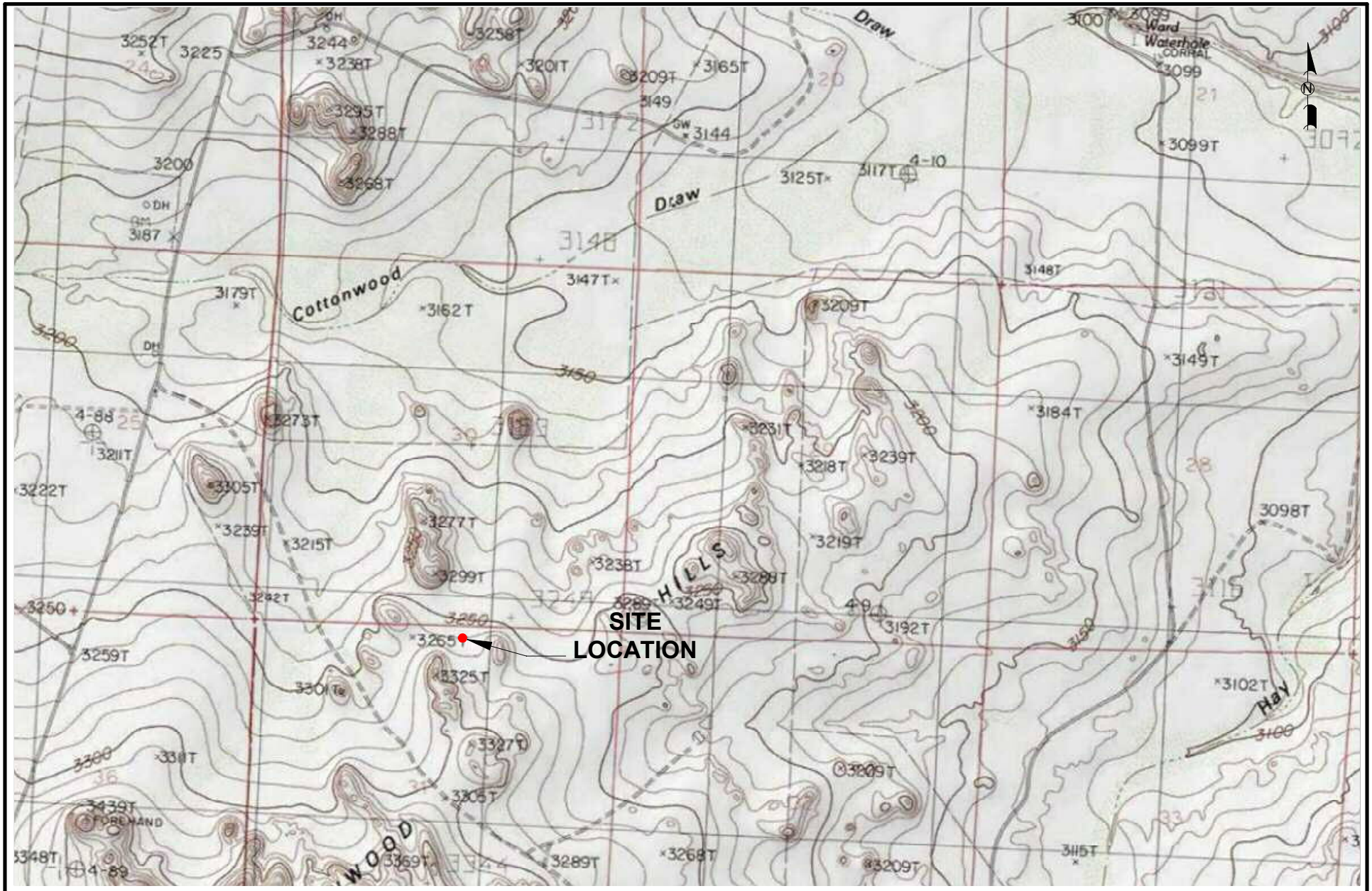
Matthew Green

Matthew Green, P.G.
President
2M Environmental Services, LLC.

