



April 12, 2018

Mr. Mike Bratcher
NMOCD District 2
811 South First Street
Artesia, New Mexico 88210

Ms. Crystal Weaver
NMOCD District 2
811 South First Street
Artesia, New Mexico 88210

Mr. Ryan Mann
Field Operation Division
New Mexico State Land Office
2827 N. Dal Paso Street, Ste. 117
Hobbs, New Mexico 88240

RE: Remediation Work Plan
COG Operating, LLC
Willow A State #003
Unit Letter "J", Section 3, Township 25S, Range 28E
Eddy County, New Mexico
2RP-4537
Release Date: December 20, 2017

EnTech Consulting Corporation (EnTech), has prepared this remediation work plan for the COG Operating LLC (COG), Willow A State #003 (Site). The Site is located at 32.1589088°N and – 104.0718384°W, approximately 2.4 miles south of Malaga, New Mexico, on the east side of Highway 285 South, and illustrated in **Figure 1**.

Background

The COG Operating LLC (COG) Site was impacted by approximately 3-barrels of crude oil and 5-barrels of produced water on December 20, 2017, as a result of a stuffing box leak on the facility pumping unit after being serviced by a hot oil unit. Approximately 1-barrel of oil and 2-barrels of produced water were recovered by vacuum truck, with the balance soaking into soil at the Site. Current plans call for the remediation of the impacted area and restoration of the Site. The release was reported to the New Mexico Oil Conservation Division (NMOCD) District II Office in Artesia, New Mexico, on December 22, 2017, and assigned NMOCD Responsible Party (RP) Number 2RP-4537. Copies of the NMOCD Form C-141 (Release Notification and Corrective Action), filed with the District II office, is attached to this report as **Attachment B**.

Site Ranking & Proposed Remedial Action Goals

The site is subject to regulatory oversight by the NMOCD. To address activities related to releases, the NMOCD utilizes the *Guidelines for Remediation of Leaks, Spill, and Releases* (August 13, 1993) as

guidance, in addition to the NMOCD rules, specifically NMAC 19.15.29, *Release Notification*. The referenced documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

In accordance with the NMOCD guidance documents, EnTech utilized the general site characteristics to determine the appropriate “ranking” for the Site. The ranking criteria and associated ranking are provided in the following table:

Assessment

The impacted area consists of three (3) contiguous area [T-1, T-2, and T-3/T-4] on an unlined caliche well pad, extending from the northeast corner to the southwest corner. Four (4) locations within the impacted area were selected for sampling. The sample locations all occurred in areas exhibiting the greatest apparent impact based on visual and/or olfactory evidence, with one (1) occurring at the release point. A total of seventeen (17) soil samples were analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) by EPA Method 8021B, total petroleum hydrocarbons (TPH) with EPA Method SW8015 Mod, and chlorides by EPA Method 300.0, by Xenco Laboratories in Midland, Texas. All soil samples were collected on January 31, 2018. The soil sample locations are indicated in **Figure 2** of this report.

Laboratory analysis of the soil samples indicated nondetectable TPH [C6-C35], nondetectable BTEX and chloride concentrations ranging from 29.0 milligrams per kilogram (mg/Kg) to 10,100 mg/Kg.

Ranking Criteria			Ranking Score
Depth to Groundwater	<50 feet	20	20
	50 to 99 feet	10	
	>100 feet	0	
Wellhead Protection Area, <1000 feet from a water source; or, <200 feet from private domestic water source.	Yes	20	0
	No	0	
Distance to Surface Water Body	<200 feet	20	
	200 to 1,000 feet	10	
	>1,000 feet	0	0
Total Ranking Score			20

Based on the proximity of the Site to area water wells, surface water bodies, and depth to groundwater, an OCD ranking score of 20 points was established for this Site, with soil remediation goals defined in the tables below:

Parameter	Total Ranking Site Score		
	19 or Greater	10 - 19	0 - 9
Benzene	10 mg/Kg	10 mg/Kg	10 mg/Kg
Total BTEX	50 mg/Kg	50 mg/Kg	50 mg/Kg
TPH (C6-C35)	100 mg/Kg	1,000 mg/Kg	5,000 mg/Kg

Per the NMOCD Pit Rule (NMAC 19.15.17), closure criteria for chloride affected soil have been established as follows:

Closure Criteria for Soils			
Depth to Groundwater with less than 10,000 mg/L TDS	Constituent	Method	Limit*
<50-feet	Chlorides	EPA 300.0	600 mg/Kg

Per NMOCD remediation standards, the analytical goals for confirmation samples collected from the affected area at the Site are: TPH target concentration of 100 mg/kg, benzene target concentration of 10 mg/Kg, total BTEX target concentration of 50 mg/Kg, and chloride target concentration of 600 mg/Kg or background, whichever is greater. A field soil vapor headspace measurement of 100 ppmv may be substituted for laboratory analysis of the benzene and total BTEX concentration limits as per NMOCD guidelines.

As indicated by the laboratory analysis of samples collected during the assessment, the only contaminant of concern that exceeded NMOCD remediation standards is chlorides. Analysis demonstrates that the chloride impact is limited to a maximum depth of 3-feet below ground surface (bgs). The laboratory analysis report is provided in **Attachment A** and the results summarized in **Table 1** of this report.

Remediation

Current plans call for the excavation of three (3) contiguous areas [T-1, T-2, and T-3/T-4] and off-site disposal of the excavated material. Specifically, the three (3) contiguous spill areas consist of: the northern trailing release area (T-1) which measures approximately 12-feet wide by 48-feet long (576 square feet) and will be excavated to a depth of 2-feet bgs; the point source area (T-2), occurring around the stuffing box measures approximately 54-feet wide by 74-feet long (3,996 square feet) and will be excavated to a depth of 3.5-feet bgs; and, the southern trailing impact area (T-3/T-4), which measures approximately 36-feet wide by 170-feet long (6,120 square feet) and will be excavated to a depth of 3.5-feet bgs. It is anticipated that approximately 1,761 cubic yards of soil will be excavated (estimated volume includes a “fluff factor” of 1.3). Although no underground utilities are anticipated, caution will be utilized during excavation and hand tools utilized in areas of concern (i.e., around piping, etc.). The soil will be loaded into 20-yard end dumps and transported to the R360 Red Bluff disposal facility located on Highway 285 in Orla, Texas, approximately 13 miles (one way) from the Site. All disposal will be documented with manifests and included in the final report.

Confirmation soil samples will be collected from the excavation. Four (4) surface soil samples will also be collected from the north, south, east, and west sides of the excavation to confirm that the lateral extent of impact has been defined.

The excavated area will be backfilled with imported caliche. It is estimated that approximately 1,761 cubic yards of clean caliche will be required for backfilling. Once backfilling has been completed, the remediated area will be compacted with excavation equipment and contoured to original conditions.

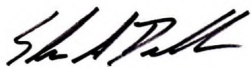
Laboratory Analysis

All soil samples will be transported to the analytical laboratory on ice following proper chain-of-custody protocol. Soil samples selected for laboratory analyses will be collected as grab samples and analyzed for chlorides using EPA Method 300.0. All sample analysis will be performed on a standard turnaround time.

April 12, 2018

At the conclusion of all activities (i.e., remediation, laboratory analyses, backfilling), a final closure report will be prepared documenting all activities and results. If you have any questions regarding the proposed activities, please do not hesitate to contact Peter Schram at (210) 326-7831 at any time.

Sincerely,



Shane Diller
Field Supervisor



Peter Schram, P.G.
Project Manager

Attachments:

Table 1 – Assessment Analytical Results

Figure 1 – Site Location Map

Figure 2 – Site Map

Attachment A – Laboratory Analytical Reports

Attachment B – NMOCD C-141 Notification

cc: Ms. Becky Haskell, COG Operating LLC
Mr. Sheldon Hitchcock, COG Operating LLC
Mr. Dakota Neel, COG Operating LLC
Mr. Robert McNeill, COG Operating LLC

