

September 29, 2017

Olivia Yu  
Oil Conservation Division  
District 1 – Hobbs  
1625 N. French Dr.  
Hobbs, NM 88240

Amber Groves  
Hobbs Field Office  
New Mexico State Land Office  
2827 N. Dal Paso St., Suite 117  
Hobbs, New Mexico 88240

**APPROVED**

*By Olivia Yu at 10:31 am, Oct 16, 2017*

NMOCD approves of the delineation completed for 1RP-4695. For the proposed remediation, confirmation sidewall and bottom samples are required for the area represented by T-1 and T-2.

**Re: Work Plan  
Macho Nacho State #001H (1RP-4695)  
Unit Letter A, Section 07, Township 24S, Range 33E  
Lea County, NM**

Ms. Yu/Ms. Groves,

COG Operating LLC is pleased to submit for your consideration the following work plan for the Macho Nacho State #001H Tank Battery. The plan is in response to a crude oil release that occurred on May 9, 2017. Subsequent to the release a C-141 Initial report was submitted to the New Mexico Oil Conservation Division (NMOCD) and New Mexico State Land Office (NMSLO) on May 10, 2017 (1RP-4695).

## **BACKGROUND**

On May 8, 2017, during maintenance activities the well and compressor were shut in and the heater treater was isolated. When the compressor came back online on May 9, 2017, the casing and choke were not shut in and it resulted in fluid being sent to the flare. The fluid from the release oversprayed a portion of the location as well as the adjacent pasture. A vacuum truck was dispatched to remove any standing fluids from within the bermed area around the flare. A crew was dispatched to perform an initial scrape of the area on location and to spray microblaze on the impacted soil and vegetation in the pasture.

## **GROUNDWATER**

A groundwater database maintained by the New Mexico Office of the State of Engineer (NMOSE) did not identify any registered water wells in Section 07, Township 24S, Range 33E. The Chevron Trend Map utilized by the NMOCD Hobbs District Office indicates depth to groundwater is greater than 100 feet below ground surface (bgs). No

water wells or surface water was observed within 1,000 feet of the release site. Based on the NMOCD ranking criteria, the release area would be classified at a site ranking of zero (0).

### **ANALYTICAL RESULTS**

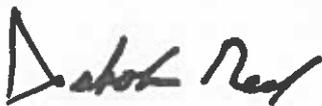
On July 25, 2017, COG personnel collected 29 soil samples from the subject area. Soil samples were collected from five (5) trenches at depths ranging from surface to twelve (12) feet bgs. The soil samples were submitted to a laboratory for analysis of benzene, toluene, ethylbenzene and xylenes (BTEX), total petroleum hydrocarbons (TPH) and chloride.

Analytical results indicate chloride concentration were within the recommended remedial action levels (RRAL)s for a site ranking of zero (0). Chloride concentration ranged from <4.92 mg/Kg in soil sample T2-1' to 54.7 mg/Kg for soil sample T2-Surface. TPH and BTEX concentrations are elevated for sample area T1 to a depth of three (3) feet and in T2 at surface level (see attached site diagram and sample table). TPH concentrations ranged from <14.9 mg/Kg to 19,700 in soil sample T2-Surface. BTEX concentrations ranged from <0.00198 mg/Kg to 354 mg/Kg in soil sample T1-2'.

### **WORK PLAN**

Based on the analytical results of soil samples collected on July 25, 2017, COG proposes the excavation of three (3) feet of material in the area of T1 and six (6) inches in the area of T2. The excavated areas will be backfilled with non-impacted like material and the area in the pasture will be reseeded. The excavated soil will be transported to a NMOCD approved disposal facility. If there are no objections or further stipulations, COG Operating LLC would like to begin the proposed remediation at this time. Please feel free to contact me with any questions or concerns at (432) 215-2783.

Sincerely,



Dakota Neel  
HSE Coordinator

Enclosed

- (1) Site Diagram and Summary Table
- (2) Laboratory Analysis
- (3) C-141 Initial (Copy)

<b>Macho Nacho State #1H</b>			
<b>SAMPLE ID</b>	<b>Chloride (mg/kg)</b>	<b>Total TPH (mg/kg)</b>	<b>Total BTEX (mg/kg)</b>
<b>T1 - Surface</b>	<b>&lt;4.96</b>	<b>6390</b>	<b>10.8</b>
T1 -1'	<4.96	10300	160
T1 -2'	<4.98	12900	354
T1 -3'	<5.00	11700	302
T1 -4'	<4.98	470	0.332
T1 -5'	<4.97	61.8	0.0113
T1 -7'	<4.95	29.1	<0.00341
T1 -10'	<4.95	<15.0	<0.00200
T1 -12'	6.19	19.7	<0.00330
<b>T2 - Surface</b>	<b>54.7</b>	<b>19700</b>	<b>0.264</b>
T2 -1'	<4.92	19.0	<0.00201
T2 -2'	<4.96	21.0	<0.00355
T2 -3'	<4.98	32.8	<0.00200
T2 -5'	<4.97	33.7	<0.00199
<b>T3 - Surface</b>	<b>&lt;4.98</b>	<b>15.4</b>	<b>&lt;0.00198</b>
T3 - 1'	<4.98	19.0	<0.00200
T3 -2'	<4.96	<15.0	<0.00358
T3 -3'	<4.99	<14.9	<0.00336
T3 -4'	<4.98	735	<0.00327
<b>T4 - Surface</b>	<b>&lt;4.96</b>	<b>&lt;15.0</b>	<b>&lt;0.00199</b>
T4 -1'	<4.91	<14.9	<0.00198
T4 -2'	<4.91	<15.0	<0.00351
T4 -3'	<4.93	<14.9	<0.00199
T4 -4'	<4.95	56.5	<0.00346
<b>T5 - Surface</b>	<b>&lt;4.98</b>	<b>&lt;15.0</b>	<b>&lt;0.00361</b>
T5 -1'	<4.97	<15.0	<0.00200
T5 -2'	<4.97	<15.0	<0.00199
T5 -3'	<4.93	<14.9	<0.00198
T5 -4'	<4.97	<15.0	<0.00202

# Macho Nacho State #1H

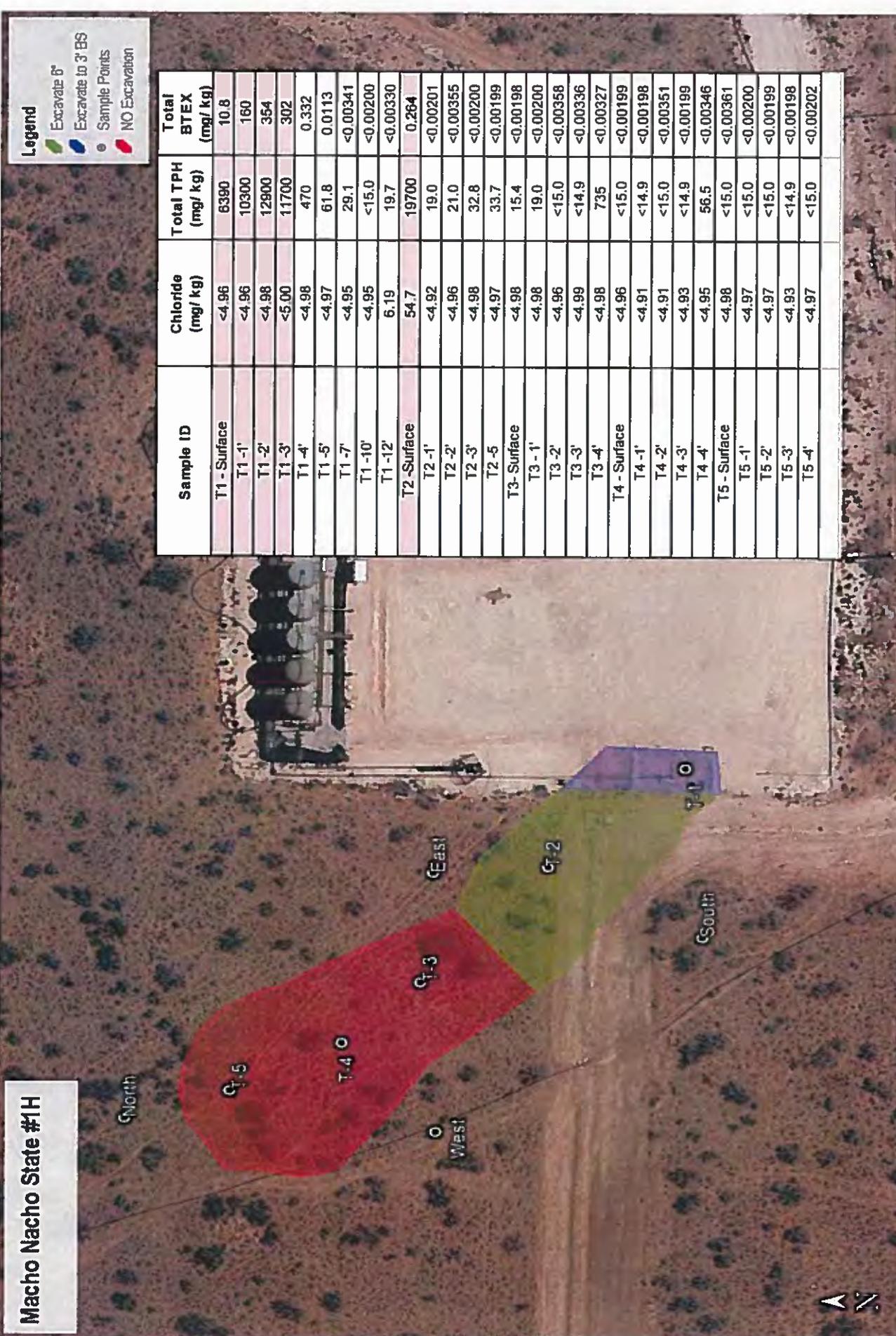
Site Diagram

Macho Nacho State #1H

### Legend

- █ Excavate 6"
- █ Excavate to 3' BS
- Sample Points
- █ NO Excavation

Sample ID	Chloride (mg/ kg)	Total TPH (mg/ kg)	Total BTEX (mg/ kg)
T1 - Surface	<4.96	6390	10.8
T1 -1'	<4.96	10300	160
T1 -2'	<4.98	12900	354
T1 -3'	<5.00	11700	302
T1 -4'	<4.98	470	0.332
T1 -5'	<4.97	61.8	0.0113
T1 -7'	<4.95	29.1	<0.00341
T1 -10'	<4.95	<15.0	<0.00200
T1 -12'	6.19	19.7	<0.00330
T2 -Surface	54.7	19700	0.264
T2 -1'	<4.92	19.0	<0.00201
T2 -2'	<4.96	21.0	<0.00355
T2 -3'	<4.98	32.8	<0.00200
T2 -5	<4.97	33.7	<0.00199
T3 -Surface	<4.98	15.4	<0.00198
T3 -1'	<4.98	19.0	<0.00200
T3 -2'	<4.96	<15.0	<0.00358
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T4 - Surface	<4.96	<15.0	<0.00199
T4 -1'	<4.91	<14.9	<0.00198
T4 -2'	<4.91	<15.0	<0.00351
T4 -3'	<4.93	<14.9	<0.00199
T4 -4'	<4.95	56.5	<0.00346
T5 - Surface	<4.98	<15.0	<0.00361
T5 -1'	<4.97	<15.0	<0.00200
T5 -2'	<4.97	<15.0	<0.00199
T5 -3'	<4.93	<14.9	<0.00198
T5 -4'	<4.97	<15.0	<0.00202



District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-141  
Revised August 8, 2011

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

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company: COG Operating LLC OGRID # 229137	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Macho Nacho State #001H	Facility Type: Tank Battery

Surface Owner: State	Mineral Owner:	API No. 30-025-39882
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	07	24S	33E	380	North	330	East	Lea

Latitude 32.2384529 Longitude -103.6039429

**NATURE OF RELEASE**

Type of Release: Oil	Volume of Release: 8 bbls	Volume Recovered: 4 bbls
Source of Release: Flare	Date and Hour of Occurrence: May 9, 2017 12:00 pm	Date and Hour of Discovery: May 9, 2017 12:00 pm
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

**RECEIVED**  
By Olivia Yu at 11:34 am, May 10, 2017

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

On May 8, 2017 the well and compressor was shut in and the heater treater was isolated for maintenance activities. The casing and choke were not shut in and the compressor came back on line and sent fluid out the top of the flare.

Describe Area Affected and Cleanup Action Taken.\*

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

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <i>Rebecca Haskell</i>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Rebecca Haskell	Approved by Environmental Specialist: <i>oy</i>	
Title: Senior HSE Coordinator	Approval Date: 5/10/2017	Expiration Date:
E-mail Address: rhaskell@concho.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: May 10, 2017 Phone: 432-683-7443		

\* Attach Additional Sheets If Necessary

1RP-4695      nOY1713041830      pOY1713042045



# Certificate of Analysis Summary 559042

COG Operating LLC, Artesia, NM  
Project Name: Macho Nacho State #1H



Date Received in Lab: Tue Aug-01-17 03:06 pm  
Report Date: 24-AUG-17  
Project Manager: Kelsey Brooks

Project Id:  
Contact: Aaron Lieb  
Project Location: Macho Nacho State

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	559042-001	559042-002	559042-003	559042-004	559042-005	559042-006
<b>BTEX by EPA 8021B</b>	TI - Surface	T1-1'	1- ft	SOIL	Jul-25-17 09:30	Aug-04-17 08:15	Aug-04-17 08:15	Aug-04-17 08:15	Aug-07-17 08:00	Aug-03-17 07:30	T1-5'
	mg/kg	5- ft									
	RL	SOIL									
	Aug-04-17 14:54	Aug-04-17 14:16	Aug-04-17 20:11	Aug-07-17 08:00	Aug-03-17 17:46	Aug-03-17 18:05	Jul-25-17 09:30	Jul-25-17 09:30	Jul-25-17 09:30	Jul-25-17 09:30	SOIL
	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202
Benzene	<0.0202	0.557	0.201	1.69	0.398	2.22	0.198	<0.00201	0.00201	<0.00199	0.00199
Toluene	1.53	30.7	0.201	77.4	0.398	79.2 D	0.401	0.00903	0.00201	0.00326	0.00199
Ethylbenzene	1.86	26.2	0.201	58.5	0.398	37.0	0.198	0.0497	0.00201	<0.00199	0.00199
m,p-Xylenes	5.11	73.1	0.402	156	0.797	152 D	0.802	0.170	0.00402	0.00501	0.00398
o-Xylene	2.32	29.1	0.201	60.6	0.398	31.3	0.198	0.103	0.00201	0.00303	0.00199
Total Xylenes	7.43	102	0.201	217	0.398	183	0.198	0.273	0.00201	0.00804	0.00199
Total BTEX	10.8	160	0.201	354	0.398	302	0.198	0.332	0.00201	0.0113	0.00199
<b>Inorganic Anions by EPA 300/300.1</b>	Aug-07-17 14:50										
	mg/kg										
	RL										
Chloride	<4.96	<4.96	4.96	<4.98	4.98	<5.00	5.00	<4.98	4.98	<4.97	4.97
<b>TPH By SW8015 Mod</b>	Aug-03-17 14:00										
	mg/kg										
	RL										
Gasoline Range Hydrocarbons (GRO)	303	2280	74.9	3860	74.8	3170	75.0	37.3	15.0	<14.9	14.9
Diesel Range Organics (DRO)	5360	7080	74.9	8040	74.8	7570	75.0	406	15.0	61.8	14.9
Oil Range Hydrocarbons (ORO)	722	914	74.9	1020	74.8	913	75.0	26.6	15.0	<14.9	14.9
Total TPH	6390	10300	74.9	12900	74.8	11700	75.0	470	15.0	61.8	14.9

*Kelsey Brooks*  
Kelsey Brooks  
Project Manager

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 unless otherwise agreed to in writing.