Attachments:

Figure 1 - Site Location Map
Figure 2 - Site Details and Soil Sample Location Map
Table 1 - Concentrations of Benzene, BTEX, TPH and Chloride in Soil
Laboratory Analytical Results
Release Notification and Corrective Action (Form C-141)

cc: File



LEGEND:

Native Grassland

2000 1000 0 1000 2000

Distance in Feet

Figure 1

Site Location Map

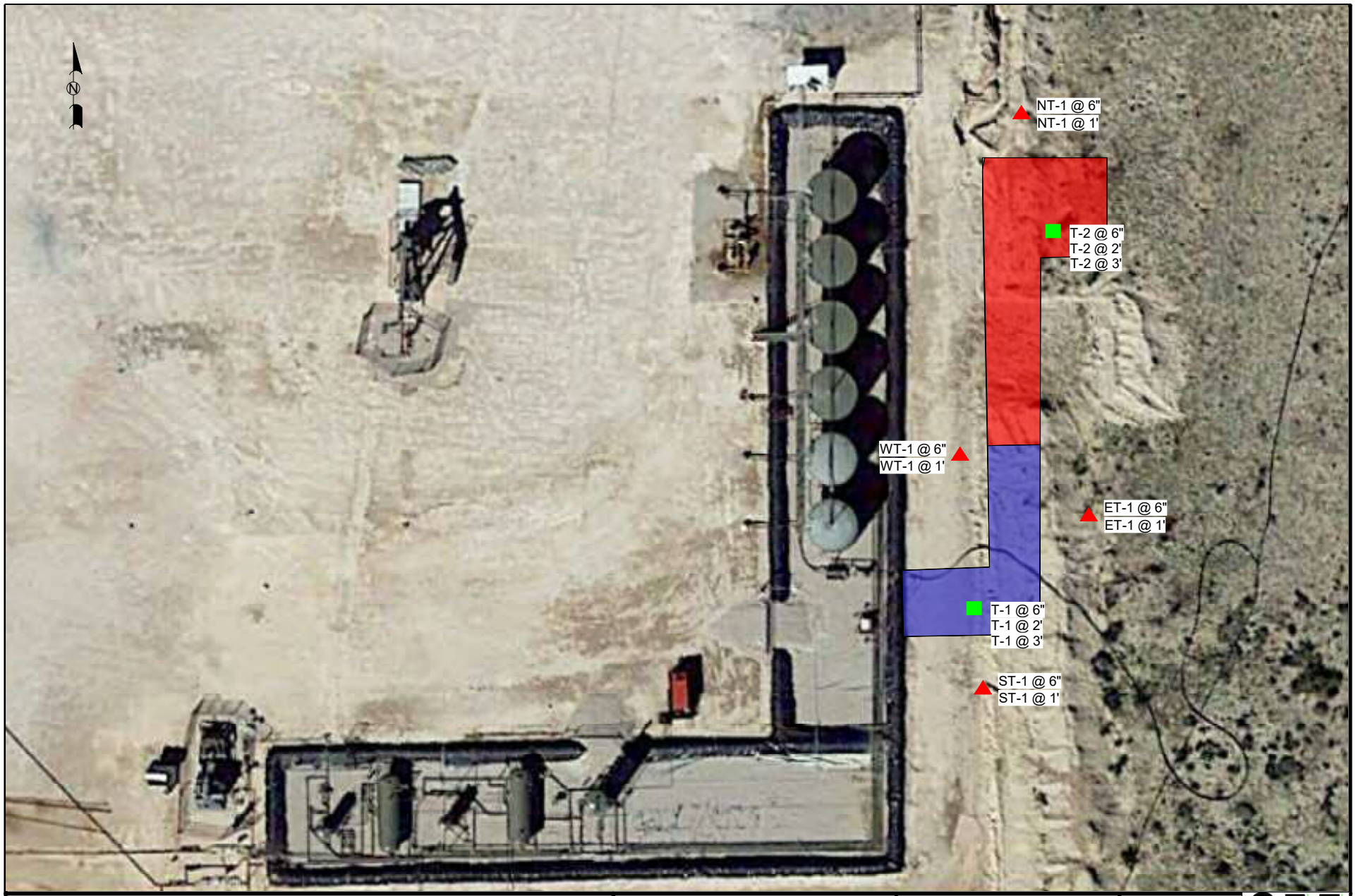
COG Operating LLC

Jack Federal #004H

Eddy County, TX

Scale: 1" = 2000'
CAD By: AR
Checked By: MG
Date: April 10, 2018
Lat. N 32.0930405°, Long. W 104.2281723°

2M Environmental Services, LLC



LEGEND:

- Excavate Area to 2' bgs
- Excavate Area to 3' bgs
- Horizontal Delineation Soil Sample Location
- Vertical Soil Sample Location

40 20 0 20 40

Distance in Feet

Figure 2
Site Details &
Soil Sample Location Map
COG Operating LLC
Jack Federal #004H
Eddy County, TX

Scale: 1" = 40'
CAD By: JR
Checked By: MG
Draft: April 10, 2018
Lat. N 32.0930405° Long. W 104.2281723°

2M Environmental Services, LLC

TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

CONCHO OPERATING, LLC

Jack Federal #004H RELEASE SITE
EDDY COUNTY, NEW MEXICO

All concentrations are reported in mg/Kg

SAMPLE LOCATION	SAMPLE DATE	METHODS: SW 846-8021B						METHOD: SW 8015M					E 300.1
		BENZENE	TOLUENE	ETHYL-BENZENE	m, p - XYLENES	o - XYLENE	TOTAL XYLENES	TOTAL BTEX	TPH GRO C_6-C_{12}	TPH DRO C_{12}-C_{28}	TPH ORO C_{28}-C_{35}	TOTAL TPH C_6-C_{35}	CHLORIDE
Limits		10 mg/Kg						50 mg/Kg				100 mg/Kg	600 mg/Kg
T-1 @ 6"	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	92.2	30.6	**122.8**	**9,990**
T-1 @ 2'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	537
T-1 @ 3'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	524
T-2 @ 6"	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17,500**
T-2 @ 2'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7,850**