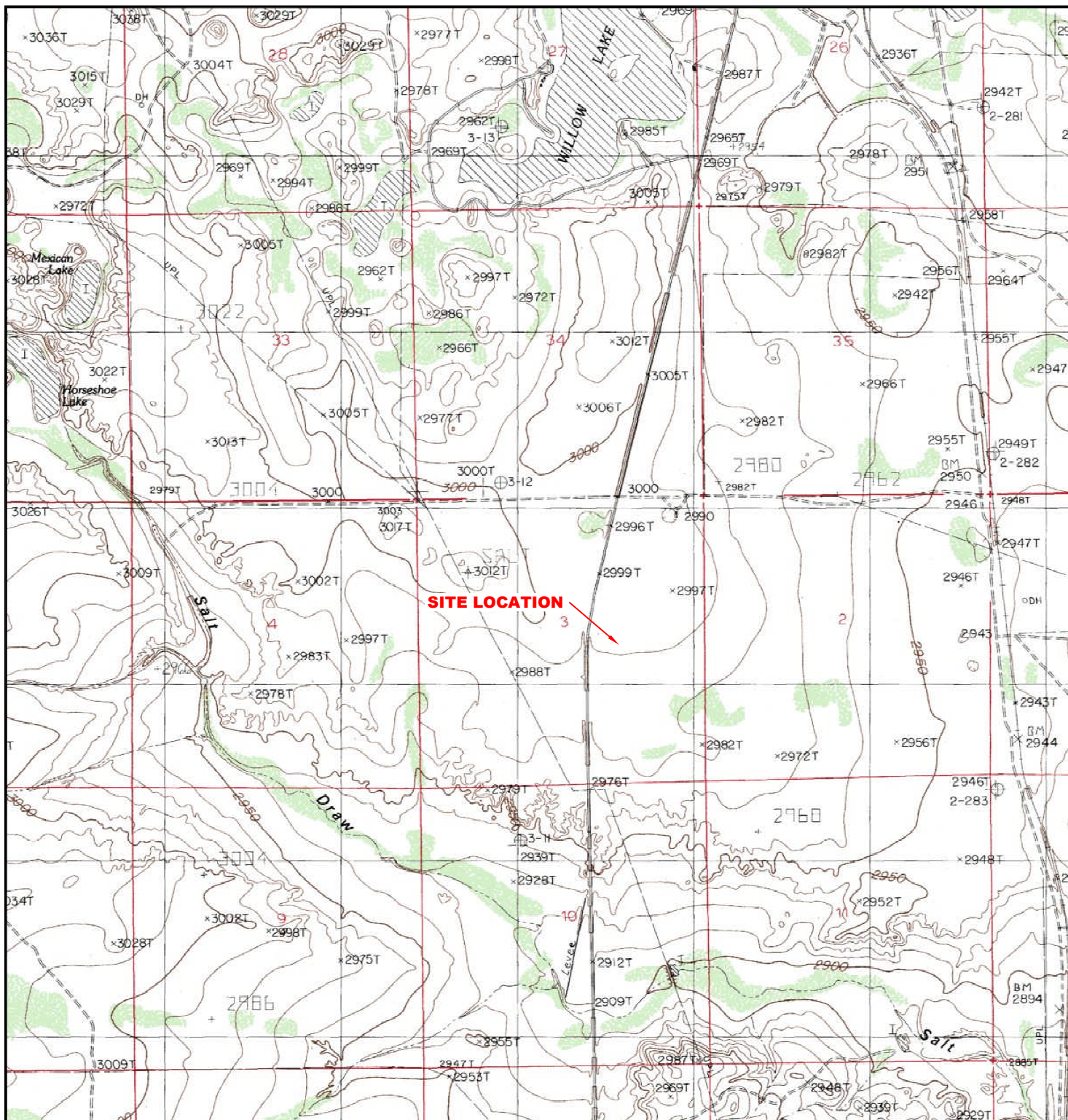
COG Willow A State #003
Eddy County, New Mexico
NMOCD Ref: 2RP-4537
Release Date: December 20, 2017

TABLE 1 - ASSESSMENT/REMEDATION ANALYTICAL RESULTS

Field ID	Laboratory ID	Date	Time	Sample Depth (feet)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	Total BTEX (mg/Kg)	TPH [C6-C12] (mg/Kg)	TPH [C12-C28] (mg/Kg)	TPH [C28-C35] (mg/Kg)	TPH [C6-C35] (mg/Kg)	Chlorides (mg/Kg)
ASSESSMENT SAMPLES														
Target Cleanup Levels					10				50				100	600
T-1 0'	575485-001	1/31/2018	1000	surface	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	8510
T-1 1'	575485-002	1/31/2018	1000	1	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<14.9	<14.9	<14.9	<14.9	959
T-1 2'	575485-003	1/31/2018	1000	2	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	257
T-2 0'	575485-008	1/31/2018	1030	surface	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	8530
T-2 1'	575485-009	1/31/2018	1030	1	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	10100
T-2 2'	575485-010	1/31/2018	1030	2	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	2720
T-2 3'	575485-011	1/31/2018	1030	3	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	1130
T-2 4'	575485-012	1/31/2018	1030	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	56.1
T-3 0'	575485-017	1/31/2018	1100	surface	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	4410
T-3 1'	575485-018	1/31/2018	1100	1	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	1890
T-3 2'	575485-019	1/31/2018	1100	2	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<14.9	<14.9	<14.9	<14.9	833
T-3 3'	575485-020	1/31/2018	1100	3	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	131
T-4 0'	575485-024	1/31/2018	1130	surface	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<14.9	<14.9	<14.9	<14.9	2270
T-4 1'	575485-025	1/31/2018	1130	1	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	1890
T-4 2'	575485-026	1/31/2018	1130	2	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	1510
T-4 3'	575485-027	1/31/2018	1130	3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	1190
T-4 4'	575485-028	1/31/2018	1130	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	29

Note: bolded "red" results indicate >1% TPH by weight

NA - not analyzed



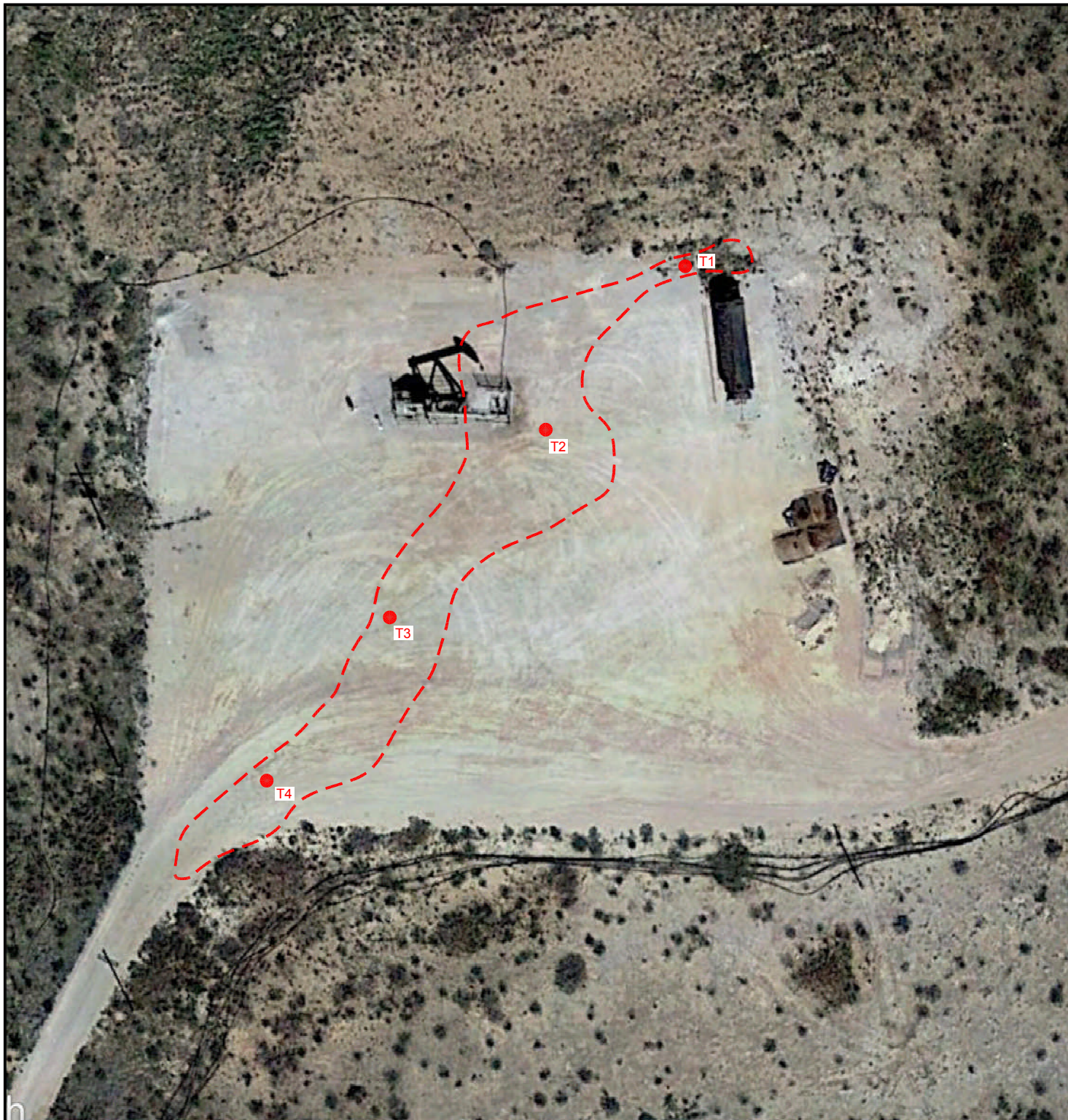
0 1/2
Miles

EnTech
Houston, TX • (281) 362-2714

Figure 1
Site Location Map
Concho - Willow A State #003
Eddy County, New Mexico

Job No.: COG18007

DATE: 3/18



LEGEND:

- - - - -Stained Area
- -Sample Location



Figure 2
Site Map
Concho - Willow A State #003
Eddy County, New Mexico

Job No.: COG18007

DATE: 3/8

ATTACHMENT A

Laboratory Analytical Reports



Certificate of Analysis Summary 575485

COG Operating LLC, Artesia, NM

Project Name: Willow A State #3



Project Id:

Contact: Dakota Neel

Project Location:

Date Received in Lab: Tue Feb-06-18 09:45 am

Report Date: 21-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	575485-001	575485-002	575485-003	575485-008	575485-009	575485-010
	Field Id:	T1	T1	T1	T2	T2	T2
	Depth:	0- ft	1- ft	2- ft	0- ft	1- ft	2- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jan-31-18 10:00	Jan-31-18 10:00	Jan-31-18 10:00	Jan-31-18 10:30	Jan-31-18 10:30	Jan-31-18 10:30
BTEX by EPA 8021B SUB: T104704400-18-14	Extracted:	Feb-10-18 09:15	Feb-10-18 09:15	Feb-10-18 09:15	Feb-10-18 09:15	Feb-10-18 09:15	Feb-10-18 09:15
	Analyzed:	Feb-10-18 23:49	Feb-11-18 00:06	Feb-11-18 00:25	Feb-11-18 03:34	Feb-11-18 03:53	Feb-11-18 03:17
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202
Toluene		<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202
Ethylbenzene		<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202
m,p-Xylenes		<0.00403 0.00403	<0.00401 0.00401	<0.00398 0.00398	<0.00397 0.00397	<0.00396 0.00396	<0.00403 0.00403
o-Xylene		<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202
Total Xylenes		<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202
Total BTEX		<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202
Chloride by EPA 300 SUB: T104704400-18-14	Extracted:	Feb-12-18 17:00	Feb-12-18 17:00	Feb-12-18 17:00	Feb-12-18 17:00	Feb-12-18 17:00	Feb-12-18 17:00
	Analyzed:	Feb-13-18 00:38	Feb-12-18 22:53	Feb-12-18 23:00	Feb-12-18 23:14	Feb-12-18 23:35	Feb-12-18 23:42
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		8510 99.6	959 49.4	257 49.6	8530 49.1	10100 99.4	2720 49.8
TPH By SW8015 Mod SUB: T104704400-18-14	Extracted:	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00
	Analyzed:	Feb-10-18 12:36	Feb-10-18 13:37	Feb-10-18 13:58	Feb-10-18 14:39	Feb-10-18 15:21	Feb-10-18 15:41
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0

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 575485

COG Operating LLC, Artesia, NM

Project Name: Willow A State #3



Project Id:

Contact: Dakota Neel

Project Location:

Date Received in Lab: Tue Feb-06-18 09:45 am

Report Date: 21-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	575485-011	575485-012	575485-017	575485-018	575485-019	575485-020
	Field Id:	T2	T2	T3	T3	T3	T3
	Depth:	3- ft	4- ft	0- ft	1- ft	2- ft	3- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jan-31-18 10:30	Jan-31-18 10:30	Jan-31-18 11:00	Jan-31-18 11:00	Jan-31-18 11:00	Jan-31-18 11:00
BTEx by EPA 8021B SUB: T104704400-18-14	Extracted:	Feb-10-18 09:15		Feb-10-18 09:15	Feb-10-18 10:00	Feb-13-18 10:00	Feb-13-18 10:00
	Analyzed:	Feb-11-18 04:12		Feb-11-18 06:07	Feb-11-18 03:33	Feb-13-18 14:26	Feb-13-18 14:44
	Units/RL:	mg/kg RL		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00201 0.00201		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Toluene		<0.00201 0.00201		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Ethylbenzene		<0.00201 0.00201		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
m,p-Xylenes		<0.00402 0.00402		<0.00398 0.00398	<0.00398 0.00398	<0.00401 0.00401	<0.00403 0.00403
o-Xylene		<0.00201 0.00201		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Total Xylenes		<0.00201 0.00201		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Total BTEx		<0.00201 0.00201		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Chloride by EPA 300 SUB: T104704400-18-14	Extracted:	Feb-12-18 17:00	Feb-17-18 11:00	Feb-12-18 17:00	Feb-12-18 17:30	Feb-12-18 17:30	Feb-12-18 17:30
	Analyzed:	Feb-12-18 23:49	Feb-17-18 17:17	Feb-12-18 23:56	Feb-13-18 04:28	Feb-13-18 04:49	Feb-13-18 04:56
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1130 49.4	56.1 24.8	4410 25.0	1890 24.7	833 49.9	131 49.6
TPH By SW8015 Mod SUB: T104704400-18-14	Extracted:	Feb-09-18 16:00		Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00
	Analyzed:	Feb-10-18 16:01		Feb-10-18 16:23	Feb-10-18 16:43	Feb-10-18 17:45	Feb-10-18 18:06
	Units/RL:	mg/kg RL		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0
Total TPH		<15.0 15.0		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0

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 575485

COG Operating LLC, Artesia, NM

Project Name: Willow A State #3



Project Id:

Contact: Dakota Neel

Project Location:

Date Received in Lab: Tue Feb-06-18 09:45 am

Report Date: 21-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	575485-024	575485-025	575485-026	575485-027	575485-028	
	Field Id:	T4	T4	T4	T4	T4	
	Depth:	0- ft	1- ft	2- ft	3- ft	4- ft	
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	
	Sampled:	Jan-31-18 11:30	Jan-31-18 11:30	Jan-31-18 11:30	Jan-31-18 11:30	Jan-31-18 11:30	
BTEX by EPA 8021B SUB: T104704400-18-14	Extracted:	Feb-10-18 10:00	Feb-10-18 10:00	Feb-13-18 10:00	Feb-13-18 10:00		
	Analyzed:	Feb-11-18 05:22	Feb-11-18 05:40	Feb-13-18 15:10	Feb-13-18 15:28		
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200		
Toluene		<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200		
Ethylbenzene		<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200		
m,p-Xylenes		<0.00397 0.00397	<0.00396 0.00396	<0.00398 0.00398	<0.00399 0.00399		
o-Xylene		<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200		
Total Xylenes		<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200		
Total BTEX		<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200		
Chloride by EPA 300 SUB: T104704400-18-14	Extracted:	Feb-12-18 17:30	Feb-12-18 17:30	Feb-12-18 17:30	Feb-12-18 17:30	Feb-17-18 11:00	
	Analyzed:	Feb-13-18 05:03	Feb-13-18 05:10	Feb-13-18 05:17	Feb-13-18 05:24	Feb-19-18 13:53	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		2270 24.7	1890 25.0	1510 24.7	1190 49.6	29.0 5.00	
TPH By SW8015 Mod SUB: T104704400-18-14	Extracted:	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00	Feb-09-18 16:00		
	Analyzed:	Feb-10-18 18:26	Feb-10-18 18:47	Feb-10-18 19:07	Feb-10-18 19:27		
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Diesel Range Organics (DRO)		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Oil Range Hydrocarbons (ORO)		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Total TPH		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0		

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

Analytical Report 575485

for COG Operating LLC

Project Manager: Dakota Neel

Willow A State #3

21-FEB-18

Collected By: Client



**4147 Greenbriar Dr.
Stafford, TX 77477**

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

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

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



21-FEB-18

Project Manager: **Dakota Neel**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **575485**
Willow A State #3
Project Address:

Dakota Neel:

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) 575485. 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. 575485 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Kelsey Brooks

Project Manager

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

Certified and approved by numerous States and Agencies.