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# Certificate of Analysis Summary 559042

COG Operating LLC, Artesia, NM  
Project Name: Macho Nacho State #1H



Project Id:

Contact: Aaron Lieb

Project Location: Macho Nacho State

Date Received in Lab: Tue Aug-01-17 03:06 pm

Report Date: 24-AUG-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	559042-007	559042-008	559042-009	559042-010	559042-011	559042-012
<b>BTEX by EPA 8021B</b>		T1 -7'	7- ft	SOIL	Jul-25-17 09:45	Aug-04-17 15:45	Aug-03-17 07:30	Aug-04-17 15:45	Jul-25-17 10:00	Jul-25-17 10:00	T2 -2' 2- ft SOIL
Benzene	Extracted:	Aug-04-17 15:45	Aug-03-17 07:30	Aug-03-17 07:30	Aug-04-17 15:45						
Toluene	Analyzed:	Aug-05-17 02:56	Aug-03-17 18:42	Aug-05-17 03:15	Aug-03-17 18:42	Aug-05-17 01:25	Aug-03-17 18:42	Aug-05-17 01:25	Aug-03-17 19:39	Aug-03-17 19:39	Aug-05-17 03:34
Ethylbenzene	Units/RL:	<0.00341 0.00341	<0.00200 0.00200	<0.00330 0.00330	<0.00200 0.00200	<0.00317 0.00317	<0.00200 0.00200	<0.00317 0.00317	<0.00201 0.00201	<0.00201 0.00201	<0.00355 0.00355
m,p-Xylenes		<0.00341 0.00341	<0.00200 0.00200	<0.00330 0.00330	<0.00200 0.00200	0.00822 0.00317	<0.00201 0.00201	0.0332 0.00317	<0.00201 0.00201	<0.00201 0.00201	<0.00355 0.00355
o-Xylene		<0.00683 0.00683	<0.00399 0.00399	<0.00660 0.00660	<0.00399 0.00399	0.143 0.00635	<0.00660 0.00660	0.799 0.00317	<0.00402 0.00402	<0.00402 0.00402	<0.00709 0.00709
Total Xylenes		<0.00341 0.00341	<0.00200 0.00200	<0.00330 0.00330	<0.00200 0.00200	0.223 0.00317	<0.00330 0.00330	0.223 0.00317	<0.00201 0.00201	<0.00201 0.00201	<0.00355 0.00355
Total BTEX		<0.00341 0.00341	<0.00200 0.00200	<0.00330 0.00330	<0.00200 0.00200	0.264 0.00317	<0.00330 0.00330	0.264 0.00317	<0.00201 0.00201	<0.00201 0.00201	<0.00355 0.00355
<b>Inorganic Anions by EPA 300/300.1</b>		Aug-07-17 14:50									
Chloride	Analyzed:	Aug-07-17 18:18	Aug-07-17 18:26	Aug-07-17 18:33	Aug-07-17 18:26	Aug-07-17 19:04	Aug-07-17 18:33	Aug-07-17 19:04	Aug-07-17 19:12	Aug-07-17 19:12	Aug-07-17 19:35
	Units/RL:	<4.95 4.95	<4.95 4.95	6.19 4.97	<4.95 4.95	54.7 4.94	6.19 4.97	54.7 4.94	<4.92 4.92	<4.92 4.92	<4.96 4.96
<b>TPH By SW8015 Mod</b>		Aug-03-17 14:00									
Gasoline Range Hydrocarbons (GRO)	Analyzed:	Aug-04-17 01:23	Aug-04-17 02:25	Aug-04-17 02:46	Aug-04-17 02:25	Aug-04-17 03:06	Aug-04-17 02:46	Aug-04-17 03:06	Aug-04-17 04:09	Aug-04-17 04:09	Aug-04-17 04:29
Diesel Range Organics (DRO)	Units/RL:	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	466 74.9	<15.0 15.0	466 74.9	<15.0 15.0	<15.0 15.0	<14.9 14.9
Oil Range Hydrocarbons (ORO)		29.1 14.9	<15.0 15.0	19.7 15.0	<15.0 15.0	16300 74.9	19.7 15.0	16300 74.9	19.0 15.0	19.0 15.0	21.0 14.9
Total TPH		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	2960 74.9	<15.0 15.0	2960 74.9	<15.0 15.0	<15.0 15.0	<14.9 14.9

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 559042

## COG Operating LLC, Artesia, NM

### Project Name: Macho Nacho State #1H



**Project Id:** Aaron Lieb  
**Contact:** Macho Nacho State  
**Project Location:**

**Date Received in Lab:** Tue Aug-01-17 03:06 pm  
**Report Date:** 24-AUG-17  
**Project Manager:** Kelsey Brooks

Analysis Requested	559042-013		559042-014		559042-015		559042-016		559042-017		559042-018																
	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	Extracted:	Analyzed:	Units/RL:	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	Extracted:	Analyzed:	Units/RL:											
<b>BTEX by EPA 8021B</b>	T2 -3'	3- ft	SOIL	Jul-25-17 10:00	Aug-03-17 10:00	Aug-03-17 07:30	Aug-03-17 19:58	mg/kg RL	T3 -1'	1- ft	SOIL	Jul-25-17 10:15	Aug-03-17 10:00	Aug-04-17 15:45	Aug-05-17 04:12	mg/kg RL	T3 -2'	2- ft	SOIL	Jul-25-17 10:15	Aug-04-17 15:45	Aug-05-17 03:53	mg/kg RL				
<b>Inorganic Anions by EPA 300/300.1</b>																											
<b>TPH By SW8015 Mod</b>																											
<b>Gasoline Range Hydrocarbons (GRO)</b>																											
<b>Diesel Range Organics (DRO)</b>																											
<b>Oil Range Hydrocarbons (ORO)</b>																											
<b>Total TPH</b>																											

*Kelsey Brooks*

Kelsey Brooks  
Project Manager

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# Certificate of Analysis Summary 559042

COG Operating LLC, Artesia, NM  
Project Name: Macho Nacho State #1H



Project Id:

Contact: Aaron Lieb

Project Location: Macho Nacho State

Date Received in Lab: Tue Aug-01-17 03:06 pm

Report Date: 24-AUG-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	559042-019	559042-020	559042-021	559042-022	559042-023	559042-024
<b>BTEX by EPA 8021B</b>											
Benzene	Aug-04-17 15:45	T3 -4'	4- ft	SOIL	Jul-25-17 10:15	Aug-03-17 10:00	Aug-04-17 15:45	Aug-03-17 10:00	Aug-04-17 15:45	Aug-03-17 10:00	Aug-04-17 15:45
Toluene	Aug-05-17 04:49	T4 - Surface	T4 -2'	SOIL	Jul-25-17 10:30	Aug-04-17 02:29	Aug-05-17 04:30	Aug-04-17 03:25	Aug-05-17 05:08	Aug-03-17 10:30	Aug-04-17 15:45
Ethylbenzene	<0.00327 0.00327										
m,p-Xylenes	<0.00327 0.00327										
o-Xylene	<0.00654 0.00654										
Total Xylenes	<0.00327 0.00327										
Total BTEX	<0.00327 0.00327										
<b>Inorganic Anions by EPA 300/300.1</b>											
Chloride	Aug-07-17 14:50	T4 -1'	1- ft	SOIL	Jul-25-17 10:30	Aug-07-17 16:40					
	Aug-07-17 18:41										
	<4.98 4.98										
<b>TPH By SW8015 Mod</b>											
Gasoline Range Hydrocarbons (GRO)	Aug-03-17 14:00	T4 -3'	3- ft	SOIL	Jul-25-17 10:30	Aug-03-17 10:00					
Diesel Range Organics (DRO)	Aug-04-17 06:55										
Oil Range Hydrocarbons (ORO)	<14.9 14.9										
Total TPH	594 14.9										
	141 14.9										
	735 14.9										

*Kelsey Brooks*

Kelsey Brooks  
Project Manager

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## COG Operating LLC, Artesia, NM

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**Date Received in Lab:** Tue Aug-01-17 03:06 pm  
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**Project Id:**  
**Contact:** Aaron Lieb  
**Project Location:** Macho Nacho State

Analysis Requested	Lab Id:		Field Id:		Depth:		Matrix:		Sampled:		Extracted:		Analyzed:		Units/RL:			
	559042-025	559042-026	559042-027	559042-028	559042-029	T5 - Surface	T5 -1'	T5 -2'	T5 -3'	T5 -4'	Jul-25-17 10:45	Aug-03-17 10:00	Aug-03-17 22:46	Jul-25-17 10:45	Aug-03-17 10:00	Aug-03-17 23:41	Jul-25-17 10:45	
<b>BTEX by EPA 8021B</b>	Benzene	<0.00361	0.00361	<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00202	0.00202	<0.00198	0.00198	<0.00202	0.00202	<0.00202	0.00202	<0.00202
	Toluene	<0.00361	0.00361	<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00198	0.00198	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202	<0.00202
	Ethylbenzene	<0.00361	0.00361	<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00397	0.00397	<0.00198	0.00198	<0.00397	0.00397	<0.00404	0.00404	<0.00404
	m,p-Xylenes	<0.00722	0.00722	<0.00401	0.00401	<0.00398	0.00398	<0.00199	0.00199	<0.00198	0.00198	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202	<0.00202
	o-Xylene	<0.00361	0.00361	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00198	0.00198	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202	<0.00202
	Total BTEX	<0.00361	0.00361	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00198	0.00198	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202	<0.00202
<b>Inorganic Anions by EPA 300/300.1</b>	Chloride	<4.98	4.98	<4.97	4.97	<4.93	4.93	<4.97	4.97	<4.97	4.97	<4.93	4.93	<4.97	4.97	<4.97	4.97	<4.97
	Gasoline Range Hydrocarbons (GRO)	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0
	Diesel Range Hydrocarbons (DRO)	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0
<b>TPH By SV8015 Mod</b>	Oil Range Hydrocarbons (ORO)	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0
	Total TPH	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0

*Kelsey Brooks*

Kelsey Brooks  
Project Manager

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

# Analytical Report 559042

for  
**COG Operating LLC**

**Project Manager: Aaron Lieb**

**Macho Nacho State #1H**

**24-AUG-17**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)

Xenco-San Antonio: Texas (T104704534)

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

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



24-AUG-17

Project Manager: Aaron Lieb  
COG Operating LLC  
2407 Pecos Avenue  
Artesia, NM 88210

Reference: XENCO Report No(s): 559042  
Macho Nacho State #1H  
Project Address: Macho Nacho State

**Aaron Lieb:**

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) 559042. 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. 559042 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.  
A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

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



# Sample Cross Reference 559042



COG Operating LLC, Artesia, NM

Macho Nacho State #1H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1 - Surface	S	07-25-17 09:30		559042-001
T1 -1'	S	07-25-17 09:30	1 ft	559042-002
T1 -2'	S	07-25-17 09:30	2 ft	559042-003
T1 -3'	S	07-25-17 09:30	3 ft	559042-004
T1 -4'	S	07-25-17 09:30	4 ft	559042-005
T1 -5'	S	07-25-17 09:45	5 ft	559042-006
T1 -7'	S	07-25-17 09:45	7 ft	559042-007
T1 -10'	S	07-25-17 09:45	10 ft	559042-008
T1 -12'	S	07-25-17 09:45	12 ft	559042-009
T2 -Surface	S	07-25-17 10:00		559042-010
T2 -1'	S	07-25-17 10:00	1 ft	559042-011
T2 -2'	S	07-25-17 10:00	2 ft	559042-012
T2 -3'	S	07-25-17 10:00	3 ft	559042-013
T2 -5	S	07-25-17 10:00	5 ft	559042-014
T3 - Surface	S	07-25-17 10:15		559042-015
T3 - 1'	S	07-25-17 10:15	1 ft	559042-016
T3 -2'	S	07-25-17 10:15	2 ft	559042-017
T3 -3'	S	07-25-17 10:15	3 ft	559042-018
T3 -4'	S	07-25-17 10:15	4 ft	559042-019
T4 - Surface	S	07-25-17 10:30		559042-020
T4 -1'	S	07-25-17 10:30	1 ft	559042-021
T4 -2'	S	07-25-17 10:30	2 ft	559042-022
T4 -3'	S	07-25-17 10:30	3 ft	559042-023
T4 -4'	S	07-25-17 10:30	4 ft	559042-024
T5 - Surface	S	07-25-17 10:45		559042-025
T5 -1'	S	07-25-17 10:45	1 ft	559042-026
T5 -2'	S	07-25-17 10:45	2 ft	559042-027
T5 -3'	S	07-25-17 10:45	3 ft	559042-028
T5 -4'	S	07-25-17 10:45	4 ft	559042-029



## CASE NARRATIVE

*Client Name: COG Operating LLC*  
*Project Name: Macho Nacho State #1H*

Project ID:  
Work Order Number(s): 559042

Report Date: 24-AUG-17  
Date Received: 08/01/2017

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**Sample receipt non conformances and comments:**

Revision to try to correct file size- Original generation was too large to send and didn't compress

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

None

**Analytical non conformances and comments:**

Batch: LBA-3024005 BTEX by EPA 8021B

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

Batch: LBA-3024007 BTEX by EPA 8021B

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

Batch: LBA-3024166 BTEX by EPA 8021B

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

Batch: LBA-3024179 BTEX by EPA 8021B

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

Batch: LBA-3024257 BTEX by EPA 8021B

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

Samples affected are: 559042-004.