T-2 @ 3'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	64.1
NT-1 @ 6"	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	259
NT-1 @ 1'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ET-1 @ 6"	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	213
ET-1 @ 1'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15.2
ST-1 @ 6"	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	216
ST-1 @ 1'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	286
WT-1 @ 6"	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	206
WT-1 @ 1'	3/13/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	520

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

Analytical Report

Prepared for:

Matt Green

2M Environmental Services, LLC.

1219 W. University Blvd.

Odessa, TEXAS 79764

Project: COG Jack Federal #004H

Project Number: [none]

Location: Eddy County, NM

Lab Order Number: 8C20017

NELAP/TCEQ # T104704516-17-8

Report Date: 03/27/18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T-1 @ 6"	8C20017-01	Soil	03/13/18 13:50	03-20-2018 15:37
T-1 @ 2'	8C20017-02	Soil	03/13/18 14:00	03-20-2018 15:37
T-1 @ 3'	8C20017-03	Soil	03/13/18 14:05	03-20-2018 15:37
T-2 @ 6"	8C20017-04	Soil	03/13/18 14:32	03-20-2018 15:37
T-2 @ 2'	8C20017-05	Soil	03/13/18 14:48	03-20-2018 15:37
T-3 @ 3'	8C20017-06	Soil	03/13/18 14:53	03-20-2018 15:37
NT-1 @ 6"	8C20017-07	Soil	03/13/18 15:30	03-20-2018 15:37
NT-1 @ 1'	8C20017-08	Soil	03/13/18 15:35	03-20-2018 15:37
ET-1 @ 6"	8C20017-09	Soil	03/13/18 15:36	03-20-2018 15:37
ET-1 @ 1'	8C20017-10	Soil	03/13/18 15:38	03-20-2018 15:37
ST-1 @ 6"	8C20017-11	Soil	03/13/18 15:40	03-20-2018 15:37
ST-1 @ 1'	8C20017-12	Soil	03/13/18 15:45	03-20-2018 15:37
WT-1 @ 6"	8C20017-13	Soil	03/13/18 16:00	03-20-2018 15:37
WT-1 @ 1'	8C20017-14	Soil	03/13/18 16:10	03-20-2018 15:37