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

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1	S	01-31-18 10:00	0 ft	575485-001
T1	S	01-31-18 10:00	1 ft	575485-002
T1	S	01-31-18 10:00	2 ft	575485-003
T2	S	01-31-18 10:30	0 ft	575485-008
T2	S	01-31-18 10:30	1 ft	575485-009
T2	S	01-31-18 10:30	2 ft	575485-010
T2	S	01-31-18 10:30	3 ft	575485-011
T2	S	01-31-18 10:30	4 ft	575485-012
T3	S	01-31-18 11:00	0 ft	575485-017
T3	S	01-31-18 11:00	1 ft	575485-018
T3	S	01-31-18 11:00	2 ft	575485-019
T3	S	01-31-18 11:00	3 ft	575485-020
T4	S	01-31-18 11:30	0 ft	575485-024
T4	S	01-31-18 11:30	1 ft	575485-025
T4	S	01-31-18 11:30	2 ft	575485-026
T4	S	01-31-18 11:30	3 ft	575485-027
T4	S	01-31-18 11:30	4 ft	575485-028
T1	S	01-31-18 10:00	3 ft	Not Analyzed
T1	S	01-31-18 10:00	4 ft	Not Analyzed
T1	S	01-31-18 10:00	6 ft	Not Analyzed
T1	S	01-31-18 10:00	8 ft	Not Analyzed
T2	S	01-31-18 10:30	6 ft	Not Analyzed
T2	S	01-31-18 10:30	8 ft	Not Analyzed
T2	S	01-31-18 10:30	10 ft	Not Analyzed
T2	S	01-31-18 10:30	12 ft	Not Analyzed
T3	S	01-31-18 11:00	4 ft	Not Analyzed
T3	S	01-31-18 11:00	6 ft	Not Analyzed
T3	S	01-31-18 11:00	8 ft	Not Analyzed
T4	S	01-31-18 11:30	6 ft	Not Analyzed



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Willow A State #3

Project ID:
Work Order Number(s): 575485

Report Date: 21-FEB-18
Date Received: 02/06/2018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3040747 BTEX by EPA 8021B

Lab Sample ID 575485-010 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 575485-001, -002, -003, -004, -008, -009, -010, -011, -017.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

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

Batch: LBA-3040877 BTEX by EPA 8021B

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

Lab Sample ID 575485-018 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 575485-018, -024, -025.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3040912 BTEX by EPA 8021B

Surrogate 1,4-Difluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 575485-026.

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



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T1 Matrix: Soil Date Received: 02.06.18 09.45
Lab Sample Id: 575485-001 Date Collected: 01.31.18 10.00 Sample Depth: 0 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: LRI % Moisture:
Analyst: LRI Date Prep: 02.12.18 17.00 Basis: Wet Weight
Seq Number: 3040835 SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8510	99.6	mg/kg	02.13.18 00.38		20

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 02.09.18 16.00 Basis: Wet Weight
Seq Number: 3040791 SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 12.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 12.36	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 12.36	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 12.36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	101	%	70-135	02.10.18 12.36		
o-Terphenyl	84-15-1	101	%	70-135	02.10.18 12.36		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T1
Lab Sample Id: 575485-001

Matrix: Soil
Date Collected: 01.31.18 10.00

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Date Prep: 02.10.18 09.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.10.18 23.49	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.10.18 23.49	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.10.18 23.49	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	02.10.18 23.49	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.10.18 23.49	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.10.18 23.49	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.10.18 23.49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	86	%	80-120	02.10.18 23.49		
4-Bromofluorobenzene	460-00-4	110	%	80-120	02.10.18 23.49		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T1
Lab Sample Id: 575485-002

Matrix: Soil
Date Collected: 01.31.18 10.00

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040835

Date Prep: 02.12.18 17.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	959	49.4	mg/kg	02.12.18 22.53		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.10.18 13.37	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.10.18 13.37	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.10.18 13.37	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.10.18 13.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	02.10.18 13.37	
o-Terphenyl	84-15-1	97	%	70-135	02.10.18 13.37	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T1
Lab Sample Id: 575485-002

Matrix: Soil
Date Collected: 01.31.18 10.00

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 09.15

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.11.18 00.06	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.11.18 00.06	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.11.18 00.06	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.11.18 00.06	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.11.18 00.06	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.11.18 00.06	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.11.18 00.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	86	%	80-120	02.11.18 00.06		
4-Bromofluorobenzene	460-00-4	110	%	80-120	02.11.18 00.06		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T1
Lab Sample Id: 575485-003

Matrix: Soil
Date Collected: 01.31.18 10.00

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040835

Date Prep: 02.12.18 17.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	257	49.6	mg/kg	02.12.18 23.00		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 13.58	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 13.58	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 13.58	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 13.58	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	02.10.18 13.58	
o-Terphenyl	84-15-1	94	%	70-135	02.10.18 13.58	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T1
Lab Sample Id: 575485-003

Matrix: Soil
Date Collected: 01.31.18 10.00

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 09.15

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.11.18 00.25	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.11.18 00.25	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.11.18 00.25	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.11.18 00.25	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.11.18 00.25	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.11.18 00.25	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.11.18 00.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	89	%	80-120	02.11.18 00.25		
4-Bromofluorobenzene	460-00-4	113	%	80-120	02.11.18 00.25		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-008

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040835

Date Prep: 02.12.18 17.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8530	49.1	mg/kg	02.12.18 23.14		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 14.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 14.39	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 14.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 14.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	02.10.18 14.39	
o-Terphenyl	84-15-1	100	%	70-135	02.10.18 14.39	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-008

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 09.15

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.11.18 03.34	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	02.11.18 03.34	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	02.11.18 03.34	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	02.11.18 03.34	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	02.11.18 03.34	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	02.11.18 03.34	U	1
Total BTEX		<0.00198	0.00198	mg/kg	02.11.18 03.34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	81	%	80-120	02.11.18 03.34		
4-Bromofluorobenzene	460-00-4	108	%	80-120	02.11.18 03.34		

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2	Matrix: Soil	Date Received: 02.06.18 09.45
Lab Sample Id: 575485-009	Date Collected: 01.31.18 10.30	Sample Depth: 1 ft
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: LRI		% Moisture:
Analyst: LRI	Date Prep: 02.12.18 17.00	Basis: Wet Weight
Seq Number: 3040835		SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	10100	99.4	mg/kg	02.12.18 23.35		20

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 02.09.18 16.00
Seq Number: 3040791	Basis: Wet Weight
	SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 15.21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 15.21	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 15.21	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 15.21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	02.10.18 15.21	
o-Terphenyl	84-15-1	95	%	70-135	02.10.18 15.21	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-009

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 09.15

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.11.18 03.53	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	02.11.18 03.53	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	02.11.18 03.53	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	02.11.18 03.53	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	02.11.18 03.53	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	02.11.18 03.53	U	1
Total BTEX		<0.00198	0.00198	mg/kg	02.11.18 03.53	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	85	%	80-120	02.11.18 03.53		
4-Bromofluorobenzene	460-00-4	108	%	80-120	02.11.18 03.53		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-010

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040835

Date Prep: 02.12.18 17.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2720	49.8	mg/kg	02.12.18 23.42		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 15.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 15.41	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 15.41	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 15.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	02.10.18 15.41	
o-Terphenyl	84-15-1	96	%	70-135	02.10.18 15.41	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-010

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 09.15

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.11.18 03.17	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.11.18 03.17	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.11.18 03.17	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	02.11.18 03.17	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.11.18 03.17	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.11.18 03.17	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.11.18 03.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	80-120	02.11.18 03.17		
1,4-Difluorobenzene	540-36-3	84	%	80-120	02.11.18 03.17		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2 Matrix: Soil Date Received: 02.06.18 09.45
Lab Sample Id: 575485-011 Date Collected: 01.31.18 10.30 Sample Depth: 3 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: LRI % Moisture:
Analyst: LRI Date Prep: 02.12.18 17.00 Basis: Wet Weight
Seq Number: 3040835 SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1130	49.4	mg/kg	02.12.18 23.49		10

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 02.09.18 16.00 Basis: Wet Weight
Seq Number: 3040791 SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 16.01	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 16.01	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 16.01	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 16.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	100	%	70-135	02.10.18 16.01		
o-Terphenyl	84-15-1	95	%	70-135	02.10.18 16.01		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-011

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Date Prep: 02.10.18 09.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.11.18 04.12	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.11.18 04.12	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.11.18 04.12	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.11.18 04.12	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.11.18 04.12	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.11.18 04.12	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.11.18 04.12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	86	%	80-120	02.11.18 04.12		
4-Bromofluorobenzene	460-00-4	104	%	80-120	02.11.18 04.12		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T2
Lab Sample Id: 575485-012

Matrix: Soil
Date Collected: 01.31.18 10.30

Date Received: 02.06.18 09.45
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Tech: OJS

Analyst: OJS

Seq Number: 3041430

Date Prep: 02.17.18 11.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	56.1	24.8	mg/kg	02.17.18 17.17		5



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-017

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040835

Date Prep: 02.12.18 17.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4410	25.0	mg/kg	02.12.18 23.56		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 16.23	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 16.23	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 16.23	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 16.23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	02.10.18 16.23	
o-Terphenyl	84-15-1	87	%	70-135	02.10.18 16.23	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-017

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040747

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 09.15

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.11.18 06.07	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.11.18 06.07	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.11.18 06.07	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.11.18 06.07	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.11.18 06.07	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.11.18 06.07	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.11.18 06.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	84	%	80-120	02.11.18 06.07		
4-Bromofluorobenzene	460-00-4	105	%	80-120	02.11.18 06.07		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-018

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040821

Date Prep: 02.12.18 17.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1890	24.7	mg/kg	02.13.18 04.28		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 16.43	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 16.43	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 16.43	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 16.43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	02.10.18 16.43	
o-Terphenyl	84-15-1	100	%	70-135	02.10.18 16.43	