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



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 - Surface  
Lab Sample Id: 559042-001

Matrix: Soil  
Date Collected: 07.25.17 09.30

Date Received: 08.01.17 15.06

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.07.17 17.17	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	303	74.8	mg/kg	08.03.17 23.18		5
Diesel Range Organics (DRO)	C10C28DRO	5360	74.8	mg/kg	08.03.17 23.18		5
Oil Range Hydrocarbons (ORO)	PHCG2835	722	74.8	mg/kg	08.03.17 23.18		5
<b>Total TPH</b>	PHC635	<b>6390</b>	74.8	mg/kg	08.03.17 23.18		5
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	127	%	70-135	08.03.17 23.18		
o-Terphenyl	84-15-1	91	%	70-135	08.03.17 23.18		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 - Surface  
Lab Sample Id: 559042-001

Matrix: Soil  
Date Collected: 07.25.17 09.30

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024166

Date Prep: 08.04.17 08.15

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0202	0.0202	mg/kg	08.04.17 14.54	U	10
Toluene	108-88-3	1.53	0.0202	mg/kg	08.04.17 14.54		10
Ethylbenzene	100-41-4	1.86	0.0202	mg/kg	08.04.17 14.54		10
m,p-Xylenes	179601-23-1	5.11	0.0404	mg/kg	08.04.17 14.54		10
o-Xylene	95-47-6	2.32	0.0202	mg/kg	08.04.17 14.54		10
Total Xylenes	1330-20-7	7.43	0.0202	mg/kg	08.04.17 14.54		10
Total BTEX		10.8	0.0202	mg/kg	08.04.17 14.54		10
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	119	%	80-120	08.04.17 14.54		
1,4-Difluorobenzene	540-36-3	88	%	80-120	08.04.17 14.54		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -1'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-002	Date Collected: 07.25.17 09.30	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.07.17 17.24	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 14.00
Seq Number: 3024054	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	2280	74.9	mg/kg	08.03.17 23.39		5
Diesel Range Organics (DRO)	C10C28DRO	7080	74.9	mg/kg	08.03.17 23.39		5
Oil Range Hydrocarbons (ORO)	PHCG2835	914	74.9	mg/kg	08.03.17 23.39		5
Total TPH	PHC635	10300	74.9	mg/kg	08.03.17 23.39		5
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	123	%	70-135	08.03.17 23.39		
o-Terphenyl	84-15-1	114	%	70-135	08.03.17 23.39		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -1'  
Lab Sample Id: 559042-002

Matrix: Soil  
Date Collected: 07.25.17 09.30

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024166

Date Prep: 08.04.17 08.15

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.557	0.201	mg/kg	08.04.17 14.16		100
Toluene	108-88-3	30.7	0.201	mg/kg	08.04.17 14.16		100
Ethylbenzene	100-41-4	26.2	0.201	mg/kg	08.04.17 14.16		100
m,p-Xylenes	179601-23-1	73.1	0.402	mg/kg	08.04.17 14.16		100
o-Xylene	95-47-6	29.1	0.201	mg/kg	08.04.17 14.16		100
Total Xylenes	1330-20-7	102	0.201	mg/kg	08.04.17 14.16		100
Total BTEX		160	0.201	mg/kg	08.04.17 14.16		100
			%				
Surrogate	Cas Number	Recovery	%	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	81	%		80-120	08.04.17 14.16	
4-Bromofluorobenzene	460-00-4	107	%		80-120	08.04.17 14.16	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -2'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-003	Date Collected: 07.25.17 09.30	Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 17.32	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 14.00
Seq Number: 3024054	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	3860	74.8	mg/kg	08.04.17 23.59		5
Diesel Range Organics (DRO)	C10C28DRO	8040	74.8	mg/kg	08.04.17 23.59		5
Oil Range Hydrocarbons (ORO)	PHCG2835	1020	74.8	mg/kg	08.04.17 23.59		5
Total TPH	PHC635	12900	74.8	mg/kg	08.04.17 23.59		5
<b>Surrogate</b>		<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
I-Chlorooctane	111-85-3		128	%	70-135	08.04.17 23.59	
o-Terphenyl	84-15-1		107	%	70-135	08.04.17 23.59	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -2'  
Lab Sample Id: 559042-003

Matrix: Soil  
Date Collected: 07.25.17 09.30

Date Received: 08.01.17 15.06  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024166

Date Prep: 08.04.17 08.15

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	1.69	0.398	mg/kg	08.04.17 20.11		200
Toluene	108-88-3	77.4	0.398	mg/kg	08.04.17 20.11		200
Ethylbenzene	100-41-4	58.5	0.398	mg/kg	08.04.17 20.11		200
m,p-Xylenes	179601-23-1	156	0.797	mg/kg	08.04.17 20.11		200
o-Xylene	95-47-6	60.6	0.398	mg/kg	08.04.17 20.11		200
Total Xylenes	1330-20-7	217	0.398	mg/kg	08.04.17 20.11		200
Total BTEX		354	0.398	mg/kg	08.04.17 20.11		200
			%				
Surrogate	Cas Number	Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	80	%	80-120	08.04.17 20.11		
4-Bromofluorobenzene	460-00-4	82	%	80-120	08.04.17 20.11		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -3'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-004	Date Collected: 07.25.17 09.30	Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	08.07.17 17.40	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Basis: Wet Weight
Seq Number: 3024054	Date Prep: 08.03.17 14.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	3170	75.0	mg/kg	08.04.17 00.21		5
Diesel Range Organics (DRO)	C10C28DRO	7570	75.0	mg/kg	08.04.17 00.21		5
Oil Range Hydrocarbons (ORO)	PHCG2835	913	75.0	mg/kg	08.04.17 00.21		5
Total TPH	PHC635	11700	75.0	mg/kg	08.04.17 00.21		5
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	126	%	70-135	08.04.17 00.21		
o-Terphenyl	84-15-1	110	%	70-135	08.04.17 00.21		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -3'  
Lab Sample Id: 559042-004

Matrix: Soil  
Date Collected: 07.25.17 09.30

Date Received: 08.01.17 15.06  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.07.17 08.00

Basis: Wet Weight

Seq Number: 3024257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	2.22	0.198	mg/kg	08.04.17 14.35		100
Toluene	108-88-3	79.2	0.401	mg/kg	08.07.17 19.32	D	200
Ethylbenzene	100-41-4	37.0	0.198	mg/kg	08.04.17 14.35		100
m,p-Xylenes	179601-23-1	152	0.802	mg/kg	08.07.17 19.32	D	200
o-Xylene	95-47-6	31.3	0.198	mg/kg	08.04.17 14.35		100
Total Xylenes	1330-20-7	183	0.198	mg/kg	08.07.17 19.32		200
Total BTEX		302	0.198	mg/kg	08.07.17 19.32		200
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	77	%	80-120	08.04.17 14.35	***	
4-Bromofluorobenzene	460-00-4	90	%	80-120	08.04.17 14.35		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -4'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-005	Date Collected: 07.25.17 09.30	Sample Depth: 4 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 18.03	U	I

Analytical Method: TPH By SW8015 Mod		Prep Method: TX1005P
Tech: ARM		% Moisture:
Analyst: ARM	Date Prep: 08.03.17 14.00	Basis: Wet Weight
Seq Number: 3024054		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	37.3	15.0	mg/kg	08.04.17 00.42		I
Diesel Range Organics (DRO)	C10C28DRO	406	15.0	mg/kg	08.04.17 00.42		I
Oil Range Hydrocarbons (ORO)	PHCG2835	26.6	15.0	mg/kg	08.04.17 00.42		I
Total TPH	PHIC635	470	15.0	mg/kg	08.04.17 00.42		I
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	119	%	70-135	08.04.17 00.42		
o-Terphenyl	84-15-1	95	%	70-135	08.04.17 00.42		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -4'  
Lab Sample Id: 559042-005

Matrix: Soil  
Date Collected: 07.25.17 09.30

Date Received: 08.01.17 15.06  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.03.17 07.30

Basis: Wet Weight

Seq Number: 3024005

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.03.17 17.46	U	1
Toluene	108-88-3	0.00903	0.00201	mg/kg	08.03.17 17.46		1
Ethylbenzene	100-41-4	0.0497	0.00201	mg/kg	08.03.17 17.46		1
m,p-Xylenes	179601-23-1	0.170	0.00402	mg/kg	08.03.17 17.46		1
o-Xylene	95-47-6	0.103	0.00201	mg/kg	08.03.17 17.46		1
Total Xylenes	1330-20-7	0.273	0.00201	mg/kg	08.03.17 17.46		1
Total BTEX		0.332	0.00201	mg/kg	08.03.17 17.46		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	107	%	80-120	08.03.17 17.46		
1,4-Difluorobenzene	540-36-3	95	%	80-120	08.03.17 17.46		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -S'  
Lab Sample Id: 559042-006

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 5 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MGO

Analyst: MGO

Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	08.07.17 18.10	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.17 01.03	U	1
Diesel Range Organics (DRO)	C10C28DRO	61.8	14.9	mg/kg	08.04.17 01.03		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.04.17 01.03	U	1
<b>Total TPH</b>	PHC635	<b>61.8</b>	<b>14.9</b>	mg/kg	08.04.17 01.03		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	08.04.17 01.03	
o-Terphenyl	84-15-1	87	%	70-135	08.04.17 01.03	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -5'  
Lab Sample Id: 559042-006

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 5 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.03.17 18.05	U	1
Toluene	108-88-3	0.00326	0.00199	mg/kg	08.03.17 18.05		1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.03.17 18.05	U	1
m,p-Xylenes	179601-23-1	0.00501	0.00398	mg/kg	08.03.17 18.05		1
o-Xylene	95-47-6	0.00303	0.00199	mg/kg	08.03.17 18.05		1
Total Xylenes	1330-20-7	0.00804	0.00199	mg/kg	08.03.17 18.05		1
Total BTEX		0.0113	0.00199	mg/kg	08.03.17 18.05		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	95	%	80-120	08.03.17 18.05		
4-Bromofluorobenzene	460-00-4	107	%	80-120	08.03.17 18.05		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -7'  
Lab Sample Id: 559042-007

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 7 ft

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	08.07.17 18.18	U	I

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.17 01.23	U	I
Diesel Range Organics (DRO)	C10C28DRO	29.1	14.9	mg/kg	08.04.17 01.23		I
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.04.17 01.23	U	I
<b>Total TPH</b>	PHC635	<b>29.1</b>	<b>14.9</b>	<b>mg/kg</b>	<b>08.04.17 01.23</b>		<b>I</b>
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	122	%	70-135	08.04.17 01.23		
o-Terphenyl	84-15-1	89	%	70-135	08.04.17 01.23		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -7'  
Lab Sample Id: 559042-007

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 7 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.04.17 15.45

Basis: Wet Weight

Seq Number: 3024179

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00341	0.00341	mg/kg	08.05.17 02.56	U	1
Toluene	108-88-3	<0.00341	0.00341	mg/kg	08.05.17 02.56	U	1
Ethylbenzene	100-41-4	<0.00341	0.00341	mg/kg	08.05.17 02.56	U	1
m,p-Xylenes	179601-23-1	<0.00683	0.00683	mg/kg	08.05.17 02.56	U	1
o-Xylene	95-47-6	<0.00341	0.00341	mg/kg	08.05.17 02.56	U	1
Total Xylenes	1330-20-7	<0.00341	0.00341	mg/kg	08.05.17 02.56	U	1
Total BTEX		<0.00341	0.00341	mg/kg	08.05.17 02.56	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	103	%	80-120	08.05.17 02.56		
1,4-Difluorobenzene	540-36-3	101	%	80-120	08.05.17 02.56		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -10'  
Lab Sample Id: 559042-008

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 10 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MGO

Analyst: MGO

Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	08.07.17 18.26	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 02.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 02.25	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 02.25	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 02.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	08.04.17 02.25	
o-Terphenyl	84-15-1	86	%	70-135	08.04.17 02.25	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T1 -10'  
Lab Sample Id: 559042-008

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 10 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.03.17 07.30

Basis: Wet Weight

Seq Number: 3024005

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.17 18.42	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.17 18.42	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.17 18.42	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.03.17 18.42	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.17 18.42	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.17 18.42	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.17 18.42	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	109	%	80-120	08.03.17 18.42		
1,4-Difluorobenzene	540-36-3	95	%	80-120	08.03.17 18.42		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -12'  
Lab Sample Id: 559042-009

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 12 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MGO

Analyst: MGO

Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6.19	4.97	mg/kg	08.07.17 18.33		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 02.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	19.7	15.0	mg/kg	08.04.17 02.46		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 02.46	U	1
Total TPH	PHC635	19.7	15.0	mg/kg	08.04.17 02.46		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	124	%	70-135	08.04.17 02.46	
o-Terphenyl	84-15-1	88	%	70-135	08.04.17 02.46	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T1 -12'  
Lab Sample Id: 559042-009

Matrix: Soil  
Date Collected: 07.25.17 09.45

Date Received: 08.01.17 15.06  
Sample Depth: 12 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.04.17 15.45

Basis: Wet Weight

Seq Number: 3024179

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00330	0.00330	mg/kg	08.05.17 03.15	U	1
Toluene	108-88-3	<0.00330	0.00330	mg/kg	08.05.17 03.15	U	1
Ethylbenzene	100-41-4	<0.00330	0.00330	mg/kg	08.05.17 03.15	U	1
m,p-Xylenes	179601-23-1	<0.00660	0.00660	mg/kg	08.05.17 03.15	U	1
o-Xylene	95-47-6	<0.00330	0.00330	mg/kg	08.05.17 03.15	U	1
Total Xylenes	1330-20-7	<0.00330	0.00330	mg/kg	08.05.17 03.15	U	1
Total BTEX		<0.00330	0.00330	mg/kg	08.05.17 03.15	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	99	%	80-120	08.05.17 03.15		
1,4-Difluorobenzene	540-36-3	97	%	80-120	08.05.17 03.15		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T2 -Surface  
Lab Sample Id: 559042-010

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 08.07.17 14.50

Basis: Wet Weight

Seq Number: 3024270

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	54.7	4.94	mg/kg	08.07.17 19.04		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.03.17 14.00

Basis: Wet Weight

Seq Number: 3024054

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	466	74.9	mg/kg	08.04.17 03.06		5
Diesel Range Organics (DRO)	C10C28DRO	16300	74.9	mg/kg	08.04.17 03.06		5
Oil Range Hydrocarbons (ORO)	PHCG2835	2960	74.9	mg/kg	08.04.17 03.06		5
Total TPH	PHC635	19700	74.9	mg/kg	08.04.17 03.06		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	129	%	70-135	08.04.17 03.06	
o-Terphenyl	84-15-1	118	%	70-135	08.04.17 03.06	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T2 -Surface  
Lab Sample Id: 559042-010

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00317	0.00317	mg/kg	08.05.17 01.25	U	1
Toluene	108-88-3	0.00822	0.00317	mg/kg	08.05.17 01.25		1
Ethylbenzene	100-41-4	0.0332	0.00317	mg/kg	08.05.17 01.25		1
m,p-Xylenes	179601-23-1	0.143	0.00635	mg/kg	08.05.17 01.25		1
o-Xylene	95-47-6	0.0799	0.00317	mg/kg	08.05.17 01.25		1
Total Xylenes	1330-20-7	0.223	0.00317	mg/kg	08.05.17 01.25		1
Total BTEX		0.264	0.00317	mg/kg	08.05.17 01.25		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	89	%	80-120	08.05.17 01.25		
4-Bromofluorobenzene	460-00-4	110	%	80-120	08.05.17 01.25		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T2 -1'  
Lab Sample Id: 559042-011