T-1 @ 6"

8C20017-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0105	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00526	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0211	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0105	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*126 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*101 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**9990**	26.3	mg/kg dry	25	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
>C12-C28	**92.2**	26.3	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
>C28-C35	**30.6**	26.3	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*99.1 %*	*70-130*		*P8C2107*	*03/21/18*	*03/21/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*101 %*	*70-130*		*P8C2107*	*03/21/18*	*03/21/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**123**	26.3	mg/kg dry	1	[CALC]	03/21/18	03/21/18	calc	

T-1 @ 2'

8C20017-02 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0114	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00568	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0227	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0114	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*80.0 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*110 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**537**	1.14	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*100 %*	*70-130*		*P8C2107*	*03/21/18*	*03/21/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*P8C2107*	*03/21/18*	*03/21/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	03/21/18	03/21/18	calc	

2M Environmental Services, LLC.	Project: COG Jack Federal #004H	Fax:
1219 W. University Blvd.	Project Number: [none]	
Odessa TEXAS, 79764	Project Manager: Matt Green	

T-1 @ 3'

8C20017-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00110	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0110	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00549	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0220	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0110	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*83.6 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*129 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**524**	1.10	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.5	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P8C2107	03/21/18	03/21/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.2 %*	*70-130*		*P8C2107*	*03/21/18*	*03/21/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*96.3 %*	*70-130*		*P8C2107*	*03/21/18*	*03/21/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	03/21/18	03/21/18	calc	

T-2 @ 6"

8C20017-04 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0114	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00568	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0227	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0114	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*85.6 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*89.0 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**17500**	56.8	mg/kg dry	50	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*92.2 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*95.6 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

T-2 @ 2'

8C20017-05 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00115	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0115	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00575	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0230	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0115	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*118 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*77.1 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**7850**	28.7	mg/kg dry	25	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*88.8 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*92.0 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

T-3 @ 3'

8C20017-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00118	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0118	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00588	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0235	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0118	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*94.7 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*71.4 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**64.1**	1.18	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.4	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	29.4	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	29.4	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*91.6 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*95.4 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.4	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

NT-1 @ 6"

8C20017-07 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00532	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0213	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*72.5 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
Surrogate: 4-Bromofluorobenzene		*103 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**259**	1.06	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*88.3 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*91.3 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

NT-1 @ 1'

8C20017-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00111	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0111	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00556	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0222	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0111	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*92.3 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*68.4 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.11	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*80.3 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*83.1 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

ET-1 @ 6"

8C20017-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00532	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0213	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*81.9 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*76.8 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**213**	1.06	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*91.1 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*94.7 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

ET-1 @ 1'

8C20017-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00104	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0104	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00521	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0208	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0104	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*65.1 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
Surrogate: 4-Bromofluorobenzene		*90.0 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**15.2**	1.04	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*82.3 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*83.1 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

ST-1 @ 6"

8C20017-11 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00532	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0213	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0106	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*79.3 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*109 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**216**	1.06	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*75.5 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*77.1 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

ST-1 @ 1'

8C20017-12 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00108	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0108	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00538	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0215	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0108	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*136 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*102 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**286**	5.38	mg/kg dry	5	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P8C2201	03/22/18	03/22/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.9	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*81.6 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*84.6 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

WT-1 @ 6"

