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September 25, 2017

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

Shelly Tucker
Carlsbad Field Office
United States Department of the Interior
Bureau of Land Management
620 E. Greene Street
Carlsbad, New Mexico 88220

Re: Soil Investigation Summary and Proposed Remediation Workplan
Loco Hills SWD 33 #004 (2RP-4359)
GPS: N 32.7860756° W 103.9705276°
Unit Letter "P", Section 33, Township 17 South, Range 30 East
Eddy County, New Mexico

Dear Mr. Bratcher and Ms. Tucker,

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG) has prepared this Soil Investigation Summary and Proposed Remediation Workplan (Workplan) for the Loco Hills SWD 33 #004 Release Site (Release Site). The purpose of this Workplan is to propose remediation activities designed to advance the Loco Hills SWD 33 #004 Release Site toward an NMOCD approved Site Closure Status. The legal description of the Release Site is Unit Letter "P", Section 33, Township 17 South, Range 30 East, in Eddy County, New Mexico. The GPS coordinates for the site are N 32.7860756° W 103.9705276°. The subject property is administered by the United States Department of the Interior Bureau of Land Management (BLM). A Site Location Map and Site Map are provided as Figure 1 and Figure 2, respectively.

On August 21, 2017, COG discovered a crude oil and produced water release had occurred due to a lightning strike. The release was contained on the location within the lined secondary containment. The release area measured approximately 12,512 square feet. On August 21, 2017, a COG representative notified the NMOCD and BLM. On August 23, 2017, a Release Notification and Corrective Action (Form C-141) was submitted to the NMOCD. During initial response activities, a vacuum truck was dispatched to remove all

freestanding fluids. Approximately seven hundred (700) barrels of fluid was released, with approximately six hundred eighty five (685) barrels recovered. The Form C-141 is attached to this report.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 33, Township 17 South, Range 30 East. A reference map utilized by the New Mexico Oil Conservation Division (NMOCD) Carlsbad District Office indicates groundwater should be encountered at approximately two hundred fifty (250) feet below ground surface (bgs). Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

No water wells were observed within one-thousand (1,000) feet of the Release Site. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

No surface water was observed within one-thousand (1,000) feet of the release. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

Based on the NMOCD Site Classification criteria, the Release Site soil remediation levels are 10 milligrams per Kilogram (mg/Kg) for benzene, 50 mg/Kg for benzene, toluene, ethylbenzene and xylenes (BTEX), and five thousand (5,000) mg/Kg for total petroleum hydrocarbons (TPH). Per NMOCD request, chloride remediation levels for the Release Site will be 600 mg/Kg.

On September 7, 2017, a Concho Representative collected twenty seven (27) delineation soil samples from the impacted area. (See attached Figure 2 and Table 1 for sample locations and a summary of laboratory analytical results). The soil samples were submitted to Xenco Laboratories in Midland, Texas for determination of concentrations of BTEX using Method SW 846-8021B, TPH using Method SW 846-8015M, and chloride using Method 300/300.1. The analytical results indicated benzene and BTEX concentrations were less than the applicable laboratory Method Detection Limit (MDL) for the submitted soil samples, with the exception of soil samples T2-SURF (0.4782 mg/Kg), T5-SURF (0.03039 mg/Kg), T6-SURF (1.53932 mg/Kg), T6-1' (0.03689 mg/Kg), and T6-3' (0.00251 mg/Kg). A review of laboratory analytical results indicated benzene and BTEX concentrations were below NMOCD regulatory guidelines. The laboratory results indicated TPH concentrations were less than the applicable laboratory MDL for all submitted soil samples, with the exception of soil samples T2-SURF (2,877 mg/Kg), T3-SURF (111.3 mg/Kg), T5-SURF (265.7 mg/Kg) and T6-SURF (1,780 mg/Kg). A review of laboratory analytical results indicated TPH concentrations were below NMOCD regulatory guidelines. The laboratory analytical results indicated chloride concentrations ranged from 24.4 mg/Kg for soil sample T3-7' to 12,000 mg/Kg for soil sample T6-SURF. A review of laboratory analytical results indicated chloride concentrations were above NMOCD regulatory guidelines for soil samples T1-SURF (1,500 mg/Kg), T1-1' (1,240 mg/Kg), T2-SURF (3,050 mg/Kg), T3-SURF (5,640 mg/Kg), T4-SURF (940 mg/Kg), T5-SURF (5,120 mg/Kg), T6-SURF (12,000 mg/Kg), and T6-1' (8,590 mg/Kg).