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MGO

Analyst: MGO

Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.92	4.92	mg/kg	08.07.17 19.12	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 04.09	U	1
Diesel Range Organics (DRO)	C10C28DRO	19.0	15.0	mg/kg	08.04.17 04.09		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 04.09	U	1
Total TPH	PHC635	19.0	15.0	mg/kg	08.04.17 04.09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	08.04.17 04.09	
o-Terphenyl	84-15-1	86	%	70-135	08.04.17 04.09	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T2 -1'  
Lab Sample Id: 559042-011

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.03.17 19.39	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.03.17 19.39	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.03.17 19.39	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.03.17 19.39	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.03.17 19.39	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.03.17 19.39	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.03.17 19.39	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	106	%	80-120	08.03.17 19.39		
1,4-Difluorobenzene	540-36-3	94	%	80-120	08.03.17 19.39		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T2 -2'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-012	Date Collected: 07.25.17 10.00	Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.07.17 19.35	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 14.00
Seq Number: 3024054	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.17 04.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	21.0	14.9	mg/kg	08.04.17 04.29		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.04.17 04.29	U	1
Total TPH	PHC635	21.0	14.9	mg/kg	08.04.17 04.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	128	%	70-135	08.04.17 04.29	
o-Terphenyl	84-15-1	98	%	70-135	08.04.17 04.29	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T2 -2'  
Lab Sample Id: 559042-012

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00355	0.00355	mg/kg	08.05.17 03.34	U	1
Toluene	108-88-3	<0.00355	0.00355	mg/kg	08.05.17 03.34	U	1
Ethylbenzene	100-41-4	<0.00355	0.00355	mg/kg	08.05.17 03.34	U	1
m,p-Xylenes	179601-23-1	<0.00709	0.00709	mg/kg	08.05.17 03.34	U	1
o-Xylene	95-47-6	<0.00355	0.00355	mg/kg	08.05.17 03.34	U	1
Total Xylenes	1330-20-7	<0.00355	0.00355	mg/kg	08.05.17 03.34	U	1
Total BTEX		<0.00355	0.00355	mg/kg	08.05.17 03.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	97	%	80-120	08.05.17 03.34	
4-Bromofluorobenzene	460-00-4	98	%	80-120	08.05.17 03.34	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T2 -3'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-013	Date Collected: 07.25.17 10.00	Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 19.42	U	I

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 14.00
Seq Number: 3024054	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 04.50	U	I
Diesel Range Organics (DRO)	C10C28DRO	32.8	15.0	mg/kg	08.04.17 04.50		I
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 04.50	U	I
<b>Total TPH</b>	PHC635	<b>32.8</b>	15.0	mg/kg	08.04.17 04.50		I

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	130	%	70-135	08.04.17 04.50	
o-Terphenyl	84-15-1	92	%	70-135	08.04.17 04.50	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T2 -3'  
Lab Sample Id: 559042-013

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.03.17 07.30

Basis: Wet Weight

Seq Number: 3024005

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.17 19.58	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.17 19.58	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.17 19.58	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.03.17 19.58	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.17 19.58	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.17 19.58	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.17 19.58	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.03.17 19.58	
4-Bromofluorobenzene	460-00-4	110	%	80-120	08.03.17 19.58	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T2 -5  
Lab Sample Id: 559042-014

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06  
Sample Depth: 5 ft

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	08.07.17 19.50	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 05.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	33.7	15.0	mg/kg	08.04.17 05.10		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 05.10	U	1
Total TPH	PHC635	33.7	15.0	mg/kg	08.04.17 05.10		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	129	%	70-135	08.04.17 05.10	
o-Terphenyl	84-15-1	92	%	70-135	08.04.17 05.10	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T2 -5  
Lab Sample Id: 559042-014

Matrix: Soil  
Date Collected: 07.25.17 10.00

Date Received: 08.01.17 15.06  
Sample Depth: 5 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.04.17 00.00	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.04.17 00.00	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.04.17 00.00	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.04.17 00.00	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.04.17 00.00	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.04.17 00.00	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.04.17 00.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	80-120	08.04.17 00.00	
4-Bromofluorobenzene	460-00-4	105	%	80-120	08.04.17 00.00	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3- Surface  
Lab Sample Id: 559042-015

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 19.58	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 05.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	15.4	15.0	mg/kg	08.04.17 05.31		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 05.31	U	1
Total TPH	PHC635	15.4	15.0	mg/kg	08.04.17 05.31		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	128	%	70-135	08.04.17 05.31		
o-Terphenyl	84-15-1	89	%	70-135	08.04.17 05.31		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T3- Surface  
Lab Sample Id: 559042-015

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.04.17 00.19	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.04.17 00.19	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.04.17 00.19	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	08.04.17 00.19	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.04.17 00.19	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.04.17 00.19	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.04.17 00.19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	80-120	08.04.17 00.19	
1,4-Difluorobenzene	540-36-3	107	%	80-120	08.04.17 00.19	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3 - 1'  
Lab Sample Id: 559042-016

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 20.05	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 05.52	U	1
Diesel Range Organics (DRO)	C10C28DRO	19.0	15.0	mg/kg	08.04.17 05.52		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 05.52	U	1
Total TPH	PHC635	19.0	15.0	mg/kg	08.04.17 05.52		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	125	%	70-135	08.04.17 05.52		
o-Terphenyl	84-15-1	99	%	70-135	08.04.17 05.52		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3 - 1'  
Lab Sample Id: 559042-016

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.04.17 00.38	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.04.17 00.38	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.04.17 00.38	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	08.04.17 00.38	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.04.17 00.38	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.04.17 00.38	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.04.17 00.38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	98	%	80-120	08.04.17 00.38	
4-Bromofluorobenzene	460-00-4	104	%	80-120	08.04.17 00.38	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3 -2'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-017	Date Collected: 07.25.17 10.15	Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.07.17 20.13	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Basis: Wet Weight
Seq Number: 3024054	Date Prep: 08.03.17 14.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 06.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 06.12	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 06.12	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 06.12	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	08.04.17 06.12	
o-Terphenyl	84-15-1	88	%	70-135	08.04.17 06.12	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3 -2'  
Lab Sample Id: 559042-017

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.04.17 15.45

Basis: Wet Weight

Seq Number: 3024179

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Benzene	71-43-2	<0.00358	0.00358	mg/kg	08.05.17 03.53	U	1
Toluene	108-88-3	<0.00358	0.00358	mg/kg	08.05.17 03.53	U	1
Ethylbenzene	100-41-4	<0.00358	0.00358	mg/kg	08.05.17 03.53	U	1
m,p-Xylenes	179601-23-1	<0.00717	0.00717	mg/kg	08.05.17 03.53	U	1
o-Xylene	95-47-6	<0.00358	0.00358	mg/kg	08.05.17 03.53	U	1
Total Xylenes	1330-20-7	<0.00358	0.00358	mg/kg	08.05.17 03.53	U	1
Total BTEX		<0.00358	0.00358	mg/kg	08.05.17 03.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	80-120	08.05.17 03.53	
1,4-Difluorobenzene	540-36-3	99	%	80-120	08.05.17 03.53	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T3 -3' Matrix: Soil Date Received: 08.01.17 15.06  
 Lab Sample Id: 559042-018 Date Collected: 07.25.17 10.15 Sample Depth: 3 ft  
 Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
 Tech: MGO % Moisture:  
 Analyst: MGO Date Prep: 08.07.17 14.50 Basis: Wet Weight  
 Seq Number: 3024270

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Chloride	16887-00-6	<4.99	4.99	mg/kg	08.07.17 20.21	U	I

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
 Tech: ARM % Moisture:  
 Analyst: ARM Date Prep: 08.03.17 14.00 Basis: Wet Weight  
 Seq Number: 3024054

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.17 06.33	U	I
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.04.17 06.33	U	I
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.04.17 06.33	U	I
Total TPH	PHC635	<14.9	14.9	mg/kg	08.04.17 06.33	U	I
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	116	%	70-135	08.04.17 06.33		
o-Terphenyl	84-15-1	82	%	70-135	08.04.17 06.33		



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T3 -3'  
Lab Sample Id: 559042-018

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.04.17 15.45

Basis: Wet Weight

Seq Number: 3024179

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Benzene	71-43-2	<0.00336	0.00336	mg/kg	08.05.17 04.12	U	1
Toluene	108-88-3	<0.00336	0.00336	mg/kg	08.05.17 04.12	U	1
Ethylbenzene	100-41-4	<0.00336	0.00336	mg/kg	08.05.17 04.12	U	1
m,p-Xylenes	179601-23-1	<0.00671	0.00671	mg/kg	08.05.17 04.12	U	1
o-Xylene	95-47-6	<0.00336	0.00336	mg/kg	08.05.17 04.12	U	1
Total Xylenes	1330-20-7	<0.00336	0.00336	mg/kg	08.05.17 04.12	U	1
Total BTEX		<0.00336	0.00336	mg/kg	08.05.17 04.12	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	105	%	80-120	08.05.17 04.12		
4-Bromofluorobenzene	460-00-4	105	%	80-120	08.05.17 04.12		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3 -4'  
Lab Sample Id: 559042-019

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06  
Sample Depth: 4 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MGO

Analyst: MGO

Seq Number: 3024270

Date Prep: 08.07.17 14.50

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 18.41	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3024054

Date Prep: 08.03.17 14.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.17 06.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	594	14.9	mg/kg	08.04.17 06.55		1
Oil Range Hydrocarbons (ORO)	PHCG2835	141	14.9	mg/kg	08.04.17 06.55		1
Total TPH	PHC635	735	14.9	mg/kg	08.04.17 06.55		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	129	%	70-135	08.04.17 06.55		
o-Terphenyl	84-15-1	120	%	70-135	08.04.17 06.55		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T3 -4'  
Lab Sample Id: 559042-019

Matrix: Soil  
Date Collected: 07.25.17 10.15

Date Received: 08.01.17 15.06  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00327	0.00327	mg/kg	08.05.17 04.49	U	1
Toluene	108-88-3	<0.00327	0.00327	mg/kg	08.05.17 04.49	U	1
Ethylbenzene	100-41-4	<0.00327	0.00327	mg/kg	08.05.17 04.49	U	1
m,p-Xylenes	179601-23-1	<0.00654	0.00654	mg/kg	08.05.17 04.49	U	1
o-Xylene	95-47-6	<0.00327	0.00327	mg/kg	08.05.17 04.49	U	1
Total Xylenes	1330-20-7	<0.00327	0.00327	mg/kg	08.05.17 04.49	U	1
Total BTEX		<0.00327	0.00327	mg/kg	08.05.17 04.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	102	%	80-120	08.05.17 04.49	
1,4-Difluorobenzene	540-36-3	99	%	80-120	08.05.17 04.49	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T4 - Surface	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-020	Date Collected: 07.25.17 10.30	
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 14.50	Basis: Wet Weight
Seq Number: 3024270		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.07.17 16.53	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 14.00
Seq Number: 3024054	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 07.16	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 07.16	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 07.16	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 07.16	U	1
<b>Surrogate</b>		<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
1-Chlorooctane		111-85-3	122	%	70-135	08.04.17 07.16	
o-Terphenyl		84-15-1	90	%	70-135	08.04.17 07.16	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T4 - Surface  
Lab Sample Id: 559042-020

Matrix: Soil  
Date Collected: 07.25.17 10.30

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.04.17 02.29	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.04.17 02.29	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.04.17 02.29	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.04.17 02.29	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.04.17 02.29	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.04.17 02.29	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.04.17 02.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	99	%	80-120	08.04.17 02.29	
4-Bromofluorobenzene	460-00-4	108	%	80-120	08.04.17 02.29	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T4 -1'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-021	Date Collected: 07.25.17 10.30	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 16.40	Basis: Wet Weight
Seq Number: 3024302		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.91	4.91	mg/kg	08.07.17 23.02	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Basis: Wet Weight
Seq Number: 3024053	Date Prep: 08.03.17 10.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.03.17 20.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.03.17 20.36	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.03.17 20.36	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.03.17 20.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	130	%	70-135	08.03.17 20.36	
o-Terphenyl	84-15-1	108	%	70-135	08.03.17 20.36	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T4 -1'  
Lab Sample Id: 559042-021

Matrix: Soil  
Date Collected: 07.25.17 10.30

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.04.17 02.47	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.04.17 02.47	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.04.17 02.47	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	08.04.17 02.47	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.04.17 02.47	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.04.17 02.47	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.04.17 02.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	100	%	80-120	08.04.17 02.47	
1,4-Difluorobenzene	540-36-3	98	%	80-120	08.04.17 02.47	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T4 -2'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-022	Date Collected: 07.25.17 10.30	Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 16.40	Basis: Wet Weight
Seq Number: 3024302		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.91	4.91	mg/kg	08.07.17 23.25	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 10.00
Seq Number: 3024053	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 20.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.03.17 20.56	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 20.56	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.03.17 20.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	08.03.17 20.56	
o-Terphenyl	84-15-1	88	%	70-135	08.03.17 20.56	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T4 -2'  
Lab Sample Id: 559042-022

Matrix: Soil  
Date Collected: 07.25.17 10.30

Date Received: 08.01.17 15.06  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00351	0.00351	mg/kg	08.05.17 04.30	U	1
Toluene	108-88-3	<0.00351	0.00351	mg/kg	08.05.17 04.30	U	1
Ethylbenzene	100-41-4	<0.00351	0.00351	mg/kg	08.05.17 04.30	U	1
m,p-Xylenes	179601-23-1	<0.00702	0.00702	mg/kg	08.05.17 04.30	U	1
o-Xylene	95-47-6	<0.00351	0.00351	mg/kg	08.05.17 04.30	U	1
Total Xylenes	1330-20-7	<0.00351	0.00351	mg/kg	08.05.17 04.30	U	1
Total BTEX		<0.00351	0.00351	mg/kg	08.05.17 04.30	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	102	%	80-120	08.05.17 04.30		
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.05.17 04.30		



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T4 -3'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-023	Date Collected: 07.25.17 10.30	Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 16.40	Basis: Wet Weight
Seq Number: 3024302		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.93	4.93	mg/kg	08.07.17 23.33	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 10.00
Seq Number: 3024053	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.03.17 21.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.03.17 21.17	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.03.17 21.17	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.03.17 21.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	124	%	70-135	08.03.17 21.17	
o-Terphenyl	84-15-1	91	%	70-135	08.03.17 21.17	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM
Macho Nacho State #1H

Sample Id: T4 -3'
Lab Sample Id: 559042-023

Matrix: Soil
Date Collected: 07.25.17 10.30

Date Received: 08.01.17 15.06
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B
Tech: ALJ
Analyst: ALJ
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B
% Moisture:
Basis: Wet Weight

Table with columns: Parameter, Cas Number, Result, RL, Units, Analysis Date, Flag, Dil. Rows include Benzene, Toluene, Ethylbenzene, m,p-Xylenes, o-Xylene, Total Xylenes, Total BTEX, and Surrogate (4-Bromofluorobenzene, 1,4-Difluorobenzene).