8C20017-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Toluene	ND	0.0105	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Ethylbenzene	ND	0.00526	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (p/m)	ND	0.0211	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Xylene (o)	ND	0.0105	mg/kg dry	1	P8C2103	03/21/18	03/21/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*125 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*99.8 %*	*75-125*		*P8C2103*	*03/21/18*	*03/21/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**206**	1.05	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8C2307	03/23/18	03/23/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P8C2107	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*115 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*119 %*	*70-130*		*P8C2107*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

WT-1 @ 1'

8C20017-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.0222	mg/kg dry	20	P8C2103	03/21/18	03/23/18	EPA 8021B	
Toluene	ND	0.222	mg/kg dry	20	P8C2103	03/21/18	03/23/18	EPA 8021B	
Ethylbenzene	ND	0.111	mg/kg dry	20	P8C2103	03/21/18	03/23/18	EPA 8021B	
Xylene (p/m)	ND	0.444	mg/kg dry	20	P8C2103	03/21/18	03/23/18	EPA 8021B	
Xylene (o)	ND	0.222	mg/kg dry	20	P8C2103	03/21/18	03/23/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*93.9 %*	*75-125*		*P8C2103*	*03/21/18*	*03/23/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*136 %*	*75-125*		*P8C2103*	*03/21/18*	*03/23/18*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**520**	1.11	mg/kg dry	1	P8C2203	03/22/18	03/23/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8C2307	03/23/18	03/23/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P8C2108	03/21/18	03/22/18	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P8C2108	03/21/18	03/22/18	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P8C2108	03/21/18	03/22/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*84.5 %*	*70-130*		*P8C2108*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*88.8 %*	*70-130*		*P8C2108*	*03/21/18*	*03/22/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	03/21/18	03/22/18	calc	

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C2103 - General Preparation (GC)										
Blank (P8C2103-BLK1)				Prepared & Analyzed: 03/21/18						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.0100	"							
Ethylbenzene	ND	0.00500	"							
Xylene (p/m)	ND	0.0200	"							
Xylene (o)	ND	0.0100	"							
Surrogate: 1,4-Difluorobenzene	*0.0572*		*"*	*0.0600*		*95.4*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0746*		*"*	*0.0600*		*124*	*75-125*			
LCS (P8C2103-BS1)				Prepared & Analyzed: 03/21/18						
Benzene	0.0821	0.00100	mg/kg wet	0.100		82.1	70-130			
Toluene	0.0918	0.0100	"	0.100		91.8	70-130			
Ethylbenzene	0.112	0.00500	"	0.100		112	70-130			
Xylene (p/m)	0.202	0.0200	"				70-130			
Xylene (o)	ND	0.0100	"				70-130			
Surrogate: 1,4-Difluorobenzene	*0.0472*		*"*	*0.0600*		*78.6*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0559*		*"*	*0.0600*		*93.2*	*75-125*			
LCS Dup (P8C2103-BSD1)				Prepared & Analyzed: 03/21/18						
Benzene	0.0866	0.00100	mg/kg wet	0.100		86.6	70-130	5.23	20	
Toluene	0.0913	0.0100	"	0.100		91.3	70-130	0.503	20	
Ethylbenzene	0.116	0.00500	"	0.100		116	70-130	3.72	20	
Xylene (p/m)	0.203	0.0200	"				70-130		20	
Xylene (o)	ND	0.0100	"				70-130		20	
Surrogate: 1,4-Difluorobenzene	*0.0499*		*"*	*0.0600*		*83.1*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0552*		*"*	*0.0600*		*92.0*	*75-125*			
Matrix Spike (P8C2103-MS1)		**Source: 8C20017-01**		Prepared: 03/21/18 Analyzed: 03/22/18						
Benzene	0.0345	0.00105	mg/kg dry	0.105	ND	32.8	80-120			QM-05
Toluene	0.0410	0.0105	"	0.105	ND	39.0	80-120			QM-05
Ethylbenzene	0.0523	0.00526	"	0.105	0.00409	45.8	80-120			QM-05
Xylene (p/m)	0.112	0.0211	"		0.00513		80-120			
Xylene (o)	ND	0.0105	"		ND		80-120			
Surrogate: 1,4-Difluorobenzene	*0.0396*		*"*	*0.0632*		*62.7*	*75-125*			*S-GC*
Surrogate: 4-Bromofluorobenzene	*0.0647*		*"*	*0.0632*		*102*	*75-125*			