In addition, a COG Representative collected eight (8) delineation soil samples (North-SURF, North-1', South-SURF, South-1', East-SURF, East-1', West-SURF, and West-1') from the four cardinal directions outside the perimeter of the visibly impacted area to horizontally delineate the release. The soil samples were submitted to the laboratory for BTEX, TPH, and chloride analysis. Laboratory analytical results indicated benzene, BTEX, and TPH concentrations for the submitted soil samples were less than the

applicable laboratory MDL, with the exception of soil sample East-SURF, which exhibited a TPH concentration of 95.6 mg/Kg. Laboratory analytical results indicated chloride concentrations ranged from 20.8 mg/Kg for soil sample West-SURF to 182 mg/Kg for soil sample North-SURF. A review of laboratory analytical results indicated benzene, BTEX, TPH, and chloride concentrations for the submitted soil samples were below NMOCD regulatory guidelines.

Based on the analytical results of the soil samples collected on September 7, 2017, COG proposes the following field activities designed to remediate the Loco Hills SWD 33 #004 Release:

- Utilizing a backhoe, excavate the areas represented by trenches T-2, T-3, T-4, and T-5 to approximately six (6) inches bgs. The areas represented by trenches T-1 and T-6 will be excavated to approximately one and one half (1.5) feet bgs.
- Following excavation activities, the excavation will be backfilled with non-impacted locally obtained "like" soil and the excavated impacted soil will be transported under manifest to an NMOCD approved disposal facility.
- Prepare and submit a "Remediation Summary and Site Closure Request" to the NMOCD and NMSLO.

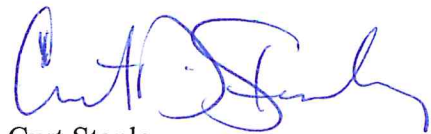
COG is prepared to begin the activities outlined in this Proposed Remediation Workplan on NMOCD and NMSLO approval.

If you have any questions, or if additional information is required, please feel free to call me at 432-520-7720 (office) or 432-664-6699 (cell).