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T4 -4' Matrix: Soil Date Received: 08.01.17 15.06  
 Lab Sample Id: 559042-024 Date Collected: 07.25.17 10.30 Sample Depth: 4 ft  
 Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
 Tech: MGO % Moisture:  
 Analyst: MGO Date Prep: 08.07.17 16.40 Basis: Wet Weight  
 Seq Number: 3024302

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	08.07.17 23.40	U	1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
 Tech: ARM % Moisture:  
 Analyst: ARM Date Prep: 08.03.17 10.00 Basis: Wet Weight  
 Seq Number: 3024053

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 21.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	56.5	15.0	mg/kg	08.03.17 21.36		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 21.36	U	1
Total TPH	PHC635	56.5	15.0	mg/kg	08.03.17 21.36		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	127	%	70-135	08.03.17 21.36	
o-Terphenyl	84-15-1	91	%	70-135	08.03.17 21.36	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T4 -4'  
Lab Sample Id: 559042-024

Matrix: Soil  
Date Collected: 07.25.17 10.30

Date Received: 08.01.17 15.06  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00346	0.00346	mg/kg	08.05.17 05.08	U	1
Toluene	108-88-3	<0.00346	0.00346	mg/kg	08.05.17 05.08	U	1
Ethylbenzene	100-41-4	<0.00346	0.00346	mg/kg	08.05.17 05.08	U	1
m,p-Xylenes	179601-23-1	<0.00692	0.00692	mg/kg	08.05.17 05.08	U	1
o-Xylene	95-47-6	<0.00346	0.00346	mg/kg	08.05.17 05.08	U	1
Total Xylenes	1330-20-7	<0.00346	0.00346	mg/kg	08.05.17 05.08	U	1
Total BTEX		<0.00346	0.00346	mg/kg	08.05.17 05.08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.05.17 05.08	
4-Bromofluorobenzene	460-00-4	100	%	80-120	08.05.17 05.08	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T5 - Surface  
Lab Sample Id: 559042-025

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024302

Date Prep: 08.07.17 16.40

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.07.17 23.48	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024175

Date Prep: 08.04.17 16.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 19.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 19.55	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 19.55	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 19.55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	128	%	70-135	08.04.17 19.55	
o-Terphenyl	84-15-1	91	%	70-135	08.04.17 19.55	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T5 - Surface  
Lab Sample Id: 559042-025

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024257

Date Prep: 08.07.17 08.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00361	0.00361	mg/kg	08.07.17 18.17	U	1
Toluene	108-88-3	<0.00361	0.00361	mg/kg	08.07.17 18.17	U	1
Ethylbenzene	100-41-4	<0.00361	0.00361	mg/kg	08.07.17 18.17	U	1
m,p-Xylenes	179601-23-1	<0.00722	0.00722	mg/kg	08.07.17 18.17	U	1
o-Xylene	95-47-6	<0.00361	0.00361	mg/kg	08.07.17 18.17	U	1
Total Xylenes	1330-20-7	<0.00361	0.00361	mg/kg	08.07.17 18.17	U	1
Total BTEX		<0.00361	0.00361	mg/kg	08.07.17 18.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	88	%	80-120	08.07.17 18.17	
1,4-Difluorobenzene	540-36-3	125	%	80-120	08.07.17 18.17	**



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T5 -1'  
Lab Sample Id: 559042-026

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024302

Date Prep: 08.07.17 16.40

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	168#7-00-6	<4.97	4.97	mg/kg	08.08.17 00.11	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024175

Date Prep: 08.04.17 16.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 21.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 21.00	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 21.00	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 21.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	126	%	70-135	08.04.17 21.00	
o-Terphenyl	84-15-1	87	%	70-135	08.04.17 21.00	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T5 -1'  
Lab Sample Id: 559042-026

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.17 22.46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.17 22.46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.17 22.46	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	08.03.17 22.46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.17 22.46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.17 22.46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.17 22.46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	102	%	80-120	08.03.17 22.46	
1,4-Difluorobenzene	540-36-3	100	%	80-120	08.03.17 22.46	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T5 -2'  
Lab Sample Id: 559042-027

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06  
Sample Depth: 2 ft

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024302

Date Prep: 08.07.17 16.40

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	08.08.17 00.19	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024175

Date Prep: 08.04.17 16.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 21.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 21.22	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 21.22	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 21.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	130	%	70-135	08.04.17 21.22	
o-Terphenyl	84-15-1	92	%	70-135	08.04.17 21.22	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T5 -2'  
Lab Sample Id: 559042-027

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.03.17 23.04	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.03.17 23.04	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.03.17 23.04	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.03.17 23.04	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.03.17 23.04	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.03.17 23.04	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.03.17 23.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	108	%	80-120	08.03.17 23.04	
4-Bromofluorobenzene	460-00-4	82	%	80-120	08.03.17 23.04	



# Certificate of Analytical Results 559042



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: T5 -3'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559042-028	Date Collected: 07.25.17 10.45	Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.07.17 16.40	Basis: Wet Weight
Seq Number: 3024302		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Chloride	16887-00-6	<4.93	4.93	mg/kg	08.08.17 00 27	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.04.17 16.00
Seq Number: 3024175	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.17 21.43	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.04.17 21.43	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.04.17 21.43	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.04.17 21.43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	130	%	70-135	08.04.17 21.43	
o-Terphenyl	84-15-1	93	%	70-135	08.04.17 21.43	



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T5 -3'  
Lab Sample Id: 559042-028

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	DII
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.03.17 23.23	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.03.17 23.23	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.03.17 23.23	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	08.03.17 23.23	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.03.17 23.23	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.03.17 23.23	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.03.17 23.23	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	111	%	80-120	08.03.17 23.23		
1,4-Difluorobenzene	540-36-3	98	%	80-120	08.03.17 23.23		



Certificate of Analytical Results 559042



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: T5 -4' Matrix: Soil Date Received: 08.01.17 15.06  
 Lab Sample Id: 559042-029 Date Collected: 07.25.17 10.45 Sample Depth: 4 ft  
 Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
 Tech: MGO % Moisture:  
 Analyst: MGO Date Prep: 08.07.17 16.40 Basis: Wet Weight  
 Seq Number: 3024302

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	08.08.17 00.34	U	1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
 Tech: ARM % Moisture:  
 Analyst: ARM Date Prep: 08.04.17 16.00 Basis: Wet Weight  
 Seq Number: 3024175

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.17 22.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.17 22.05	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.04.17 22.05	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.17 22.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	125	%	70-135	08.04.17 22.05	
o-Terphenyl	84-15-1	89	%	70-135	08.04.17 22.05	



**Certificate of Analytical Results 559042**



**COG Operating LLC, Artesia, NM  
Macho Nacho State #1H**

Sample Id: T5 -4'  
Lab Sample Id: 559042-029

Matrix: Soil  
Date Collected: 07.25.17 10.45

Date Received: 08.01.17 15.06  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024007

Date Prep: 08.03.17 10.00

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.03.17 23.41	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.03.17 23.41	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.03.17 23.41	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	08.03.17 23.41	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.03.17 23.41	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.03.17 23.41	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.03.17 23.41	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	97	%	80-120	08.03.17 23.41		
4-Bromofluorobenzene	460-00-4	106	%	80-120	08.03.17 23.41		



# Flagging Criteria



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

\*\* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: Inorganic Anions by EPA 300/300.1  
Seq Number: 3024270  
MB Sample Id: 728877-1-BLK

Matrix: Solid  
LCS Sample Id: 728877-1-BKS

Prep Method: E300P  
Date Prep: 08.07.17  
LCSD Sample Id: 728877-1-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	247	99	244	98	90-110	1	20	mg/kg	08.07.17 16:38	

Analytical Method: Inorganic Anions by EPA 300/300.1  
Seq Number: 3024302  
MB Sample Id: 728922-1-BLK

Matrix: Solid  
LCS Sample Id: 728922-1-BKS

Prep Method: E300P  
Date Prep: 08.07.17  
LCSD Sample Id: 728922-1-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	242	97	244	98	90-110	1	20	mg/kg	08.07.17 22:47	

Analytical Method: Inorganic Anions by EPA 300/300.1  
Seq Number: 3024270  
Parent Sample Id: 559042-019

Matrix: Soil  
MS Sample Id: 559042-019 S

Prep Method: E300P  
Date Prep: 08.07.17  
MSD Sample Id: 559042-019 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.98	249	253	102	248	100	90-110	2	20	mg/kg	08.07.17 18:49	

Analytical Method: Inorganic Anions by EPA 300/300.1  
Seq Number: 3024270  
Parent Sample Id: 559042-020

Matrix: Soil  
MS Sample Id: 559042-020 S

Prep Method: E300P  
Date Prep: 08.07.17  
MSD Sample Id: 559042-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.96	248	255	103	258	104	90-110	1	20	mg/kg	08.07.17 17:01	

Analytical Method: Inorganic Anions by EPA 300/300.1  
Seq Number: 3024302  
Parent Sample Id: 559042-021

Matrix: Soil  
MS Sample Id: 559042-021 S

Prep Method: E300P  
Date Prep: 08.07.17  
MSD Sample Id: 559042-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.91	246	243	99	239	97	90-110	2	20	mg/kg	08.07.17 23:10	

Analytical Method: Inorganic Anions by EPA 300/300.1  
Seq Number: 3024302  
Parent Sample Id: 559309-001

Matrix: Soil  
MS Sample Id: 559309-001 S

Prep Method: E300P  
Date Prep: 08.07.17  
MSD Sample Id: 559309-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	14.6	248	261	99	261	99	90-110	0	20	mg/kg	08.08.17 00:57	



QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: TPH By SW8015 Mod  
Seq Number: 3024053  
MB Sample Id: 728721-1-BLK

Matrix: Solid  
LCS Sample Id: 728721-1-BKS

Prep Method: TX1005P  
Date Prep: 08.03.17  
LCSD Sample Id: 728721-1-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	1010	101	979	98	70-135	3	35	mg/kg	08.03.17 13:11	
Diescl Range Organics (DRO)	<15.0	1000	1060	106	1040	104	70-135	2	35	mg/kg	08.03.17 13:11	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
I-Chlorooctane	132		127		124		70-135	%	08.03.17 13:11			
o-Terphenyl	97		97		96		70-135	%	08.03.17 13:11			

Analytical Method: TPH By SW8015 Mod  
Seq Number: 3024054  
MB Sample Id: 728722-1-BLK

Matrix: Solid  
LCS Sample Id: 728722-1-BKS

Prep Method: TX1005P  
Date Prep: 08.03.17  
LCSD Sample Id: 728722-1-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	1030	103	993	99	70-135	4	35	mg/kg	08.03.17 22:37	
Diescl Range Organics (DRO)	<15.0	1000	1030	103	1060	106	70-135	3	35	mg/kg	08.03.17 22:37	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
I-Chlorooctane	128		122		126		70-135	%	08.03.17 22:37			
o-Terphenyl	96		108		96		70-135	%	08.03.17 22:37			

Analytical Method: TPH By SW8015 Mod  
Seq Number: 3024175  
MB Sample Id: 728839-1-BLK

Matrix: Solid  
LCS Sample Id: 728839-1-BKS

Prep Method: TX1005P  
Date Prep: 08.04.17  
LCSD Sample Id: 728839-1-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	805	81	949	95	70-135	16	35	mg/kg	08.04.17 19:11	
Diescl Range Organics (DRO)	<15.0	1000	886	89	983	98	70-135	10	35	mg/kg	08.04.17 19:11	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
I-Chlorooctane	130		113		128		70-135	%	08.04.17 19:11			
o-Terphenyl	96		80		90		70-135	%	08.04.17 19:11			



QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: TPH By SW8015 Mod  
Seq Number: 3024053  
Parent Sample Id: 558952-005

Matrix: Soil  
MS Sample Id: 558952-005 S

Prep Method: TX1005P  
Date Prep: 08.03.17  
MSD Sample Id: 558952-005 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	999	968	97	975	98	70-135	1	35	mg/kg	08.03.17 14:32	
Diesel Range Organics (DRO)	16.2	999	1060	104	1080	107	70-135	2	35	mg/kg	08.03.17 14:32	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		128		70-135	%	08.03.17 14:32
o-Terphenyl	91		93		70-135	%	08.03.17 14:32

Analytical Method: TPH By SW8015 Mod  
Seq Number: 3024054  
Parent Sample Id: 559042-007

Matrix: Soil  
MS Sample Id: 559042-007 S

Prep Method: TX1005P  
Date Prep: 08.03.17  
MSD Sample Id: 559042-007 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	950	95	988	99	70-135	4	35	mg/kg	08.04.17 01:44	
Diesel Range Organics (DRO)	29.1	998	1030	100	998	97	70-135	3	35	mg/kg	08.04.17 01:44	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		123		70-135	%	08.04.17 01:44
o-Terphenyl	123		104		70-135	%	08.04.17 01:44

Analytical Method: TPH By SW8015 Mod  
Seq Number: 3024175  
Parent Sample Id: 559042-025

Matrix: Soil  
MS Sample Id: 559042-025 S

Prep Method: TX1005P  
Date Prep: 08.04.17  
MSD Sample Id: 559042-025 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	997	1020	102	997	100	70-135	2	35	mg/kg	08.04.17 20:17	
Diesel Range Organics (DRO)	<15.0	997	1020	102	1000	100	70-135	2	35	mg/kg	08.04.17 20:17	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		127		70-135	%	08.04.17 20:17
o-Terphenyl	91		90		70-135	%	08.04.17 20:17



QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024005  
MB Sample Id: 728728-1-BLK

Matrix: Solid  
LCS Sample Id: 728728-1-BKS

Prep Method: SW5030B  
Date Prep: 08.03.17  
LCSD Sample Id: 728728-1-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	0.0894	89	0.0888	88	70-130	1	35	mg/kg	08.03.17 10:38	
Toluene	<0.00202	0.101	0.0916	91	0.0924	91	70-130	1	35	mg/kg	08.03.17 10:38	
Ethylbenzene	<0.00202	0.101	0.0964	95	0.0969	96	71-129	1	35	mg/kg	08.03.17 10:38	
m,p-Xylenes	<0.00404	0.202	0.186	92	0.187	93	70-135	1	35	mg/kg	08.03.17 10:38	
o-Xylene	<0.00202	0.101	0.0945	94	0.0955	95	71-133	1	35	mg/kg	08.03.17 10:38	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	100		108		114		80-120	%	08.03.17 10:38			
4-Bromofluorobenzene	105		110		113		80-120	%	08.03.17 10:38			

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024007  
MB Sample Id: 728729-1-BLK