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C2103 - General Preparation (GC)										
Matrix Spike Dup (P8C2103-MSD1)		**Source: 8C20017-01**		Prepared: 03/21/18 Analyzed: 03/22/18						
Benzene	0.0637	0.00105	mg/kg dry	0.105	ND	60.5	80-120	59.3	20	QM-05
Toluene	0.0945	0.0105	"	0.105	ND	89.8	80-120	78.9	20	QM-05
Ethylbenzene	0.108	0.00526	"	0.105	0.00409	98.5	80-120	73.1	20	QM-05
Xylene (p/m)	0.182	0.0211	"		0.00513		80-120		20	
Xylene (o)	ND	0.0105	"		ND		80-120		20	
Surrogate: 4-Bromofluorobenzene	*0.118*		*"*	*0.0632*		*187*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0919*		*"*	*0.0632*		*145*	*75-125*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C2201 - % Solids										
Blank (P8C2201-BLK1)				Prepared & Analyzed: 03/22/18						
% Moisture	ND	0.1	%							
Duplicate (P8C2201-DUP1)		**Source: 8C20017-12**		Prepared & Analyzed: 03/22/18						
% Moisture	8.0	0.1	%		7.0			13.3	20	
Batch P8C2203 - * DEFAULT PREP *****										
Blank (P8C2203-BLK1)				Prepared: 03/22/18 Analyzed: 03/23/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8C2203-BS1)				Prepared: 03/22/18 Analyzed: 03/23/18						
Chloride	386	1.00	mg/kg wet	400		96.5	80-120			
LCS Dup (P8C2203-BSD1)				Prepared: 03/22/18 Analyzed: 03/23/18						
Chloride	421	1.00	mg/kg wet	400		105	80-120	8.73	20	
Duplicate (P8C2203-DUP1)		**Source: 8C20010-01**		Prepared: 03/22/18 Analyzed: 03/23/18						
Chloride	13000	56.8	mg/kg dry		11000			16.2	20	
Duplicate (P8C2203-DUP2)		**Source: 8C20017-08**		Prepared: 03/22/18 Analyzed: 03/23/18						
Chloride	0.922	1.11	mg/kg dry		0.600			42.3	20	
Matrix Spike (P8C2203-MS1)		**Source: 8C20010-01**		Prepared: 03/22/18 Analyzed: 03/23/18						
Chloride	18800	56.8	mg/kg dry	5680	11000	137	80-120			
Batch P8C2307 - * DEFAULT PREP *****										
Blank (P8C2307-BLK1)				Prepared & Analyzed: 03/23/18						
% Moisture	ND	0.1	%							