Thank you,



Nikki Green
Project Manager
TRC Environmental Corporation

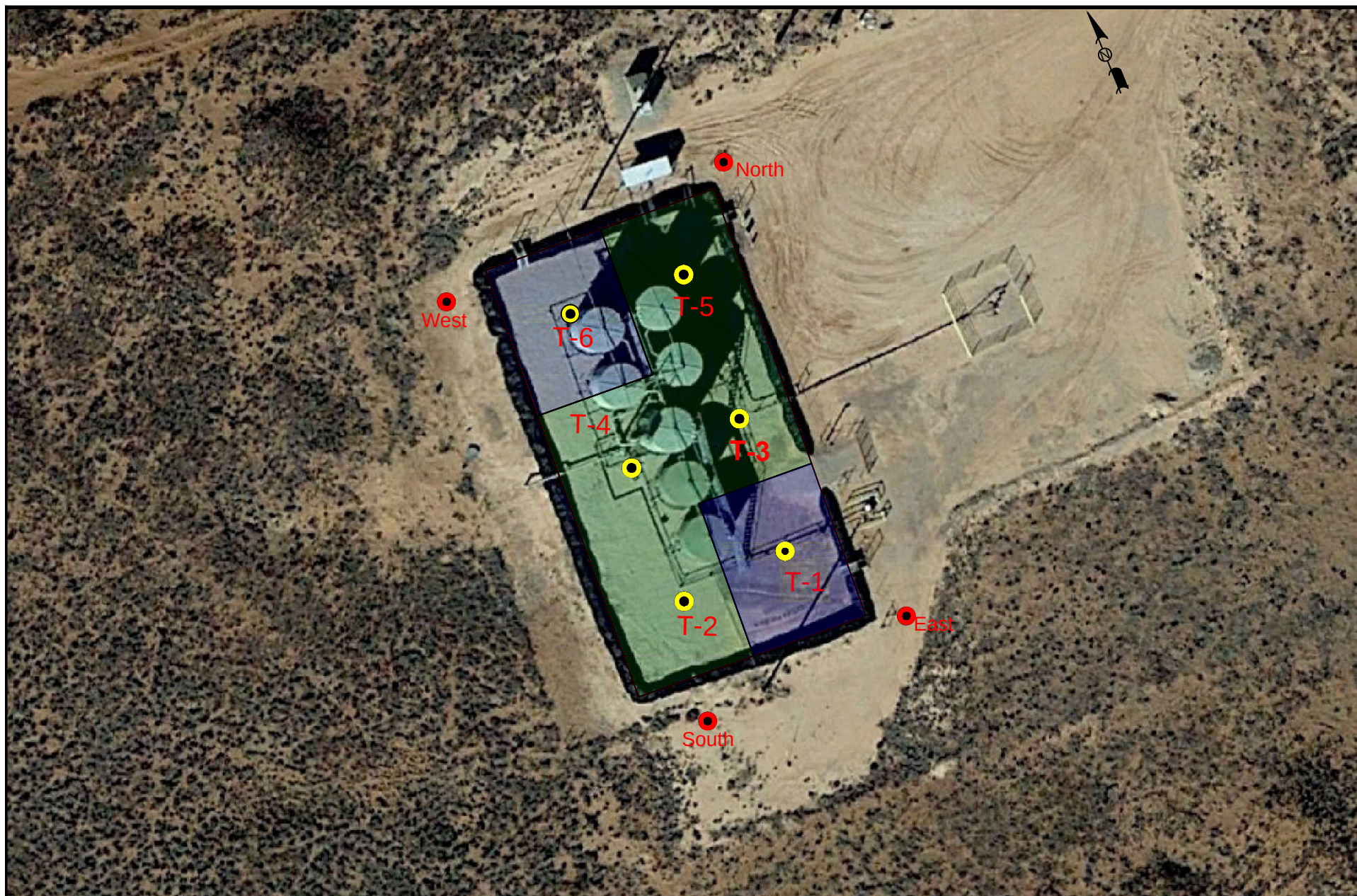


Curt Stanley
Senior Project Manager
TRC Environmental Corporation

Attachments:

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

cc: File



LEGEND:

- Excavate To 1.5' BGS
- Excavate To 6" BGS

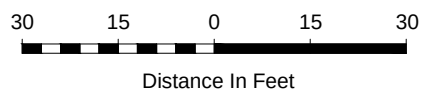


Figure 2
Site Map
Loco Hills SWD 33 #004
COG Operating, LLC
Eddy County, New Mexico

Scale: 1" = 30'
CAD By: JH
Checked By: NG
Draft: September 22, 2017
Lat. N 32.7860756°, Long. W 103.9705276°
TRC Proj. No. 287411

TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

COG OPERATING, LLC
 LOCO HILLS SWD 33 #004
 EDDY COUNTY, NEW MEXICO

All concentrations are reported in mg/Kg

SAMPLE LOCATION	SAMPLE DATE	SOIL STATUS	METHODS: SW 846-8021b						METHOD: SW 8015M				E 300.1
			BENZENE	TOLUENE	ETHYL-BENZENE	m, p - XYLENES	o - XYLENE	TOTAL BTEX	TPH GRO C ₆ -C ₁₀	TPH DRO C ₁₀ -C ₂₈	TPH ORO C ₂₈ -C ₃₅	TOTAL TPH C ₆ -C ₃₅	CHLORIDE
NMOCD Site Classification Criteria			10					50				5,000	600
T1-SURF	09/07/17	Trench	<0.00353	<0.00353	<0.00353	<0.00707	<0.00353	<0.00707	<15.0	<15.0	<15.0	<15.0	1,500
T1-1'	09/07/17	Trench	<0.00198	<0.00198	<0.00198	<0.00396	<0.00198	<0.00396	<15.0	<15.0	<15.0	<15.0	1,240
T1-2'	09/07/17	Trench	<0.00346	<0.00346	<0.00346	<0.00692	<0.00346	<0.00692	<15.0	<15.0	<15.0	<15.0	559
T1-3'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00401	<0.00200	<0.00401	<15.0	<15.0	<15.0	<15.0	173
T1-8'	09/07/17	Trench	<0.00344	<0.00344	<0.00344	<0.00687	<0.00344	<0.00687	<15.0	<15.0	<15.0	<15.0	178
T2-SURF	09/07/17	Trench	<0.00199	0.0975	0.0194	0.300	0.0613	0.4782	181	2,300	396	2,877	3,050
T2-1'	09/07/17	Trench	<0.00339	<0.00339	<0.00339	<0.00678	<0.00339	<0.00678	<15.0	<15.0	<15.0	<15.0	27.3
T2-2'	09/07/17	Trench	<0.00202	<0.00202	<0.00202	<0.00404	<0.00202	<0.00404	<15.0	<15.0	<15.0	<15.0	25.4
T2-7'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00401	<0.00200	<0.00401	<15.0	<15.0	<15.0	<15.0	40.3
T3-SURF	09/07/17	Trench	<0.00199	<0.00199	<0.00199	<0.00398	<0.00199	<0.00398	<15.0	93.5	17.8	111.3	5,640
T3-1'	09/07/17	Trench	<0.00201	<0.00201	<0.00201	<0.00402	<0.00201	<0.00402	<14.9	<14.9	<14.9	<14.9	81.8
T3-2'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00399	<0.00200	<0.00399	<15.0	<15.0	<15.0	<15.0	26.6
T3-7'	09/07/17	Trench	<0.00202	<0.00202	<0.00202	<0.00403	<0.00202	<0.00403	<15.0	<15.0	<15.0	<15.0	24.4
T4-SURF	09/07/17	Trench	<0.00199	<0.00199	<0.00199	<0.00398	<0.00199	<0.00398	<14.9	<14.9	<14.9	<14.9	940
T4-1'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00399	<0.00200	<0.00399	<15.0	<15.0	<15.0	<15.0	31.8
T4-2'	09/07/17	Trench	<0.00198	<0.00198	<0.00198	<0.00396	<0.00198	<0.00396	<15.0	<15.0	<15.0	<15.0	35.9
T4-7'	09/07/17	Trench	<0.00201	<0.00201	<0.00201	<0.00402	<0.00201	<0.00402	<15.0	<15.0	<15.0	<15.0	164
T5-SURF	09/07/17	Trench	<0.00202	<0.00202	0.0117	0.0129	0.00579	0.03039	<15.0	231	34.7	265.7	5,120
T5-1'	09/07/17	Trench	<0.00202	<0.00202	<0.00202	<0.00403	<0.00202	<0.00403	<15.0	<15.0	<15.0	<15.0	59.7
T5-2'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00401	<0.00200	<0.00401	<15.0	<15.0	<15.0	<15.0	36.2
T5-3'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00401	<0.00200	<0.00401	<15.0	<15.0	<15.0	<15.0	32.9
T5-8'	09/07/17	Trench	<0.00347	<0.00347	<0.00347	<0.00694	<0.00347	<0.00694	<15.0	<15.0	<15.0	<15.0	83.7
T6-SURF	09/07/17	Trench	0.00532	0.180	0.366	0.403	0.58500	1.53932	132	1,410	238	1,780	12,000
T6-1'	09/07/17	Trench	0.00523	0.00239	0.00722	0.00822	0.01383	0.03689	<15.0	<15.0	<15.0	<15.0	8,590
T6-2'	09/07/17	Trench	<0.00201	<0.00201	<0.00201	<0.00402	<0.00201	<0.00402	<15.0	<15.0	<15.0	<15.0	80.3
T6-3'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00399	0.00251	0.00251	<15.0	<15.0	<15.0	<15.0	25.2

TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

COG OPERATING, LLC
 LOCO HILLS SWD 33 #004
 EDDY COUNTY, NEW MEXICO

All concentrations are reported in mg/Kg

SAMPLE LOCATION	SAMPLE DATE	SOIL STATUS	METHODS: SW 846-8021b						METHOD: SW 8015M				E 300.1
			BENZENE	TOLUENE	ETHYL-BENZENE	m, p - XYLENES	o - XYLENE	TOTAL BTEX	TPH GRO C ₆ -C ₁₀	TPH DRO C ₁₀ -C ₂₈	TPH ORO C ₂₈ -C ₃₅	TOTAL TPH C ₆ -C ₃₅	CHLORIDE
NMOCD Site Classification Criteria			10					50				5,000	600
T6-8'	09/07/17	Trench	<0.00202	<0.00202	<0.00202	<0.00403	<0.00202	<0.00403	<15.0	<15.0	<15.0	<15.0	50.1
North-SURF	09/07/17	Trench	<0.00198	<0.00198	<0.00198	<0.00397	<0.00198	<0.00397	<15.0	<15.0	<15.0	<15.0	182
North-1'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00399	<0.00200	<0.00399	<15.0	<15.0	<15.0	<15.0	44.1
South-SURF	09/07/17	Trench	<0.00345	<0.00345	<0.00345	<0.00690	<0.00345	<0.00690	<15.0	<15.0	<15.0	<15.0	21.1
South-1'	09/07/17	Trench	<0.00199	<0.00199	<0.00199	<0.00398	<0.00199	<0.00398	<14.9	<14.9	<14.9	<14.9	21.1
East-SURF	09/07/17	Trench	<0.00199	<0.00199	<0.00199	<0.00398	<0.00199	<0.00398	<14.9	55.7	39.9	95.6	22.1
East-1'	09/07/17	Trench	<0.00200	<0.00200	<0.00200	<0.00401	<0.00200	<0.00401	<15.0	<15.0	<15.0	<15.0	21.9
West-SURF	09/07/17	Trench	<0.00202	<0.00202	<0.00202	<0.00403	<0.00202	<0.00403	<15.0	<15.0	<15.0	<15.0	20.8
West-1'	09/07/17	Trench	<0.00199	<0.00199	<0.00199	<0.00398	<0.00199	<0.00398	<15.0	<15.0	<15.0	<15.0	21.7

Photographic Documentation

Client: COG Operating, LLC
Project Name: Loco Hills SWD 33 #004

Prepared by: TRC Environmental Corp.
Location: Eddy County, NM

Photograph No. 1

Date:
August 21, 2017

Direction:
Northwest

Description:
View of Release
Site



Photograph No. 2

Date:
August 21, 2017

Direction:
North

Description:
View of Release
Site.



Photographic Documentation

Client: COG Operating, LLC
Project Name: Loco Hills SWD 33 #004

Prepared by: TRC Environmental Corp.
Location: Eddy County, NM

Photograph No. 3

Date:
September 7, 2017

Direction:
Northwest

Description:
View of the
Release Site
following the
removal of facility
equipment and
secondary
containment.



Photograph No. 4

Date:
September 7, 2017

Direction:
Northeast

Description:
View of the
Release Site
following the
removal of facility
equipment and
secondary
containment.