Matrix: Solid  
LCS Sample Id: 728729-1-BKS

Prep Method: SW5030B  
Date Prep: 08.03.17  
LCSD Sample Id: 728729-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.0858	86	0.0842	84	70-130	2	35	mg/kg	08.03.17 20:54	
Toluene	<0.00200	0.0998	0.0899	90	0.0880	88	70-130	2	35	mg/kg	08.03.17 20:54	
Ethylbenzene	<0.00200	0.0998	0.0984	99	0.0972	97	71-129	1	35	mg/kg	08.03.17 20:54	
m,p-Xylenes	<0.00399	0.200	0.189	95	0.188	94	70-135	1	35	mg/kg	08.03.17 20:54	
o-Xylene	<0.00200	0.0998	0.0981	98	0.0990	99	71-133	1	35	mg/kg	08.03.17 20:54	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	98		100		99		80-120	%	08.03.17 20:54			
4-Bromofluorobenzene	105		105		105		80-120	%	08.03.17 20:54			

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024166  
MB Sample Id: 728837-1-BLK

Matrix: Solid  
LCS Sample Id: 728837-1-BKS

Prep Method: SW5030B  
Date Prep: 08.04.17  
LCSD Sample Id: 728837-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.108	107	0.116	115	70-130	7	35	mg/kg	08.04.17 08:18	
Toluene	<0.00201	0.101	0.107	106	0.115	114	70-130	7	35	mg/kg	08.04.17 08:18	
Ethylbenzene	<0.00201	0.101	0.110	109	0.117	116	71-129	6	35	mg/kg	08.04.17 08:18	
m,p-Xylenes	<0.00402	0.201	0.213	106	0.228	113	70-135	7	35	mg/kg	08.04.17 08:18	
o-Xylene	<0.00201	0.101	0.106	105	0.113	112	71-133	6	35	mg/kg	08.04.17 08:18	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	100		106		105		80-120	%	08.04.17 08:18			
4-Bromofluorobenzene	103		104		103		80-120	%	08.04.17 08:18			



QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024179  
MB Sample Id: 728847-1-BLK

Matrix: Solid  
LCS Sample Id: 728847-1-BKS

Prep Method: SW5030B  
Date Prep: 08.04.17  
LCSD Sample Id: 728847-1-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	0.107	106	0.117	116	70-130	9	35	mg/kg	08.04.17 20:49	
Toluene	<0.00202	0.101	0.109	108	0.119	118	70-130	9	35	mg/kg	08.04.17 20:49	
Ethylbenzene	<0.00202	0.101	0.110	109	0.122	121	71-129	10	35	mg/kg	08.04.17 20:49	
m,p-Xylenes	<0.00403	0.202	0.215	106	0.238	118	70-135	10	35	mg/kg	08.04.17 20:49	
o-Xylene	<0.00202	0.101	0.108	107	0.119	118	71-133	10	35	mg/kg	08.04.17 20:49	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	98		98		103		80-120	%	08.04.17 20:49			
4-Bromofluorobenzene	96		101		107		80-120	%	08.04.17 20:49			

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024257  
MB Sample Id: 728907-1-BLK

Matrix: Solid  
LCS Sample Id: 728907-1-BKS

Prep Method: SW5030B  
Date Prep: 08.07.17  
LCSD Sample Id: 728907-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.0969	96	0.0977	98	70-130	1	35	mg/kg	08.07.17 08:13	
Toluene	<0.00201	0.101	0.104	103	0.104	104	70-130	0	35	mg/kg	08.07.17 08:13	
Ethylbenzene	<0.00201	0.101	0.0984	97	0.0993	99	71-129	1	35	mg/kg	08.07.17 08:13	
m,p-Xylenes	<0.00402	0.201	0.192	96	0.194	97	70-135	1	35	mg/kg	08.07.17 08:13	
o-Xylene	<0.00201	0.101	0.0945	94	0.0962	96	71-133	2	35	mg/kg	08.07.17 08:13	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	99		104		105		80-120	%	08.07.17 08:13			
4-Bromofluorobenzene	105		104		105		80-120	%	08.07.17 08:13			

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024005  
Parent Sample Id: 559040-006

Matrix: Soil  
MS Sample Id: 559040-006 S

Prep Method: SW5030B  
Date Prep: 08.03.17  
MSD Sample Id: 559040-006 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	0.101	0.0748	74	0.105	104	70-130	34	35	mg/kg	08.03.17 16:31	
Toluene	<0.00201	0.101	0.0750	74	0.0933	92	70-130	22	35	mg/kg	08.03.17 16:31	
Ethylbenzene	<0.00201	0.101	0.0816	81	0.0910	90	71-129	11	35	mg/kg	08.03.17 16:31	
m,p-Xylenes	<0.00402	0.201	0.157	78	0.166	82	70-135	6	35	mg/kg	08.03.17 16:31	
o-Xylene	<0.00201	0.101	0.0846	84	0.0800	79	71-133	6	35	mg/kg	08.03.17 16:31	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene			103		101		80-120	%	08.03.17 16:31			
4-Bromofluorobenzene			112		89		80-120	%	08.03.17 16:31			



QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024007  
Parent Sample Id: 559042-029

Matrix: Soil  
MS Sample Id: 559042-029 S

Prep Method: SW5030B  
Date Prep: 08.03.17  
MSD Sample Id: 559042-029 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0834	83	0.0753	75	70-130	10	35	mg/kg	08.04.17 07:14	
Toluene	<0.00202	0.101	0.0813	80	0.0754	75	70-130	8	35	mg/kg	08.04.17 07:14	
Ethylbenzene	<0.00202	0.101	0.0825	82	0.0902	90	71-129	9	35	mg/kg	08.04.17 07:14	
m,p-Xylenes	<0.00403	0.202	0.158	78	0.178	89	70-135	12	35	mg/kg	08.04.17 07:14	
o-Xylene	<0.00202	0.101	0.0799	79	0.0996	100	71-133	22	35	mg/kg	08.04.17 07:14	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		109		80-120	%	08.04.17 07:14
4-Bromofluorobenzene	102		106		80-120	%	08.04.17 07:14

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024166  
Parent Sample Id: 559039-005

Matrix: Soil  
MS Sample Id: 559039-005 S

Prep Method: SW5030B  
Date Prep: 08.04.17  
MSD Sample Id: 559039-005 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	0.101	0.0988	98	0.101	100	70-130	2	35	mg/kg	08.04.17 08:56	
Toluene	<0.00201	0.101	0.0983	97	0.100	99	70-130	2	35	mg/kg	08.04.17 08:56	
Ethylbenzene	<0.00201	0.101	0.101	100	0.102	101	71-129	1	35	mg/kg	08.04.17 08:56	
m,p-Xylenes	<0.00402	0.201	0.196	98	0.199	99	70-135	2	35	mg/kg	08.04.17 08:56	
o-Xylene	<0.00201	0.101	0.0977	97	0.0990	98	71-133	1	35	mg/kg	08.04.17 08:56	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		105		80-120	%	08.04.17 08:56
4-Bromofluorobenzene	107		108		80-120	%	08.04.17 08:56

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024179  
Parent Sample Id: 559258-001

Matrix: Soil  
MS Sample Id: 559258-001 S

Prep Method: SW5030B  
Date Prep: 08.04.17  
MSD Sample Id: 559258-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0851	85	0.101	101	70-130	17	35	mg/kg	08.04.17 21:26	
Toluene	<0.00201	0.100	0.0804	80	0.0965	97	70-130	18	35	mg/kg	08.04.17 21:26	
Ethylbenzene	<0.00201	0.100	0.0828	83	0.0975	98	71-129	16	35	mg/kg	08.04.17 21:26	
m,p-Xylenes	<0.00402	0.201	0.161	80	0.188	94	70-135	15	35	mg/kg	08.04.17 21:26	
o-Xylene	<0.00201	0.100	0.0849	85	0.0962	96	71-133	12	35	mg/kg	08.04.17 21:26	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	107		103		80-120	%	08.04.17 21:26
4-Bromofluorobenzene	109		107		80-120	%	08.04.17 21:26



QC Summary 559042

COG Operating LLC  
Macho Nacho State #1H

Analytical Method: BTEX by EPA 8021B  
Seq Number: 3024257  
Parent Sample Id: 559041-001

Matrix: Soil  
MS Sample Id: 559041-001 S

Prep Method: SW5030B  
Date Prep: 08.07.17  
MSD Sample Id: 559041-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0757	75	0.0640	64	70-130	17	35	mg/kg	08.07.17 15:10	X
Toluene	<0.00202	0.101	0.0718	71	0.0683	68	70-130	5	35	mg/kg	08.07.17 15:10	X
Ethylbenzene	<0.00202	0.101	0.0620	61	0.0561	56	71-129	10	35	mg/kg	08.07.17 15:10	X
m,p-Xylenes	0.00745	0.202	0.119	55	0.109	51	70-135	9	35	mg/kg	08.07.17 15:10	X
o-Xylene	0.00285	0.101	0.0606	57	0.0553	52	71-133	9	35	mg/kg	08.07.17 15:10	X
<b>Surrogate</b>			<b>MS %Rec</b>	<b>MS Flag</b>	<b>MSD %Rec</b>	<b>MSD Flag</b>	<b>Limits</b>			<b>Units</b>	<b>Analysis Date</b>	
1,4-Difluorobenzene			97		106		80-120			%	08.07.17 15:10	
4-Bromofluorobenzene			105		114		80-120			%	08.07.17 15:10	



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Phoenix, Arizona (480-365-0900)

# CHAIN OF CUSTODY

Page 1 of 3

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes	
Company Name / Branch: COG Operating LLC Project Address: 2407 PECOS Avenue, Arista NM 80210 Email: <a href="mailto:info@xenco.com">info@xenco.com</a> Phone No: 575-748-1683 Project Contact: Aaron Lebl		Project Name/Number: Macho Necho State #11 Project Location: Macho Necho State Invoice To: COG Operating LLC Attn: Robert McNeill 600 W Illinois Midland TX 79701		Xenco Quote # Xenco Job #		Matrix Codes	
Sampler's Name: Aaron Lebl		PO Number:		TPH/ EXTENDED BTEX Chloride		559043	
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	Number of preserved bottles
1	T1 - SURFACE	Surface	7/5/17	9:30 AM	S	1	1
2	T1 - 1'						
3	T1 - 2'						
4	T1 - 3'						
5	T1 - 4'						
6	T1 - 5'						
7	T1 - 7'						
8	T1 - 10'						
9	T1 - 12'						
10							

Turnaround Time (Business days)		Data Deliverable Information		Notes:	
<input type="checkbox"/> Same Day TAT	<input type="checkbox"/> 5 Day TAT	<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> Level IV (Full Data Pkg raw data)	Temp: 3.1	IR ID: R-8
<input type="checkbox"/> Next Day EMERGENCY	<input type="checkbox"/> 7 Day TAT	<input type="checkbox"/> Level III Std QC + Forms	<input type="checkbox"/> TRRP Level IV	CF: (0.6; -0.2°C)	
<input type="checkbox"/> 2 Day EMERGENCY	<input type="checkbox"/> Contract TAT	<input type="checkbox"/> Level 3 (CLP Forms)	<input type="checkbox"/> UST / RO 411	Corrected Temp: 2.9	
<input type="checkbox"/> 3 Day EMERGENCY		<input type="checkbox"/> TRRP Checklist			

TAT Slides: Day received by Lab, if received by 5:00 pm		RECEIVED BY		DATE	
Retrieved By:		Received By:		Date Time:	
Retrieved By:		Received By:		Date Time:	
Retrieved By:		Received By:		Date Time:	
Retrieved By:		Received By:		Date Time:	

TAT Slides: Day received by Lab, if received by 5:00 pm		RECEIVED BY		DATE	
Retrieved By:		Received By:		Date Time:	
Retrieved By:		Received By:		Date Time:	
Retrieved By:		Received By:		Date Time:	
Retrieved By:		Received By:		Date Time:	

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# CHAIN OF CUSTODY

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San Antonio, Texas (210-809-3334)  
 Midland, Texas (432-704-6261)

Phoenix, Arizona (480-355-0900)

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Client / Reporting Information		Project Information		Analytical Information		Matrix Codes	
Company Name / Branch: <b>COG Operating LLC</b> Company Address: <b>2407 PECOS Avenue Aarisa NM 88210</b> Email: <b>info@xenco.com</b> Phone No: 615-748-1833 <b>www.xenco.com</b> <b>direct@xenco.com</b> <b>market@xenco.com</b>		Project Name/Number: <b>Marcho Necho Slide #1H</b> Project Location: <b>Marcho Necho State</b> Invoice To: <b>COG Operating LLC</b> <b>Attn: Robert McNeill</b> <b>600 W. Illinois</b> <b>Midland TX 79701</b>		Xenco Quote # <b>559072</b> Xenco Job # <b>559072</b>		W = Water S = Solids/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	
Project Contact: <b>Aaron Lieb</b> Sampler's Name: <b>Aaron Lieb</b>		PU Number:		TPH/ EXTENDED BTEX Chloride		Field Comments	
No	Field ID / Point of Collection	Sample Depth	Collection Date	Time	Matrix	# of bottles	Number of preserved bottles
1	T2- SURFACE	SURF	7/25/17	10:00 AM	S	1	1
2	T2- 1'	1				1	1
3	T2- 2'	2				1	1
4	T2- 3'	3				1	1
5	T2- 5'	5				1	1
6	T3- SURFACE	SURF		10:15 AM		1	1
7	T3- 1'	1				1	1
8	T3- 2'	2				1	1
9	T3- 3'	3				1	1
10	T3- 4'	4				1	1

<input type="checkbox"/> Same Day TAT <input type="checkbox"/> Next Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 3 Day EMERGENCY	<input type="checkbox"/> 5 Day TAT <input type="checkbox"/> 7 Day TAT <input type="checkbox"/> Contract TAT <input type="checkbox"/> TRRP Checklist	<input type="checkbox"/> Level II SID OC <input type="checkbox"/> Level IV (Full Data Plug flow data) <input type="checkbox"/> Level III SID OC+ Forms <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level 3 (CLP Forms) <input type="checkbox"/> UST / RG-411	Temp: <b>3.1</b> IR ID: R-8 CF: (0-6: -0.2°C) (6-23: +0.2°C) Corrected Temp: <b>2.9</b>
--	--	---	---

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:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1	8-17 1:17 PM	2	8-17 3:09 PM	3		4	

Relinquished by: **Aaron Lieb**  
 Received by: **Robert McNeill**  
 Date Time: **8-17 1:17 PM**  
 Date Time: **8-17 3:09 PM**

Relinquished by: **Aaron Lieb**  
 Received by: **Robert McNeill**  
 Date Time: **8-17 1:17 PM**  
 Date Time: **8-17 3:09 PM**

Relinquished by: **Aaron Lieb**  
 Received by: **Robert McNeill**  
 Date Time: **8-17 1:17 PM**  
 Date Time: **8-17 3:09 PM**

Relinquished by: **Aaron Lieb**  
 Received by: **Robert McNeill**  
 Date Time: **8-17 1:17 PM**  
 Date Time: **8-17 3:09 PM**

Relinquished by: **Aaron Lieb**  
 Received by: **Robert McNeill**  
 Date Time: **8-17 1:17 PM**  
 Date Time: **8-17 3:09 PM**

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 destroyed at 90 day sample. These terms will be enforced unless previously negotiated under a fully executed client contract.