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C2307 - * DEFAULT PREP *****										
Duplicate (P8C2307-DUP1)		**Source: 8C20021-06**		Prepared & Analyzed: 03/23/18						
% Moisture	9.0	0.1	%		9.0			0.00	20	
Duplicate (P8C2307-DUP2)		**Source: 8C22004-01**		Prepared & Analyzed: 03/23/18						
% Moisture	11.0	0.1	%		11.0			0.00	20	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C2107 - General Preparation (GC)										
Blank (P8C2107-BLK1)				Prepared & Analyzed: 03/21/18						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*100*		*"*	*100*		*100*	*70-130*			
Surrogate: o-Terphenyl	*52.0*		*"*	*50.0*		*104*	*70-130*			
LCS (P8C2107-BS1)				Prepared & Analyzed: 03/21/18						
C6-C12	976	25.0	mg/kg wet	1000		97.6	75-125			
>C12-C28	1010	25.0	"	1000		101	75-125			
Surrogate: 1-Chlorooctane	*118*		*"*	*100*		*118*	*70-130*			
Surrogate: o-Terphenyl	*52.7*		*"*	*50.0*		*105*	*70-130*			
LCS Dup (P8C2107-BSD1)				Prepared & Analyzed: 03/21/18						
C6-C12	1080	25.0	mg/kg wet	1000		108	75-125	9.93	20	
>C12-C28	1110	25.0	"	1000		111	75-125	9.87	20	
Surrogate: 1-Chlorooctane	*127*		*"*	*100*		*127*	*70-130*			
Surrogate: o-Terphenyl	*49.0*		*"*	*50.0*		*98.0*	*70-130*			
Matrix Spike (P8C2107-MS1)		**Source: 8C20017-13**		Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	1040	26.3	mg/kg dry	1050	10.0	98.1	75-125			
>C12-C28	1070	26.3	"	1050	ND	102	75-125			
Surrogate: 1-Chlorooctane	*115*		*"*	*105*		*109*	*70-130*			
Surrogate: o-Terphenyl	*49.7*		*"*	*52.6*		*94.5*	*70-130*			
Matrix Spike Dup (P8C2107-MSD1)		**Source: 8C20017-13**		Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	1010	26.3	mg/kg dry	1050	10.0	95.4	75-125	2.78	20	
>C12-C28	1140	26.3	"	1050	ND	108	75-125	5.67	20	
Surrogate: 1-Chlorooctane	*117*		*"*	*105*		*111*	*70-130*			
Surrogate: o-Terphenyl	*61.4*		*"*	*52.6*		*117*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C2108 - General Preparation (GC)										
Blank (P8C2108-BLK1)				Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*121*		*"*	*100*		*121*	*70-130*			
Surrogate: o-Terphenyl	*63.5*		*"*	*50.0*		*127*	*70-130*			
LCS (P8C2108-BS1)				Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	1200	25.0	mg/kg wet	1000		120	75-125			
>C12-C28	1200	25.0	"	1000		120	75-125			
Surrogate: 1-Chlorooctane	*118*		*"*	*100*		*118*	*70-130*			
Surrogate: o-Terphenyl	*62.4*		*"*	*50.0*		*125*	*70-130*			
LCS Dup (P8C2108-BSD1)				Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	1170	25.0	mg/kg wet	1000		117	75-125	2.45	20	
>C12-C28	1180	25.0	"	1000		118	75-125	1.79	20	
Surrogate: 1-Chlorooctane	*113*		*"*	*100*		*113*	*70-130*			
Surrogate: o-Terphenyl	*58.2*		*"*	*50.0*		*116*	*70-130*			
Matrix Spike (P8C2108-MS1)		**Source: 8C20021-01**		Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	852	27.2	mg/kg dry	1090	12.2	77.3	75-125			
>C12-C28	851	27.2	"	1090	ND	78.3	75-125			
Surrogate: 1-Chlorooctane	*107*		*"*	*109*		*98.8*	*70-130*			
Surrogate: o-Terphenyl	*43.8*		*"*	*54.3*		*80.6*	*70-130*			
Matrix Spike Dup (P8C2108-MSD1)		**Source: 8C20021-01**		Prepared: 03/21/18 Analyzed: 03/22/18						
C6-C12	843	27.2	mg/kg dry	1090	12.2	76.5	75-125	1.07	20	
>C12-C28	845	27.2	"	1090	ND	77.8	75-125	0.701	20	
Surrogate: 1-Chlorooctane	*107*		*"*	*109*		*98.8*	*70-130*			
Surrogate: o-Terphenyl	*47.1*		*"*	*54.3*		*86.7*	*70-130*			

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 3/27/2018

Brent Barron, Laboratory Director/Technical Director

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-661-4184

Project Manager: Matt Green
Project Name: COG Jack Federal #004H
Company Name: 2M Environmental Services, LLC.
Project #:
Company Address: 1219 W. University Blvd.
Project Loc: Eddy County, NM
City/State/Zip: Odessa, Texas 79764
PO #:
Telephone No: (432)230-3763
Fax No:
Report Format: [X] Standard [ ] TRRP [ ] NPDES
Sampler Signature: Matthew Green
e-mail: mgreen@2m-environmental.com