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-018

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040877

Date Prep: 02.10.18 10.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.11.18 03.33	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.11.18 03.33	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.11.18 03.33	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.11.18 03.33	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.11.18 03.33	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.11.18 03.33	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.11.18 03.33	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	116	%	80-120	02.11.18 03.33		
1,4-Difluorobenzene	540-36-3	82	%	80-120	02.11.18 03.33		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-019

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040821

Date Prep: 02.12.18 17.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	833	49.9	mg/kg	02.13.18 04.49		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.10.18 17.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.10.18 17.45	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.10.18 17.45	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.10.18 17.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	02.10.18 17.45	
o-Terphenyl	84-15-1	99	%	70-135	02.10.18 17.45	



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-019

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040912

Prep Method: SW5030B

% Moisture:

Date Prep: 02.13.18 10.00

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.13.18 14.26	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.13.18 14.26	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.13.18 14.26	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.13.18 14.26	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.13.18 14.26	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.13.18 14.26	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.13.18 14.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	87	%	80-120	02.13.18 14.26		
4-Bromofluorobenzene	460-00-4	110	%	80-120	02.13.18 14.26		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-020

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040821

Date Prep: 02.12.18 17.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	131	49.6	mg/kg	02.13.18 04.56		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 18.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 18.06	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 18.06	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 18.06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	02.10.18 18.06	
o-Terphenyl	84-15-1	104	%	70-135	02.10.18 18.06	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T3
Lab Sample Id: 575485-020

Matrix: Soil
Date Collected: 01.31.18 11.00

Date Received: 02.06.18 09.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040912

Prep Method: SW5030B

% Moisture:

Date Prep: 02.13.18 10.00

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.13.18 14.44	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.13.18 14.44	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.13.18 14.44	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	02.13.18 14.44	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.13.18 14.44	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.13.18 14.44	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.13.18 14.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	80-120	02.13.18 14.44		
1,4-Difluorobenzene	540-36-3	80	%	80-120	02.13.18 14.44		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-024

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040821

Date Prep: 02.12.18 17.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2270	24.7	mg/kg	02.13.18 05.03		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.10.18 18.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.10.18 18.26	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.10.18 18.26	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.10.18 18.26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	02.10.18 18.26	
o-Terphenyl	84-15-1	99	%	70-135	02.10.18 18.26	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: **T4**
Lab Sample Id: 575485-024

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040877

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 10.00

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.11.18 05.22	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	02.11.18 05.22	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	02.11.18 05.22	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	02.11.18 05.22	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	02.11.18 05.22	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	02.11.18 05.22	U	1
Total BTEX		<0.00198	0.00198	mg/kg	02.11.18 05.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	94	%	80-120	02.11.18 05.22		
1,4-Difluorobenzene	540-36-3	80	%	80-120	02.11.18 05.22		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-025

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040821

Date Prep: 02.12.18 17.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1890	25.0	mg/kg	02.13.18 05.10		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 18.47	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 18.47	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 18.47	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 18.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	02.10.18 18.47	
o-Terphenyl	84-15-1	100	%	70-135	02.10.18 18.47	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-025

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040877

Prep Method: SW5030B

% Moisture:

Date Prep: 02.10.18 10.00

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.11.18 05.40	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	02.11.18 05.40	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	02.11.18 05.40	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	02.11.18 05.40	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	02.11.18 05.40	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	02.11.18 05.40	U	1
Total BTEX		<0.00198	0.00198	mg/kg	02.11.18 05.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	87	%	80-120	02.11.18 05.40		
4-Bromofluorobenzene	460-00-4	106	%	80-120	02.11.18 05.40		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4 Matrix: Soil Date Received: 02.06.18 09.45
Lab Sample Id: 575485-026 Date Collected: 01.31.18 11.30 Sample Depth: 2 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: LRI % Moisture:
Analyst: LRI Date Prep: 02.12.18 17.30 Basis: Wet Weight
Seq Number: 3040821 SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1510	24.7	mg/kg	02.13.18 05.17		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 02.09.18 16.00 Basis: Wet Weight
Seq Number: 3040791 SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 19.07	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 19.07	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 19.07	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 19.07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	02.10.18 19.07	
o-Terphenyl	84-15-1	101	%	70-135	02.10.18 19.07	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-026

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040912

Prep Method: SW5030B

% Moisture:

Date Prep: 02.13.18 10.00

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.13.18 15.10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.13.18 15.10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.13.18 15.10	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.13.18 15.10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.13.18 15.10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.13.18 15.10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.13.18 15.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	80-120	02.13.18 15.10		
1,4-Difluorobenzene	540-36-3	69	%	80-120	02.13.18 15.10	**	



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-027

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: LRI

Seq Number: 3040821

Date Prep: 02.12.18 17.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1190	49.6	mg/kg	02.13.18 05.24		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040791

Date Prep: 02.09.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.18 19.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.18 19.27	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.10.18 19.27	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.18 19.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	02.10.18 19.27	
o-Terphenyl	84-15-1	110	%	70-135	02.10.18 19.27	

COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-027

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040912

Prep Method: SW5030B

% Moisture:

Date Prep: 02.13.18 10.00

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.13.18 15.28	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.13.18 15.28	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.13.18 15.28	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	02.13.18 15.28	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.13.18 15.28	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.13.18 15.28	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.13.18 15.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	84	%	80-120	02.13.18 15.28		
4-Bromofluorobenzene	460-00-4	105	%	80-120	02.13.18 15.28		



Certificate of Analytical Results 575485



COG Operating LLC, Artesia, NM

Willow A State #3

Sample Id: T4
Lab Sample Id: 575485-028

Matrix: Soil
Date Collected: 01.31.18 11.30

Date Received: 02.06.18 09.45
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Tech: OJS

Analyst: OJS

Seq Number: 3041430

Date Prep: 02.17.18 11.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-14

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	29.0	5.00	mg/kg	02.19.18 13.53		1

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

****** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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COG Operating LLC
Willow A State #3

Analytical Method: Chloride by EPA 300

Seq Number: 3040835

MB Sample Id: 7638978-1-BLK

Matrix: Solid

LCS Sample Id: 7638978-1-BKS

Prep Method: E300P

Date Prep: 02.12.18

LCSD Sample Id: 7638978-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	272	109	265	106	90-110	3	20	mg/kg	02.12.18 22:18	

Analytical Method: Chloride by EPA 300

Seq Number: 3040821

MB Sample Id: 7638980-1-BLK

Matrix: Solid

LCS Sample Id: 7638980-1-BKS

Prep Method: E300P

Date Prep: 02.12.18

LCSD Sample Id: 7638980-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	271	108	262	105	90-110	3	20	mg/kg	02.13.18 02:08	

Analytical Method: Chloride by EPA 300

Seq Number: 3041430

MB Sample Id: 7639329-1-BLK

Matrix: Solid

LCS Sample Id: 7639329-1-BKS

Prep Method: E300P

Date Prep: 02.17.18

LCSD Sample Id: 7639329-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	272	109	274	110	90-110	1	20	mg/kg	02.17.18 14:48	

Analytical Method: Chloride by EPA 300

Seq Number: 3040835

Parent Sample Id: 575484-017

Matrix: Soil

MS Sample Id: 575484-017 S

Prep Method: E300P

Date Prep: 02.12.18

MSD Sample Id: 575484-017 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1340	250	1590	100	1590	100	90-110	0	20	mg/kg	02.13.18 00:17	

Analytical Method: Chloride by EPA 300

Seq Number: 3040835

Parent Sample Id: 575484-018

Matrix: Soil

MS Sample Id: 575484-018 S

Prep Method: E300P

Date Prep: 02.12.18

MSD Sample Id: 575484-018 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	743	249	970	91	965	89	90-110	1	20	mg/kg	02.12.18 22:39	X

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

COG Operating LLC
Willow A State #3

Analytical Method: Chloride by EPA 300

Seq Number: 3040821

Parent Sample Id: 575479-001

Matrix: Soil

MS Sample Id: 575479-001 S

Prep Method: E300P

Date Prep: 02.12.18

MSD Sample Id: 575479-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	28.9	250	300	108	302	109	90-110	1	20	mg/kg	02.13.18 02:29	

Analytical Method: Chloride by EPA 300

Seq Number: 3040821

Parent Sample Id: 575484-007

Matrix: Soil

MS Sample Id: 575484-007 S

Prep Method: E300P

Date Prep: 02.12.18

MSD Sample Id: 575484-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	70.8	247	335	107	325	103	90-110	3	20	mg/kg	02.13.18 04:07	

Analytical Method: Chloride by EPA 300

Seq Number: 3041430

Parent Sample Id: 576719-001

Matrix: Soil

MS Sample Id: 576719-001 S

Prep Method: E300P

Date Prep: 02.17.18

MSD Sample Id: 576719-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	15.8	245	287	111	302	117	90-110	5	20	mg/kg	02.17.18 15:04	X

Analytical Method: Chloride by EPA 300

Seq Number: 3041430

Parent Sample Id: 576776-004

Matrix: Soil

MS Sample Id: 576776-004 S

Prep Method: E300P

Date Prep: 02.17.18

MSD Sample Id: 576776-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	556	250	814	103	813	103	90-110	0	20	mg/kg	02.17.18 16:18	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3040791