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# CHAIN OF CUSTODY

Page 3 of 3

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

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Phoenix, Arizona (480-355-0900)

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes	
Company Name / Branch: COG Operating LLC Company Address: 2407 PECOS Avenue Arleta NM 86210 Phone No: 575-346-1533 Email: <a href="mailto:dms12@xenco.com">dms12@xenco.com</a> <a href="mailto:msaest@xenco.com">msaest@xenco.com</a> Project Contact: Aaron Lieb Sampler's Name: Aaron Lieb		Project Name/Number: Macho Macho State #11 Project Location: Macho Macho State Service To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Midland TX 79701		Xenco Queue # Xenco Job #		5599043	
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	Number of preserved bottles
1	T4 - SURFACE	SURF	7/25/17	10:00AM	S	1	TPH/ EXTENDED
2	T4 - 2'						BTEX
3	T4 - 3'						Chloride
4	T4 - 4'						
5	T4 - 4'						
6	T5 - SURFACE	SURF		10:15AM			
7	T5 - 1'						
8	T5 - 2'						
9	T5 - 3'						
10	T5 - 4'						
Data Deliverable Information							
<input type="checkbox"/> Same Day TAT <input type="checkbox"/> Next Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 3 Day EMERGENCY		<input type="checkbox"/> 5 Day TAT <input type="checkbox"/> 7 Day TAT <input type="checkbox"/> Contract TAT		<input type="checkbox"/> Level II SLD OC <input type="checkbox"/> Level III SLD OC+ Forms <input type="checkbox"/> Level 3 (CLP Forms)		<input type="checkbox"/> Level IV (Full Data Plug/raw data) <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> TRRP Checklist	
TAT Starts Day received by Lab, if received by 5:00 pm SAMPLE SUBSTORY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING CONTAINER DELIVERY							
Relinquished by Sampler: [Signature] Date Time: 8-1-17 1:17A		Received By: [Signature] Date Time: 8-1-17 1:17P		Relinquished By: [Signature] Date Time: 8-1-17 3:06P		Received By: [Signature] Date Time: 8-2-17	
Relinquished by: [Signature] Date Time:		Received By: [Signature] Date Time:		Relinquished By: [Signature] Date Time:		Received By: [Signature] Date Time:	
<input type="checkbox"/> TAT Starts Day received by Lab, if received by 5:00 pm		<input type="checkbox"/> Level II SLD OC		<input type="checkbox"/> Level IV (Full Data Plug/raw data)		<input type="checkbox"/> TRRP Level IV	
<input type="checkbox"/> Next Day EMERGENCY		<input type="checkbox"/> 7 Day TAT		<input type="checkbox"/> Contract TAT		<input type="checkbox"/> TRRP Checklist	
<input type="checkbox"/> 2 Day EMERGENCY		<input type="checkbox"/> Level 3 (CLP Forms)		<input type="checkbox"/> TRRP Level IV		<input type="checkbox"/> TRRP Checklist	
<input type="checkbox"/> 3 Day EMERGENCY		<input type="checkbox"/> TRRP Checklist		<input type="checkbox"/> TRRP Level IV		<input type="checkbox"/> TRRP Checklist	
Temp: 3.1 CF: (0.6; -0.2°C) IR ID: R-8 Corrected Temp: 29							
Field Comments:							
W = Water S = Solids/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							

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, as attests and subcontractor. 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 respecified under a duly executed client contract.



**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**



Client: COG Operating LLC

Date/ Time Received: 08/01/2017 03:06:00 PM

Work Order #: 559042

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	N/A
#21 VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer  
 Jessica Kramer

Date: 08/02/2017

Checklist reviewed by: Kelsey Brooks  
 Kelsey Brooks

Date: 08/02/2017



# Certificate of Analysis Summary 559040

COG Operating LLC, Artesia, NM  
Project Name: Macho Nacho State #1H



Date Received in Lab: Tue Aug-01-17 03:06 pm  
Report Date: 09-AUG-17  
Project Manager: Kelsey Brooks

Project Id:  
Contact: Aaron Lieb  
Project Location: Macho Nacho State

Analysis Requested		Lab Id:	559040-001	559040-002	559040-003	559040-004	559040-005	559040-006
		Field Id:	North- Surf	North- 1'	South- Surf	South- 1'	West- Surf	West- 1'
		Depth:	1- ft					
		Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampled:	Jul-25-17 11:00	Jul-25-17 11:00	Jul-25-17 11:15	Jul-25-17 11:15	Jul-25-17 11:30	Jul-25-17 11:35
		Extracted:	Aug-03-17 07:30	Aug-04-17 15:45	Aug-03-17 07:30	Aug-03-17 07:30	Aug-04-17 15:45	Aug-03-17 07:30
		Analyzed:	Aug-03-17 14:32	Aug-05-17 02:20	Aug-03-17 15:08	Aug-03-17 15:27	Aug-05-17 02:39	Aug-03-17 12:35
		Units/RL:	mg/kg RL					
BTEX by EPA 8021B			<0.00202 0.00202	<0.00360 0.00360	<0.00200 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
Benzene			<0.00202 0.00202	<0.00360 0.00360	0.00200 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
Toluene			<0.00202 0.00202	<0.00360 0.00360	<0.00200 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
Ethylbenzene			<0.00403 0.00403	<0.00719 0.00719	<0.00400 0.00400	<0.00404 0.00404	<0.00702 0.00702	<0.00398 0.00398
m,p-Xylenes			<0.00202 0.00202	<0.00360 0.00360	0.00200 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
o-Xylene			<0.00202 0.00202	<0.00360 0.00360	0.00200 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
Total Xylenes			<0.00202 0.00202	<0.00360 0.00360	0.00447 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
Total BTEX			<0.00202 0.00202	<0.00360 0.00360	0.00447 0.00200	<0.00202 0.00202	<0.00351 0.00351	<0.00199 0.00199
Inorganic Anions by EPA 300/300.1			Aug-04-17 12:00					
Chloride			Aug-03-17 10:00	Aug-04-17 13:32	Aug-04-17 13:40	Aug-04-17 13:47	Aug-04-17 13:55	Aug-04-17 14:18
			mg/kg RL					
			<4.97 4.97	<4.96 4.96	<4.95 4.95	<4.96 4.96	<4.99 4.99	<4.98 4.98
TPH By SW8015 Mod			Aug-03-17 10:00					
Gasoline Range Hydrocarbons (GRO)			Aug-03-17 17:13	Aug-03-17 17:33	Aug-03-17 18:33	Aug-03-17 18:53	Aug-03-17 19:14	Aug-03-17 19:35
Diesel Range Organics (DRO)			mg/kg RL					
Oil Range Hydrocarbons (ORO)			<14.9 14.9	<15.0 15.0	<15.0 15.0	<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	<15.0 15.0	<15.0 15.0

*Kelsey Brooks*

Kelsey Brooks  
Project Manager

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 unless otherwise agreed to in writing.

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# Certificate of Analysis Summary 559040

**COG Operating LLC, Artesia, NM**  
**Project Name: Macho Nacho State #1H**



**Date Received in Lab:** Tue Aug-01-17 03:06 pm  
**Report Date:** 09-AUG-17  
**Project Manager:** Kelsey Brooks

**Project Id:**  
**Contact:** Aaron Lieb  
**Project Location:** Macho Nacho State

<i>Analysis Requested</i>		<i>Lab Id:</i>	<i>Field Id:</i>	<i>Depth:</i>	<i>Matrix:</i>	<i>Sampled:</i>	<i>Extracted:</i>	<i>Analyzed:</i>	<i>Units/RL:</i>
<b>BTEX by EPA 8021B</b>		559040-007	East- Surf	SOIL	Jul-25-17 11:45	Aug-03-17 07:30	Aug-03-17 16:03	mg/kg	RL
		559040-008	East- 1'	SOIL	Jul-25-17 11:45	Aug-03-17 07:30	Aug-03-17 17:27	mg/kg	RL
		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
Benzene		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
Toluene		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
Ethylbenzene		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
m,p-Xylenes		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
o-Xylenes		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
Total Xylenes		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
Total BTEX		<0.00198	0.00198	<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200
<b>Inorganic Anions by EPA 300/300.1</b>		Aug-04-17 12:00	Aug-04-17 12:00	mg/kg	RL	Aug-04-17 14:33	mg/kg	RL	RL
Chloride		14.3	4.98	<4.91	4.91	<4.91	4.91	<4.91	4.91
<b>TPH By SW8015 Mod</b>		Aug-03-17 10:00	Aug-03-17 10:00	mg/kg	RL	Aug-03-17 20:15	mg/kg	RL	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Oil Range Hydrocarbons (ORO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0

*Kelsey Brooks*  
 Kelsey Brooks  
 Project Manager

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.

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# Analytical Report 559040

for  
**COG Operating LLC**

**Project Manager: Aaron Lieb**  
**Macho Nacho State #1H**

**09-AUG-17**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)

Xenco-San Antonio: Texas (T104704534)

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

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



09-AUG-17

Project Manager: **Aaron Lieb**  
**COG Operating LLC**  
2407 Pecos Avenue  
Artesia, NM 88210

Reference: XENCO Report No(s): **559040**  
**Macho Nacho State #1H**  
Project Address: Macho Nacho State

**Aaron Lieb:**

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) 559040. 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. 559040 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.*

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

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## Sample Cross Reference 559040



COG Operating LLC, Artesia, NM

Macho Nacho State #1H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North- Surf	S	07-25-17 11:00		559040-001
North- 1'	S	07-25-17 11:00	1 ft	559040-002
South- Surf	S	07-25-17 11:15		559040-003
South- 1'	S	07-25-17 11:15	1 ft	559040-004
West-Surf	S	07-25-17 11:30		559040-005
West- 1'	S	07-25-17 11:35	1 ft	559040-006
East- Surf	S	07-25-17 11:45		559040-007
East- 1'	S	07-25-17 11:45	1 ft	559040-008



## CASE NARRATIVE

*Client Name: COG Operating LLC  
Project Name: Macho Nacho State #1H*

Project ID:  
Work Order Number(s): 559040

Report Date: 09-AUG-17  
Date Received: 08/01/2017

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### **Sample receipt non conformances and comments:**

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

None

#### **Analytical non conformances and comments:**

Batch: LBA-3024005 BTEX by EPA 8021B

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

Batch: LBA-3024179 BTEX by EPA 8021B

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



Certificate of Analytical Results 559040



COG Operating LLC, Artesia, NM  
Macho Nacho State #1H

Sample Id: North-Surf  
Lab Sample Id: 559040-001

Matrix: Soil  
Date Collected: 07.25.17 11.00

Date Received: 08.01.17 15.06

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024184

Date Prep: 08.04.17 12.00

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	08.04.17 13.09	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024053

Date Prep: 08.03.17 10.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.03.17 17.13	U	1
Diethyl Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.03.17 17.13	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.03.17 17.13	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.03.17 17.13	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	127	%	70-135	08.03.17 17.13		
o-Terphenyl	84-15-1	92	%	70-135	08.03.17 17.13		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: North-Surf  
Lab Sample Id: 559040-001

Matrix: Soil  
Date Collected: 07.25.17 11.00

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.03.17 14.32	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.03.17 14.32	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.03.17 14.32	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	08.03.17 14.32	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.03.17 14.32	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.03.17 14.32	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.03.17 14.32	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	99	%	80-120	08.03.17 14.32		
4-Bromofluorobenzene	460-00-4	92	%	80-120	08.03.17 14.32		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: North- 1'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559040-002	Date Collected: 07.25.17 11.00	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.04.17 12.00	Basis: Wet Weight
Seq Number: 3024184		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.04.17 13.32	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Basis: Wet Weight
Seq Number: 3024053	
Date Prep: 08.03.17 10.00	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 17.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.03.17 17.33	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 17.33	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.03.17 17.33	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	128	%	70-135	08.03.17 17.33		
o-Terphenyl	84-15-1	93	%	70-135	08.03.17 17.33		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: North- 1'  
Lab Sample Id: 559040-002

Matrix: Soil  
Date Collected: 07.25.17 11.00

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00360	0.00360	mg/kg	08.05.17 02.20	U	1
Toluene	108-88-3	<0.00360	0.00360	mg/kg	08.05.17 02.20	U	1
Ethylbenzene	100-41-4	<0.00360	0.00360	mg/kg	08.05.17 02.20	U	1
m,p-Xylenes	179601-23-1	<0.00719	0.00719	mg/kg	08.05.17 02.20	U	1
o-Xylene	95-47-6	<0.00360	0.00360	mg/kg	08.05.17 02.20	U	1
Total Xylenes	1330-20-7	<0.00360	0.00360	mg/kg	08.05.17 02.20	U	1
Total BTEX		<0.00360	0.00360	mg/kg	08.05.17 02.20	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	82	%	80-120	08.05.17 02.20		
1,4-Difluorobenzene	540-36-3	89	%	80-120	08.05.17 02.20		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: <b>South- Surf</b>	Matrix: <b>Soil</b>	Date Received: <b>08.01.17 15.06</b>
Lab Sample Id: <b>559040-003</b>	Date Collected: <b>07.25.17 11.15</b>	
Analytical Method: <b>Inorganic Anions by EPA 300/300.1</b>		Prep Method: <b>E300P</b>
Tech: <b>MGO</b>		% Moisture:
Analyst: <b>MGO</b>	Date Prep: <b>08.04.17 12.00</b>	Basis: <b>Wet Weight</b>
Seq Number: <b>3024184</b>		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	08.04.17 13.40	U	1

Analytical Method: <b>TPH By SW8015 Mod</b>	Prep Method: <b>TX1005P</b>
Tech: <b>ARM</b>	% Moisture:
Analyst: <b>ARM</b>	Basis: <b>Wet Weight</b>
Seq Number: <b>3024053</b>	Date Prep: <b>08.03.17 10.00</b>

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 18.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	21.5	15.0	mg/kg	08.03.17 18.33		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 18.33	U	1
<b>Total TPH</b>	PHC635	21.5	15.0	mg/kg	08.03.17 18.33		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	128	%	70-135	08.03.17 18.33	
o-Terphenyl	84-15-1	93	%	70-135	08.03.17 18.33	



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: **South- Surf**  
Lab Sample Id: 559040-003

Matrix: **Soil**  
Date Collected: 07.25.17 11.15

Date Received: 08.01.17 15.06

Analytical Method: **BTEX by EPA 8021B**

Prep Method: **SW5030B**

Tech: **ALJ**

% Moisture:

Analyst: **ALJ**

Date Prep: **08.03.17 07.30**

Basis: **Wet Weight**

Seq Number: **3024005**

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.17 15.08	U	1
Toluene	108-88-3	0.00247	0.00200	mg/kg	08.03.17 15.08		1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.17 15.08	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	08.03.17 15.08	U	1
o-Xylene	95-47-6	0.00200	0.00200	mg/kg	08.03.17 15.08		1
Total Xylenes	1330-20-7	0.00200	0.00200	mg/kg	08.03.17 15.08		1
Total BTEX		0.00447	0.00200	mg/kg	08.03.17 15.08		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	97	%	80-120	08.03.17 15.08		
4-Bromofluorobenzene	460-00-4	108	%	80-120	08.03.17 15.08		



## Certificate of Analytical Results 559040



### COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: South- 1'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559040-004	Date Collected: 07.25.17 11.15	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.04.17 12.00	Basis: Wet Weight
Seq Number: 3024184		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.04.17 13.47	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Basis: Wet Weight
Seq Number: 3024053	Date Prep: 08.03.17 10.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 18.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.03.17 18.53	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 18.53	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.03.17 18.53	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	126	%	70-135	08.03.17 18.53		
o-Terphenyl	84-15-1	92	%	70-135	08.03.17 18.53		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: South- 1'  
Lab Sample Id: 559040-004

Matrix: Soil  
Date Collected: 07.25.17 11.15

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.03.17 15.27	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.03.17 15.27	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.03.17 15.27	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	08.03.17 15.27	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.03.17 15.27	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.03.17 15.27	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.03.17 15.27	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	108	%	80-120	08.03.17 15.27		
1,4-Difluorobenzene	540-36-3	99	%	80-120	08.03.17 15.27		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: West-Surf  
Lab Sample Id: 559040-005

Matrix: Soil  
Date Collected: 07.25.17 11.30

Date Received: 08.01.17 15.06

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024184

Date Prep: 08.04.17 12.00

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	08.04.17 13.55	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024053

Date Prep: 08.03.17 10.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 19.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.03.17 19.14	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 19.14	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.03.17 19.14	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	127	%	70-135	08.03.17 19.14		
o-Terphenyl	84-15-1	92	%	70-135	08.03.17 19.14		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: West-Surf  
Lab Sample Id: 559040-005

Matrix: Soil  
Date Collected: 07.25.17 11.30

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024179

Date Prep: 08.04.17 15.45

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00351	0.00351	mg/kg	08.05.17 02.39	U	1
Toluene	108-88-3	<0.00351	0.00351	mg/kg	08.05.17 02.39	U	1
Ethylbenzene	100-41-4	<0.00351	0.00351	mg/kg	08.05.17 02.39	U	1
m,p-Xylenes	179601-23-1	<0.00702	0.00702	mg/kg	08.05.17 02.39	U	1
o-Xylene	95-47-6	<0.00351	0.00351	mg/kg	08.05.17 02.39	U	1
Total Xylenes	1330-20-7	<0.00351	0.00351	mg/kg	08.05.17 02.39	U	1
Total BTEX		<0.00351	0.00351	mg/kg	08.05.17 02.39	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	101	%	80-120	08.05.17 02.39		
1,4-Difluorobenzene	540-36-3	98	%	80-120	08.05.17 02.39		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: West- 1'	Matrix: Soil	Date Received: 08.01.17 15.06
Lab Sample Id: 559040-006	Date Collected: 07.25.17 11.35	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.04.17 12.00	Basis: Wet Weight
Seq Number: 3024184		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.04.17 14.18	U	1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 10.00
Seq Number: 3024053	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 19.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	20.7	15.0	mg/kg	08.03.17 19.35		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 19.35	U	1
Total TPH	PHC635	20.7	15.0	mg/kg	08.03.17 19.35		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	126	%	70-135	08.03.17 19.35		
o-Terphenyl	84-15-1	100	%	70-135	08.03.17 19.35		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: West- 1'  
Lab Sample Id: 559040-006

Matrix: Soil  
Date Collected: 07.25.17 11.35

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.03.17 12.35	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.03.17 12.35	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.03.17 12.35	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.03.17 12.35	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.03.17 12.35	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.03.17 12.35	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.03.17 12.35	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	103	%	80-120	08.03.17 12.35		
1,4-Difluorobenzene	540-36-3	110	%	80-120	08.03.17 12.35		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: <b>East-Surf</b>	Matrix: <b>Soil</b>	Date Received: 08.01.17 15.06
Lab Sample Id: 559040-007	Date Collected: 07.25.17 11.45	
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MGO		% Moisture:
Analyst: MGO	Date Prep: 08.04.17 12.00	Basis: <b>Wet Weight</b>
Seq Number: 3024184		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.3	4.98	mg/kg	08.04.17 14.26		1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.03.17 10.00
Seq Number: 3024053	Basis: <b>Wet Weight</b>

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 19.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.03.17 19.55	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 19.55	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.03.17 19.55	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
I-Chlorooctane	111-85-3	120	%	70-135	08.03.17 19.55		
o-Terphenyl	84-15-1	84	%	70-135	08.03.17 19.55		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: East-Surf  
Lab Sample Id: 559040-007

Matrix: Soil  
Date Collected: 07.25.17 11.45

Date Received: 08.01.17 15.06

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.03.17 16.03	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.03.17 16.03	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.03.17 16.03	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	08.03.17 16.03	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.03.17 16.03	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.03.17 16.03	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.03.17 16.03	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	105	%	80-120	08.03.17 16.03		
4-Bromofluorobenzene	460-00-4	104	%	80-120	08.03.17 16.03		



## Certificate of Analytical Results 559040



### COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: East- 1'  
Lab Sample Id: 559040-008

Matrix: Soil  
Date Collected: 07.25.17 11.45

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1  
Tech: MGO  
Analyst: MGO  
Seq Number: 3024184

Date Prep: 08.04.17 12.00

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.91	4.91	mg/kg	08.04.17 14.33	U	1

Analytical Method: TPH By SW8015 Mod  
Tech: ARM  
Analyst: ARM  
Seq Number: 3024053

Date Prep: 08.03.17 10.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.03.17 20.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.03.17 20.15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.03.17 20.15	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.03.17 20.15	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1-Chlorooctane	111-85-3	124	%	70-135	08.03.17 20.15		
o-Terphenyl	84-15-1	91	%	70-135	08.03.17 20.15		



# Certificate of Analytical Results 559040



## COG Operating LLC, Artesia, NM Macho Nacho State #1H

Sample Id: East-1'  
Lab Sample Id: 559040-008

Matrix: Soil  
Date Collected: 07.25.17 11.45

Date Received: 08.01.17 15.06  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B  
Tech: ALJ  
Analyst: ALJ  
Seq Number: 3024005

Date Prep: 08.03.17 07.30

Prep Method: SW5030B  
% Moisture:  
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.17 17.27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.17 17.27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.17 17.27	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.03.17 17.27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.17 17.27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.17 17.27	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.17 17.27	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	99	%	80-120	08.03.17 17.27		
4-Bromofluorobenzene	460-00-4	98	%	80-120	08.03.17 17.27		



# Flagging Criteria



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

\*\* Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

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

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

**DL** Method Detection Limit

**NC** Non-Calculable

+ NELAC certification not offered for this compound.

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

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(602) 437-0330	



**QC Summary 559040**

**COG Operating LLC  
Macho Nacho State #1H**

**Analytical Method:** Inorganic Anions by EPA 300/300.1  
**Seq Number:** 3024184  
**MB Sample Id:** 728776-1-BLK

**Matrix:** Solid  
**LCS Sample Id:** 728776-1-BKS

**Prep Method:** E300P  
**Date Prep:** 08.04.17  
**LCSD Sample Id:** 728776-1-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	259	104	257	103	90-110	1	20	mg/kg	08.04.17 12:54	

**Analytical Method:** Inorganic Anions by EPA 300/300.1  
**Seq Number:** 3024184  
**Parent Sample Id:** 559040-001

**Matrix:** Soil  
**MS Sample Id:** 559040-001 S

**Prep Method:** E300P  
**Date Prep:** 08.04.17  
**MSD Sample Id:** 559040-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.97	249	256	103	261	105	90-110	2	20	mg/kg	08.04.17 13:17	

**Analytical Method:** Inorganic Anions by EPA 300/300.1  
**Seq Number:** 3024184  
**Parent Sample Id:** 559041-003

**Matrix:** Soil  
**MS Sample Id:** 559041-003 S

**Prep Method:** E300P  
**Date Prep:** 08.04.17  
**MSD Sample Id:** 559041-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6.09	250	268	105	265	104	90-110	1	20	mg/kg	08.04.17 15:04	

**Analytical Method:** TPH By SW8015 Mod  
**Seq Number:** 3024053  
**MB Sample Id:** 728721-1-BLK

**Matrix:** Solid  
**LCS Sample Id:** 728721-1-BKS

**Prep Method:** TX1005P  
**Date Prep:** 08.03.17  
**LCSD Sample Id:** 728721-1-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	1010	101	979	98	70-135	3	35	mg/kg	08.03.17 13:11	
Dicscl Range Organics (DRO)	<15.0	1000	1060	106	1040	104	70-135	2	35	mg/kg	08.03.17 13:11	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	132		127		124		70-135	%	08.03.17 13:11			
o-Terphenyl	97		97		96		70-135	%	08.03.17 13:11			



**QC Summary 559040**

**COG Operating LLC  
Macho Nacho State #1H**

**Analytical Method:** TPH By SW8015 Mod  
**Seq Number:** 3024053  
**Parent Sample Id:** 558952-005

**Matrix:** Soil  
**MS Sample Id:** 558952-005 S

**Prep Method:** TX1005P  
**Date Prep:** 08.03.17  
**MSD Sample Id:** 558952-005 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	999	968	97	975	98	70-135	1	35	mg/kg	08.03.17 14:32	
Diesel Range Organics (DRO)	16.2	999	1060	104	1080	107	70-135	2	35	mg/kg	08.03.17 14:32	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		128		70-135	%	08.03.17 14:32
o-Terphenyl	91		93		70-135	%	08.03.17 14:32

**Analytical Method:** BTEX by EPA 8021B  
**Seq Number:** 3024005  
**MB Sample Id:** 728728-1-BLK

**Matrix:** Solid  
**LCS Sample Id:** 728728-1-BKS

**Prep Method:** SW5030B  
**Date Prep:** 08.03.17  
**LCSD Sample Id:** 728728-1-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	0.0894	89	0.0888	88	70-130	1	35	mg/kg	08.03.17 10:38	
Toluene	<0.00202	0.101	0.0916	91	0.0924	91	70-130	1	35	mg/kg	08.03.17 10:38	
Ethylbenzene	<0.00202	0.101	0.0964	95	0.0969	96	71-129	1	35	mg/kg	08.03.17 10:38	
m,p-Xylenes	<0.00404	0.202	0.186	92	0.187	93	70-135	1	35	mg/kg	08.03.17 10:38	
o-Xylene	<0.00202	0.101	0.0945	94	0.0955	95	71-133	1	35	mg/kg	08.03.17 10:38	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		108		114		80-120	%	08.03.17 10:38
4-Bromofluorobenzene	105		110		113		80-120	%	08.03.17 10:38

**Analytical Method:** BTEX by EPA 8021B  
**Seq Number:** 3024179  
**MB Sample Id:** 728847-1-BLK

**Matrix:** Solid  
**LCS Sample Id:** 728847-1-BKS

**Prep Method:** SW5030B  
**Date Prep:** 08.04.17  
**LCSD Sample Id:** 728847-1-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	0.107	106	0.117	116	70-130	9	35	mg/kg	08.04.17 20:49	
Toluene	<0.00202	0.101	0.109	108	0.119	118	70-130	9	35	mg/kg	08.04.17 20:49	
Ethylbenzene	<0.00202	0.101	0.110	109	0.122	121	71-129	10	35	mg/kg	08.04.17 20:49	
m,p-Xylenes	<0.00403	0.202	0.215	106	0.238	118	70-135	10	35	mg/kg	08.04.17 20:49	
o-Xylene	<0.00202	0.101	0.108	107	0.119	118	71-133	10	35	mg/kg	08.04.17 20:49	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		98		103		80-120	%	08.04.17 20:49
4-Bromofluorobenzene	96		101		107		80-120	%	08.04.17 20:49



**QC Summary 559040**

**COG Operating LLC  
Macho Nacho State #1H**

**Analytical Method: BTEX by EPA 8021B**  
Seq Number: 3024005  
Parent Sample Id: 559040-006

Matrix: Soil  
MS Sample Id: 559040-006 S

Prep Method: SW5030B  
Date Prep: 08.03.17  
MSD Sample Id: 559040-006 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	0.101	0.0748	74	0.105	104	70-130	34	35	mg/kg	08.03.17 16:31	
Toluene	<0.00201	0.101	0.0750	74	0.0933	92	70-130	22	35	mg/kg	08.03.17 16:31	
Ethylbenzene	<0.00201	0.101	0.0816	81	0.0910	90	71-129	11	35	mg/kg	08.03.17 16:31	
m,p-Xylenes	<0.00402	0.201	0.157	78	0.166	82	70-135	6	35	mg/kg	08.03.17 16:31	
o-Xylene	<0.00201	0.101	0.0846	84	0.0800	79	71-133	6	35	mg/kg	08.03.17 16:31	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		101		80-120	%	08.03.17 16:31
4-Bromofluorobenzene	112		89		80-120	%	08.03.17 16:31

**Analytical Method: BTEX by EPA 8021B**  
Seq Number: 3024179  
Parent Sample Id: 559258-001

Matrix: Soil  
MS Sample Id: 559258-001 S

Prep Method: SW5030B  
Date Prep: 08.04.17  
MSD Sample Id: 559258-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0851	85	0.101	101	70-130	17	35	mg/kg	08.04.17 21:26	
Toluene	<0.00201	0.100	0.0804	80	0.0965	97	70-130	18	35	mg/kg	08.04.17 21:26	
Ethylbenzene	<0.00201	0.100	0.0828	83	0.0975	98	71-129	16	35	mg/kg	08.04.17 21:26	
m,p-Xylenes	<0.00402	0.201	0.161	80	0.188	94	70-135	15	35	mg/kg	08.04.17 21:26	
o-Xylene	<0.00201	0.100	0.0849	85	0.0962	96	71-133	12	35	mg/kg	08.04.17 21:26	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	107		103		80-120	%	08.04.17 21:26
4-Bromofluorobenzene	109		107		80-120	%	08.04.17 21:26





**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**



Client: COG Operating LLC

Date/ Time Received: 08/01/2017 03:06:00 PM

Work Order #: 559040

Acceptable Temperature Range: 0 - 6 degC  
 Air and Metal samples Acceptable Range: Ambient  
 Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1.2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	N/A
#21 VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer  
 Jessica Kramer

Date: 08/02/2017

Checklist reviewed by: Kelsey Brooks  
 Kelsey Brooks

Date: 08/02/2017