Certificate of Analysis Summary 562385

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562385-001	562385-002	562385-003	562385-004	562385-005	562385-006
	Field Id:	North	North	South	South	East	East
	Depth:	0-	1- ft	0-	1- ft	0-	1- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-07-17 11:40	Sep-07-17 11:45	Sep-07-17 11:50	Sep-07-17 11:55	Sep-07-17 12:05	Sep-07-17 12:10
BTEX by EPA 8021B	Extracted:	Sep-11-17 08:30	Sep-11-17 08:30	Sep-11-17 08:45	Sep-11-17 08:30	Sep-11-17 08:30	Sep-11-17 08:30
	Analyzed:	Sep-11-17 12:13	Sep-11-17 12:30	Sep-11-17 18:47	Sep-11-17 13:10	Sep-11-17 13:30	Sep-11-17 13:49
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198	<0.00200 0.00200	<0.00345 0.00345	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200
Toluene		<0.00198 0.00198	<0.00200 0.00200	<0.00345 0.00345	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200
Ethylbenzene		<0.00198 0.00198	<0.00200 0.00200	<0.00345 0.00345	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200
m,p-Xylenes		<0.00397 0.00397	<0.00399 0.00399	<0.00690 0.00690	<0.00398 0.00398	<0.00398 0.00398	<0.00401 0.00401
o-Xylene		<0.00198 0.00198	<0.00200 0.00200	<0.00345 0.00345	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200
Total Xylenes		<0.00198 0.00198	<0.00200 0.00200	<0.00345 0.00345	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200
Total BTEX		<0.00198 0.00198	<0.00200 0.00200	<0.00345 0.00345	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35
	Analyzed:	Sep-11-17 11:35	Sep-11-17 12:06	Sep-11-17 12:16	Sep-11-17 12:26	Sep-11-17 12:37	Sep-11-17 13:08
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		182 4.99	44.1 4.94	21.1 4.93	21.1 4.99	22.1 5.00	21.9 4.91
TPH By SW8015 Mod	Extracted:	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00
	Analyzed:	Sep-11-17 12:33	Sep-10-17 21:31	Sep-10-17 21:51	Sep-10-17 22:12	Sep-10-17 22:32	Sep-10-17 22:53
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<14.9 14.9	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	55.7 14.9	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	39.9 14.9	<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	95.6 14.9	<15.0 15.0

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 562385

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562385-007	562385-008				
	Field Id:	West	West				
	Depth:	0- ft	1- ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Sep-07-17 12:15	Sep-07-17 12:20				
BTEX by EPA 8021B	Extracted:	Sep-11-17 08:30	Sep-11-17 08:30				
	Analyzed:	Sep-11-17 14:08	Sep-11-17 14:27				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00202 0.00202	<0.00199 0.00199				
Toluene		<0.00202 0.00202	<0.00199 0.00199				
Ethylbenzene		<0.00202 0.00202	<0.00199 0.00199				
m,p-Xylenes		<0.00403 0.00403	<0.00398 0.00398				
o-Xylene		<0.00202 0.00202	<0.00199 0.00199				
Total Xylenes		<0.00202 0.00202	<0.00199 0.00199				
Total BTEX		<0.00202 0.00202	<0.00199 0.00199				
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 09:35	Sep-11-17 09:35				
	Analyzed:	Sep-11-17 13:18	Sep-11-17 13:28				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		20.8 4.96	21.7 4.97				
TPH By SW8015 Mod	Extracted:	Sep-10-17 14:00	Sep-10-17 14:00				
	Analyzed:	Sep-10-17 23:13	Sep-10-17 23:34				
	Units/RL:	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0				
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0				
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0				
Total TPH		<15.0 15.0	<15.0 15.0				

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

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

Kelsey Brooks
Project Manager

Analytical Report 562385

**for
COG Operating LLC**

Project Manager: Aaron Lieb

Loco Hills SWD#004

12-SEP-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)



12-SEP-17

Project Manager: **Aaron Lieb**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **562385**

Loco Hills SWD#004

Project Address: Loco Hills SWD#004

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) 562385. 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. 562385 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 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North	S	09-07-17 11:40	0	562385-001
North	S	09-07-17 11:45	1 ft	562385-002
South	S	09-07-17 11:50	0	562385-003
South	S	09-07-17 11:55	1 ft	562385-004
East	S	09-07-17 12:05	0	562385-005
East	S	09-07-17 12:10	1 ft	562385-006
West	S	09-07-17 12:15	0 ft	562385-007
West	S	09-07-17 12:20	1 ft	562385-008



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Loco Hills SWD#004

Project ID:

Work Order Number(s): 562385

Report Date: 12-SEP-17

Date Received: 09/08/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3027284 BTEX by EPA 8021B

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

Batch: LBA-3027289 BTEX by EPA 8021B

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

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

Samples affected are: 562386-013 S, 562386-013 SD.