MB Sample Id: 7638961-1-BLK

Matrix: Solid

LCS Sample Id: 7638961-1-BKS

Prep Method: TX1005P

Date Prep: 02.09.18

LCSD Sample Id: 7638961-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	844	84	894	89	70-135	6	35	mg/kg	02.10.18 11:55	
Diesel Range Organics (DRO)	<15.0	1000	959	96	1020	102	70-135	6	35	mg/kg	02.10.18 11:55	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	102		93		100		70-135	%	02.10.18 11:55
o-Terphenyl	105		102		106		70-135	%	02.10.18 11:55

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C-A) / B$
 $RPD = 200 * | (C-E) / (C+E) |$
 $[D] = 100 * (C) / [B]$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 575485

COG Operating LLC

Willow A State #3

Analytical Method: TPH By SW8015 Mod

Seq Number: 3040791

Parent Sample Id: 575485-001

Matrix: Soil

MS Sample Id: 575485-001 S

Prep Method: TX1005P

Date Prep: 02.09.18

MSD Sample Id: 575485-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	887	89	838	84	70-135	6	35	mg/kg	02.10.18 12:57	
Diesel Range Organics (DRO)	<15.0	998	987	99	972	97	70-135	2	35	mg/kg	02.10.18 12:57	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		94		70-135	%	02.10.18 12:57
o-Terphenyl	100		99		70-135	%	02.10.18 12:57

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040747

MB Sample Id: 7638894-1-BLK

Matrix: Solid

LCS Sample Id: 7638894-1-BKS

Prep Method: SW5030B

Date Prep: 02.10.18

LCSD Sample Id: 7638894-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0852	84	0.0814	81	70-130	5	35	mg/kg	02.10.18 21:15	
Toluene	<0.00202	0.101	0.0895	89	0.0858	86	70-130	4	35	mg/kg	02.10.18 21:15	
Ethylbenzene	<0.00202	0.101	0.0978	97	0.0942	94	71-129	4	35	mg/kg	02.10.18 21:15	
m,p-Xylenes	<0.00403	0.202	0.193	96	0.187	94	70-135	3	35	mg/kg	02.10.18 21:15	
o-Xylene	<0.00202	0.101	0.0963	95	0.0927	93	71-133	4	35	mg/kg	02.10.18 21:15	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	82		86		86		80-120	%	02.10.18 21:15
4-Bromofluorobenzene	97		119		114		80-120	%	02.10.18 21:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040877

MB Sample Id: 7638897-1-BLK

Matrix: Solid

LCS Sample Id: 7638897-1-BKS

Prep Method: SW5030B

Date Prep: 02.10.18

LCSD Sample Id: 7638897-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0951	94	0.0838	84	70-130	13	35	mg/kg	02.11.18 01:41	
Toluene	<0.00202	0.101	0.0872	86	0.0814	81	70-130	7	35	mg/kg	02.11.18 01:41	
Ethylbenzene	<0.00202	0.101	0.0901	89	0.0837	84	71-129	7	35	mg/kg	02.11.18 01:41	
m,p-Xylenes	<0.00403	0.202	0.175	87	0.163	82	70-135	7	35	mg/kg	02.11.18 01:41	
o-Xylene	<0.00202	0.101	0.0909	90	0.0839	84	71-133	8	35	mg/kg	02.11.18 01:41	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	83		87		91		80-120	%	02.11.18 01:41
4-Bromofluorobenzene	86		118		111		80-120	%	02.11.18 01:41

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

COG Operating LLC
Willow A State #3

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040912

MB Sample Id: 7639041-1-BLK

Matrix: Solid

LCS Sample Id: 7639041-1-BKS

Prep Method: SW5030B

Date Prep: 02.13.18

LCSD Sample Id: 7639041-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0990	0.0991	100	0.0885	89	70-130	11	35	mg/kg	02.13.18 11:26	
Toluene	<0.00198	0.0990	0.0965	97	0.0869	87	70-130	10	35	mg/kg	02.13.18 11:26	
Ethylbenzene	<0.00198	0.0990	0.100	101	0.0903	90	71-129	10	35	mg/kg	02.13.18 11:26	
m,p-Xylenes	<0.00396	0.198	0.195	98	0.176	88	70-135	10	35	mg/kg	02.13.18 11:26	
o-Xylene	<0.00198	0.0990	0.0993	100	0.0899	90	71-133	10	35	mg/kg	02.13.18 11:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	82		88		92		80-120	%	02.13.18 11:26
4-Bromofluorobenzene	112		119		115		80-120	%	02.13.18 11:26

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040747

Parent Sample Id: 575485-010

Matrix: Soil

MS Sample Id: 575485-010 S

Prep Method: SW5030B

Date Prep: 02.10.18

MSD Sample Id: 575485-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0548	55	0.0464	47	70-130	17	35	mg/kg	02.10.18 21:53	X
Toluene	<0.00201	0.100	0.0582	58	0.0509	51	70-130	13	35	mg/kg	02.10.18 21:53	X
Ethylbenzene	<0.00201	0.100	0.0673	67	0.0577	58	71-129	15	35	mg/kg	02.10.18 21:53	X
m,p-Xylenes	<0.00402	0.201	0.133	66	0.120	60	70-135	10	35	mg/kg	02.10.18 21:53	X
o-Xylene	<0.00201	0.100	0.0680	68	0.0609	61	71-133	11	35	mg/kg	02.10.18 21:53	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	82		89		80-120	%	02.10.18 21:53
4-Bromofluorobenzene	115		114		80-120	%	02.10.18 21:53

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040877

Parent Sample Id: 575485-018

Matrix: Soil

MS Sample Id: 575485-018 S

Prep Method: SW5030B

Date Prep: 02.10.18

MSD Sample Id: 575485-018 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0483	49	0.0603	60	70-130	22	35	mg/kg	02.11.18 02:18	X
Toluene	<0.00199	0.0994	0.0454	46	0.0619	62	70-130	31	35	mg/kg	02.11.18 02:18	X
Ethylbenzene	<0.00199	0.0994	0.0471	47	0.0634	64	71-129	30	35	mg/kg	02.11.18 02:18	X
m,p-Xylenes	<0.00398	0.199	0.0904	45	0.120	60	70-135	28	35	mg/kg	02.11.18 02:18	X
o-Xylene	<0.00199	0.0994	0.0484	49	0.0628	63	71-133	26	35	mg/kg	02.11.18 02:18	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	82		86		80-120	%	02.11.18 02:18
4-Bromofluorobenzene	100		113		80-120	%	02.11.18 02:18

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C-A) / B$
 $RPD = 200 * | (C-E) / (C+E) |$
 $[D] = 100 * (C) / [B]$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



COG Operating LLC

Willow A State #3

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040912

Parent Sample Id: 576101-001

Matrix: Soil

MS Sample Id: 576101-001 S

Prep Method: SW5030B

Date Prep: 02.13.18

MSD Sample Id: 576101-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0829	83	0.0930	92	70-130	11	35	mg/kg	02.13.18 12:41	
Toluene	0.00203	0.0994	0.0440	42	0.0441	42	70-130	0	35	mg/kg	02.13.18 12:41	X
Ethylbenzene	<0.00199	0.0994	0.0437	44	0.0367	36	71-129	17	35	mg/kg	02.13.18 12:41	X
m,p-Xylenes	<0.00398	0.199	0.0860	43	0.0666	33	70-135	25	35	mg/kg	02.13.18 12:41	X
o-Xylene	<0.00199	0.0994	0.0430	43	0.0329	33	71-133	27	35	mg/kg	02.13.18 12:41	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	83		83		80-120	%	02.13.18 12:41
4-Bromofluorobenzene	81		80		80-120	%	02.13.18 12:41

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 1 of 4

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

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Client / Reporting Information				Project Information				Analytical Information				Matrix Codes						
Company Name / Branch: COG Operating LLC				Project Name/Number: Wilson A State #3														
Company Address: 2407 Pecos Ave. Artesia NM 88210				Project Location:														
Email: ornela@concho.com shirley@concho.com ogray@concho.com Project Contact: maskell@concho.com Dakota Neel				Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Ave. Midland TX, 79701														
Phone No: 575-746-2010				PO Number:														
Samplers Name:																		
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TPH Extended	BTEX	CHLORIDES	Field Comments
1	T1	0'	11/3/18	10:00AM	S										X	X	X	
2	T1	1'													X	X	X	
3	T1	2'													X	X	X	
4	T1	3'													X	X	X	
5	T1	4'																
6	T1	5'																
7	T1	6'																
8		8'																
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Turnaround Time (Business days)																		
Data Deliverable Information																		
Notes:																		
Same Day TAT ☐ 5 Day TAT ☐ Level II Std QC ☐ Level IV (Full Data Pkg raw data) ☐																		
Next Day EMERGENCY ☐ 7 Day TAT ☐ Level III Std QC+ Forms ☐ TRRP Level IV ☐																		
2 Day EMERGENCY ☐ Contract TAT ☐ Level 3 (CLP Forms) ☐ UST / RG-411 ☐																		
3 Day EMERGENCY ☐ TRRP Checklist ☐																		
TAT Starts Day received by Lab, if received by 5:00 pm																		
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																		
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Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 2 of 4