(lab use only) ORDER #: 8C20017

Analyze For: TCLP: / TOTAL:

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix (DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other)	TPH: 418.1 8015M 8015B	TPH: TX 1005 Ext TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/8030 or BTEX 8260	RCI	ignitability	Chlorides E 300			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	T-1 @ 6"			3/13/2018	1350		1	x								S	X								X			X				X
02	T-1 @ 2'			3/13/2018	1400		1	x								S	X								X			X				X
03	T-1 @ 3'			3/13/2018	1405		1	x								S	X								X			X				X
04	T-2 @ 6"			3/13/2018	1432		1	x								S	X								X			X				X
05	T-2 @ 2'			3/13/2018	1448		1	x								S	X								X			X				X
06	T-3 @ 3'			3/13/2018	1453		1	x								S	X								X			X				X
07	NT-1 @ 6"			3/13/2018	1530		1	x								S	X								X			X				X
08	NT-1 @ 1'			3/13/2018	1535		1	x								S	X								X			X				X
09	ET-1 @ 6"			3/13/2018	1536		1	x								S	X								X			X				X
10	ET-1 @ 1'			3/13/2018	1538		1	x								S	X								X			X				X

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
Matthew Green	3-20-18	14:10	[illegible]	3/20/18	14:10
[illegible]	3-20-18	[illegible]	[illegible]	3/20/18	15:10

Laboratory Comments:
Sample Containers Intact ? Y N
VOCs Free of Headspace ? Y N
Labels on container(s) Y N
Custody seals on container(s) Y N
Custody seals on cooler(s) Y N
Sample Hand Delivered Y N
by Sampler/Client Rep. ? Y N
by Courier? UPS DHL FedEx Lone Star
Temperature Upon Receipt:
Received: °C
Adjusted: °C Factor: 06.5

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-661-4184

Project Manager: Matt Green

Company Name: 2M Environmental Services, LLC.

Company Address: 1219 W. University Blvd.

City/State/Zip: Odessa, Texas 79764

Telephone No: (432)230-3763

Fax No:

Sampler Signature: Matthew Green

e-mail: mgreen@2m-environmental.com

Project Name: COG Jack Federal #004H

Project #:

Project Loc: Eddy County, NM

PO #:

Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only) ORDER #: 8C20017

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 8015M 8015B	TOTAL: TPH: TX 1005 Ext TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides E 300			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
11	ST-1 @ 6"			3/13/2018	1540		1	x								S	X								X			X				X
12	ST-1 @ 1'			3/13/2018	1545		1	x								S	X								X			X				X
13	WT-1 @ 6"			3/13/2018	1600		1	x								S	X								X			X				X
14	WT-1 @ 1'			3/13/2018	1610		1	x								S	X								X			X				X

Special Instructions:

Relinquished by: Matthew Green	Date 3-20-18	Time 14:11	Received by:	Date 3/20/18	Time 14:11
Relinquished by:	Date 3/20/18	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL:	Date	Time

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: °C
Adjusted: °C Factor

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 229137	Contact: Robert McNeil
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: **Jack Federal #004H**	Facility Type: Flowline

Surface Owner: BLM	Mineral Owner: Federal	API No. 30-015-42134

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	31	25S	27E	190	North	2,310	East	Eddy

Latitude_32.0930405____ **Longitude**_-104.2281723____ NAD83

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 7 bbl.	Volume Recovered: 0 bbl.
Source of Release: Flowline	Date and Hour of Occurrence: March 6, 2018 9:00 am	Date and Hour of Discovery: March 6, 2018 9:00 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 a corroded check valve on a flowline. The check valve was replaced.

Describe Area Affected and Cleanup Action Taken.*

The release was remained 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: 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: March 7, 2018	Phone: 432-683-7443		

* Attach Additional Sheets If Necessary