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes			
Company Name / Branch: COG Operating LLC				Project Name/Number: WILLOW A STAYS #3											
Company Address: 2407 Pecos Ave, Artesia NM 88210				Project Location:											
Email: dnee2@concho.com				Phone No: 575-746-2010											
slhickcock@concho.com				Invoice To: COG Operating LLC											
cgray@concho.com				Attn: Robert McNeill											
Project Contact: dakota.neel@concho.com				600 W. Illinois Ave.											
Dakota Neel				Midland TX, 79701											
Sample's Name:				PO Number:											
No.		Field ID / Point of Collection		Collection		Number of preserved bottles		TPH Extended		BTEX		CHLORIDES		Field Comments	
		Sample Depth		Date		Time		Matrix		# of bottles		HCl		NaOH/Zn Acetate	
		HNO3		H2SO4		NaOH		NaHSO4		MEOH		NONE			
1	T2	0'	1/31/15	1030AM	5										
2	T2	1'													
3	T2	2'													
4	T2	3'													
5	T2	4'													
6	T2	6'													
7	T2	8'													
8	T2	10'													
9	T2	12'													
10															
Turnaround Time (Business days)				Data Deliverable Information				Notes:							
☐ Same Day TAT		☐ 5 Day TAT		☐ Level II Std QC		☐ Level IV (Full Data Pkg /raw data)									
☐ Next Day EMERGENCY		☐ 7 Day TAT		☐ Level III Std QC+ Forms		☐ TRRP Level IV									
☐ 2 Day EMERGENCY		☐ Contract TAT		☐ Level 3 (CLP Forms)		☐ UST / RG -411									
☐ 3 Day EMERGENCY				☐ TRRP Checklist											
TAT Starts Day received by Lab, if received by 5:00 pm															
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY															
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Setting the Standard since 1990
Stardford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 3 of 4

San Antonio, Texas (210-509-3344)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

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Xenco Quote #

Xenco Job #

575485

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes						
Company Name / Branch: COG Operating LLC				Project Name/Number: Willow A STARS #3														
Company Address: 2407 Percos Ave. Artesia NM 88210				Project Location:														
Email: dnee2@concho.com				Invoice To: COG Operating LLC														
Phone No: 575-746-2010				Attn: Robert McNeill														
Project Contact: dakota.neel@concho.com				600 W. Illinois Ave.														
Dakota Neel				Midland TX, 79701														
Samplers Name:				PO Number:														
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH Extended	BTEX	CHLORIDES	Field Comments
1	T3	0'	1/31/18	11:00AM	S										X	X	X	
2	T3	1'													X	X	X	
3	T3	2'													X	X	X	
4	T3	3'													X	X	X	
5	T3	4'																
6	T3	6'																
7	T3	8'																
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10																		
Turnaround Time (Business days)																		
Data Deliverable Information																		
Notes: 533 PACS #1																		
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SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																		
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CHAIN OF CUSTODY

Page 1 of 4.

Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

San Antonio, Texas (210-509-3334)

Phoenix, Arizona (480-355-0900)

www.xenco.com

[illegible]

Notice: Signature of this document and reimbursement of samples constitutes a valid purchase order from client company to Xeno, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xeno 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 Xeno. A minimum charge of \$50 will be applied to the cost of samples. Any samples received by Xeno and not analyzed will be incinerated at \$5. per sample. Thank you for your business. We will be honored unless previously negotiated under a fully executed client contract.

Signature: [Signature] Date: 4.2



Serving the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas, Texas (214-902-0300)

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

CHAIN OF CUSTODY

Page 2 of 4

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515485

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes						
Company Name / Branch: COG Operating LLC				Project Name/Number: WILLOW A STARS #3														
Company Address: 2407 Pecos Ave. Artesia NM 88210				Project Location:														
Email: dlee12@concho.com slitchcock@concho.com ggray@concho.com thaseel@concho.com				Phone No: 575-746-2010				Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Ave. Midland TX, 79701										
Project Contact: Dakota Neel				PO Number:														
Sampler's Name:																		
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH Extended	BTEX	CHLORIDES	Field Comments
1	T2	0'	11/31/18	1030AM	S										X	X	X	
2	T2	1'													X	X	X	
3	T2	2'													X	X	X	
4	T2	3'													X	X	X	
5	T2	4'																
6	T2	6'																
7	T2	8'																
8	T2	10'																
9	T2	12'																
10																		
Turnaround Time (Business days)																		
Data Deliverable Information																		
Notes:																		
Same Day TAT ☐ 5 Day TAT ☐ Level II Std QC ☐ Level IV (Full Data Pkg / raw data) ☐																		
Next Day EMERGENCY ☐ 7 Day TAT ☐ Level III Std QC+ Forms ☐ TRRP Level IV ☐																		
2 Day EMERGENCY ☐ Contract TAT ☐ Level 3 (CLP Forms) ☐ UST / RG-411 ☐																		
3 Day EMERGENCY ☐ TRRP Checklist ☐																		
TAT Starts Day received by Lab, if received by 5:00 pm																		
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																		
FED-EX / UPS: Tracking #																		
Relinquished by sampler:																		
Relinquished by:																		
Date Time: 2-5-18 1:30 Received By: [Signature] 2-5-18 3:00 Relinquished By: [Signature]																		
Date Time: 2-5-18 9:45 Received By: [Signature] 2-5-18 3:00 Relinquished By: [Signature]																		
Custody Seal # [] Preserved where applicable [] On Ice [] Cooler Temp. [] Thermo. Corr. Factor []																		

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 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 3 of 4

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

www.xenco.com

Xenco Quote # Xenco Job #

575485

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW = Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW = Ocean/Sea Water
WI = Wipe
O = Oil
WW = Waste Water
A = Air

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes	
Company Name / Branch: COG Operating LLC		Project Name/Number: WILLOW A STARS #3					
Company Address: 2407 Pecos Ave. Artesia NM 80210		Project Location:					
Email: dlee2@concho.com slitchook@concho.com ggray@concho.com mshel@concho.com		Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Ave. Midland TX 79701					
Project Contact: Dakota Neel		PO Number:					
Samples Name:							

No.	Field ID / Point of Collection	Collection			Matrix	# of bottles	Number of preserved bottles							TPH Extended	BTEX	CHLORIDES						Field Comments	WW= Waste Water A = Air	
		Sample Depth	Date	Time			HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH											NONE
1	T3	0'	1/31/18	11:00AM	S									X	X	X								
2	T3	1'												X	X	X								
3	T3	2'												X	X	X								
4	T3	3'												X	X	X								
5	T3	4'												X	X	X								
6	T3	6'																						
7	T3	8'																						
8																								
9																								
10																								
Turnaround Time (Business days)																								

Data Deliverable Information

Notes:

562 PACE #1

☐ Same Day TAT	☐ 5 Day TAT	☐ Level II Std QC	☐ Level IV (Full Data Pkg raw data)
☐ Next Day EMERGENCY	☐ 7 Day TAT	☐ Level III Std QC+ Forms	☐ TRRP Level IV
☐ 2 Day EMERGENCY	☐ Contract TAT	☐ Level 3 (CLP Forms)	☐ UST / RG 411
☐ 3 Day EMERGENCY		☐ TRRP Checklist	

TAT Starts Day received by Lab, if received by 5:00 pm

Relinquished by Sampler:	Relinquished By:	Date Time:	Relinquished By:	Date Time:	FED-EX / UPS: Tracking #
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Relinquished by:	Relinquished By:	Date Time:	Relinquished By:	Date Time:
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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 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

CHAIN OF CUSTODY

Page 4 of 4

www.xenco.com

Xenco Quote # Xenco Job #

575485

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes							
Company Name / Branch: COG Operating LLC				Project Name/Number: WILLOW A 57412 H3															
Company Address: 2407 Pease Ave. Artesia NM 88210				Project Location:															
Email: dree2@xenco.com slithcock@xenco.com ggray@xenco.com Project Contact: rissell@xenco.com Dakota Meel Samplers Name:				Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Ave. Midland TX 79701 PO Number:															
No.	Field ID / Point of Collection	Collection			Number of preserved bottles								TPH Extended	BTEX	CHLORIDES	Field Comments			
		Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4					MEOH	NONE	
1	T4	0'	1/3/16	11:30A	S														
2	T4	1'																	
3	T4	2'																	
4	T4	3'																	
5	T4	4'																	
6	T4	6'																	
7																			
8																			
9																			
10																			
Turnaround Time (Business days)		Data Deliverable Information																	
☐ Same Day TAT		☐ 5 Day TAT		☐ Level II Std QC		☐ Level IV (Full Data Pkg / raw data)		Notes: 552 PAGE #1											
☐ Next Day EMERGENCY		☐ 7 Day TAT		☐ Level III Std QC+ Forms		☐ TRRP Level IV													
☐ 2 Day EMERGENCY		☐ Contract TAT		☐ Level 3 (CLP Forms)		☐ UST / RG 411													
☐ 3 Day EMERGENCY				☐ TRRP Checklist															
TAT Starts Day received by Lab, if received by 5:00 pm																			
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																			
Relinquished by Sampler:				Date Time:				Received By:				Date Time:				FED-EX / UPS: Tracking #			
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Relinquished by:				Date Time:				Received By:				Date Time:							
3				2/5/18 1:30				3/16/18 1:00P				2/5/18 3:00							
Relinquished by:				Date Time:				Received By:				Date Time:							
5				2/6/18 9:45				3/16/18 1:00P				2/5/18 3:00							

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 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

ID: HOBA (575) 392-7550

MAIL SERVICES ETC, LLC
4008 N GRIMES

HOBBS, NM 88240
UNITED STATES US

SHIP DATE: 05FEB18
ACTWGT: 43.00 LB MAN
CAD: 0909328/CAFE3108
DIMS: 26x14x14 IN

BILL RECIPIENT

TO XENCO LABORATORIES
XENCO LABORATORIES
4143 GREENBRIAR DR

STAFFORD TX 77477

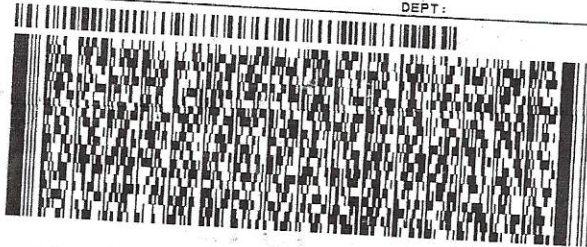
(281) 240-4200

INV:

PO:

REF:

DEPT:



FedEx
Express



2 of 2
MPS# 6606 3916 1070
0263
Mstr# 6606 3916 1069

TUE - 06 FEB 10:30A
PRIORITY OVERNIGHT

0201

AB SGRA

77477

TX-US IAH



Part # 156148-434 RRD 09/16



Inter-Office Shipment

Page 1 of 4

IOS Number 1055592

Date/Time: 02/06/18 11:26

Created by: Maria Paula Guerra

Please send report to: Kelsey Brooks

Lab# From: **Houston**

Delivery Priority:

Address: 4147 Greenbriar Dr.

Lab# To: **Midland**

Air Bill No.:

Phone: Stafford, TX 77477

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
575485-001	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-001	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-001	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-002	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-002	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-002	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-003	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-003	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-003	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-004	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-004	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-004	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-005	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-005	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-005	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-006	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-006	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-006	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-007	S	T1	01/31/18 10:00	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-007	S	T1	01/31/18 10:00	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-007	S	T1	01/31/18 10:00	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-008	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-008	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-008	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-009	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	



Inter-Office Shipment

Page 2 of 4

IOS Number **1055592**

Date/Time: 02/06/18 11:26

Created by: Maria Paula Guerra

Please send report to: Kelsey Brooks

Lab# From: **Houston**

Delivery Priority:

Address: 4147 Greenbriar Dr.

Lab# To: **Midland**

Air Bill No.:

Phone: Stafford, TX 77477

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
575485-009	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-009	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-010	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-010	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-010	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-011	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-011	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-011	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-012	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-012	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-012	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-013	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-013	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-013	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-014	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-014	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-014	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-015	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-015	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-015	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-016	S	T2	01/31/18 10:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-016	S	T2	01/31/18 10:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 1	
575485-016	S	T2	01/31/18 10:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-017	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-017	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 1	



Inter-Office Shipment

Page 3 of 4

IOS Number **1055592**

Date/Time: 02/06/18 11:26

Created by: Maria Paula Guerra

Please send report to: Kelsey Brooks

Lab# From: **Houston**

Delivery Priority:

Address: 4147 Greenbriar Dr.

Lab# To: **Midland**

Air Bill No.:

Phone: Stafford, TX 77477

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
575485-017	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-018	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-018	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-018	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-019	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-019	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-019	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-020	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-020	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-020	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-021	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-021	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-021	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-022	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-022	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-022	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-023	S	T3	01/31/18 11:00	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-023	S	T3	01/31/18 11:00	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-023	S	T3	01/31/18 11:00	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-024	S	T4	01/31/18 11:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-024	S	T4	01/31/18 11:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-024	S	T4	01/31/18 11:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-025	S	T4	01/31/18 11:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-025	S	T4	01/31/18 11:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-025	S	T4	01/31/18 11:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	



Inter-Office Shipment

Page 4 of 4

IOS Number **1055592**

Date/Time: 02/06/18 11:26

Created by: Maria Paula Guerra

Please send report to: Kelsey Brooks

Lab# From: **Houston**

Delivery Priority:

Address: 4147 Greenbriar Dr.

Lab# To: **Midland**

Air Bill No.:

Phone: Stafford, TX 77477

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
575485-026	S	T4	01/31/18 11:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-026	S	T4	01/31/18 11:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-026	S	T4	01/31/18 11:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-027	S	T4	01/31/18 11:30	SW8015MOD_NM	TPH By SW8015 Mod	02/12/18	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-027	S	T4	01/31/18 11:30	E300_CL	Chloride by EPA 300	02/12/18	02/28/18	KEB	CL	
575485-027	S	T4	01/31/18 11:30	SW8021B	BTEX by EPA 8021B	02/12/18	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-028	S	T4	01/31/18 11:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	
575485-028	S	T4	01/31/18 11:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-028	S	T4	01/31/18 11:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-029	S	T4	01/31/18 11:30	SW8015MOD_NM	TPH By SW8015 Mod	HOLD	02/14/18	KEB	PHCC10C28 PHCC28C35 I	
575485-029	S	T4	01/31/18 11:30	SW8021B	BTEX by EPA 8021B	HOLD	02/14/18	KEB	BR4FBZ BZ BZME EBZ X	
575485-029	S	T4	01/31/18 11:30	E300_CL	Chloride by EPA 300	HOLD	02/28/18	KEB	CL	

Inter Office Shipment or Sample Comments:

Relinquished By

Maria Paula Guerra

Received By:

Connie Hernandez

Date Relinquished: 02/06/2018

Date Received: 02/08/2018 11:30

Cooler Temperature: 1.9



XENCO Laboratories



Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 1055592

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sent By: Maria Paula Guerra

Date Sent: 02/06/2018 11:26 AM

Received By: Connie Hernandez

Date Received: 02/08/2018 11:30 AM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 *Custody Seals Signed and dated for Containers/coolers	N/A
#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:

Connie Hernandez

Date: 02/08/2018



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 02/06/2018 09:45:00 AM

Work Order #: 575485

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR:HOU068

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	No
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes Xenco Midland
#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: 
Maria Paula Guerra

Date: 02/06/2018

Checklist reviewed by: 
Kelsey Brooks

Date: 02/06/2018

ATTACHMENT B
NMOCD C-141 Report

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 McNeill	
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No.: 432-683-7443	
Facility Name: Willow A State #003	Facility Type: Battery	
Surface Owner: State	Mineral Owner: State	API No.: 30-015-33371

LOCATION OF RELEASE

Unit Letter J	Section 3	Township 25S	Range 28E	Feet from the 2570	North/South Line South	Feet from the 1650	East/West Line East	County Eddy
------------------	--------------	-----------------	--------------	-----------------------	---------------------------	-----------------------	------------------------	----------------

Latitude: 32.1589088 Longitude: -104.0718384 NAD83

NATURE OF RELEASE

Type of Release: Oil & Produced Water	Volume of Release: 5 bbls PW; 3 bbls Oil	Volume Recovered: 2 bbls PW; 1 bbls Oil
Source of Release: Wellhead	Date and Hour of Occurrence: 12/20/2017 1:30 pm	Date and Hour of Discovery: 12/20/2017 1:30 pm
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.*

This release was caused by a stuffing box leak after being serviced by a hot oiler. The stuffing box will be repacked and an environmental pot will be installed on the wellhead.

Describe Area Affected and Cleanup Action Taken.*

The release impacted the well pad and a small portion of the adjacent pasture. A vacuum truck was dispatched to recover all freestanding fluids. Concho will have the spill area evaluated for 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:		OIL CONSERVATION DIVISION	
		Approved by Environmental Specialist:	
Printed Name: Dakota Neel			
Title: HSE Coordinator	Approval Date:	Expiration Date:	
E-mail Address dneel2@concho.com	Conditions of Approval:		Attached ☐
Date: 12/22/2017	Phone: 575-746-2010		

* Attach Additional Sheets If Necessary