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **North**
Lab Sample Id: 562385-001

Matrix: Soil
Date Collected: 09.07.17 11.40

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MNV

Seq Number: 3027331

Date Prep: 09.11.17 09.35

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	182	4.99	mg/kg	09.11.17 11.35		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3027227

Date Prep: 09.10.17 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	09.11.17 12.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 12.33	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 12.33	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 12.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	113	%	70-135	09.11.17 12.33	
o-Terphenyl	84-15-1	115	%	70-135	09.11.17 12.33	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **North**
Lab Sample Id: 562385-001

Matrix: Soil
Date Collected: 09.07.17 11.40

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027284

Date Prep: 09.11.17 08.30

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	09.11.17 12.13	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.11.17 12.13	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.11.17 12.13	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	09.11.17 12.13	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.11.17 12.13	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.11.17 12.13	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.11.17 12.13	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	80-120	09.11.17 12.13		
1,4-Difluorobenzene	540-36-3	106	%	80-120	09.11.17 12.13		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **North**
Lab Sample Id: 562385-002

Matrix: Soil
Date Collected: 09.07.17 11.45

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MNV

Seq Number: 3027331

Date Prep: 09.11.17 09.35

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	44.1	4.94	mg/kg	09.11.17 12.06		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3027227

Date Prep: 09.10.17 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	09.10.17 21.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.10.17 21.31	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.10.17 21.31	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.10.17 21.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	09.10.17 21.31	
o-Terphenyl	84-15-1	93	%	70-135	09.10.17 21.31	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **North**
Lab Sample Id: 562385-002

Matrix: Soil
Date Collected: 09.07.17 11.45

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027284

Date Prep: 09.11.17 08.30

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	09.11.17 12.30	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 12.30	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 12.30	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.11.17 12.30	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 12.30	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 12.30	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 12.30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	102	%	80-120	09.11.17 12.30		
4-Bromofluorobenzene	460-00-4	118	%	80-120	09.11.17 12.30		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **South**
Lab Sample Id: 562385-003

Matrix: Soil
Date Collected: 09.07.17 11.50

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MNV

Seq Number: 3027331

Date Prep: 09.11.17 09.35

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21.1	4.93	mg/kg	09.11.17 12.16		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3027227

Date Prep: 09.10.17 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	09.10.17 21.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.10.17 21.51	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.10.17 21.51	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.10.17 21.51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	09.10.17 21.51	
o-Terphenyl	84-15-1	87	%	70-135	09.10.17 21.51	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **South**
Lab Sample Id: 562385-003

Matrix: Soil
Date Collected: 09.07.17 11.50

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00345	0.00345	mg/kg	09.11.17 18.47	U	1
Toluene	108-88-3	<0.00345	0.00345	mg/kg	09.11.17 18.47	U	1
Ethylbenzene	100-41-4	<0.00345	0.00345	mg/kg	09.11.17 18.47	U	1
m,p-Xylenes	179601-23-1	<0.00690	0.00690	mg/kg	09.11.17 18.47	U	1
o-Xylene	95-47-6	<0.00345	0.00345	mg/kg	09.11.17 18.47	U	1
Total Xylenes	1330-20-7	<0.00345	0.00345	mg/kg	09.11.17 18.47	U	1
Total BTEX		<0.00345	0.00345	mg/kg	09.11.17 18.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	80-120	09.11.17 18.47		
4-Bromofluorobenzene	460-00-4	84	%	80-120	09.11.17 18.47		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **South** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562385-004 Date Collected: 09.07.17 11.55 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21.1	4.99	mg/kg	09.11.17 12.26		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	09.10.17 22.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	09.10.17 22.12	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	09.10.17 22.12	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	09.10.17 22.12	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	09.10.17 22.12	
o-Terphenyl	84-15-1	92	%	70-135	09.10.17 22.12	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **South**
Lab Sample Id: 562385-004

Matrix: Soil
Date Collected: 09.07.17 11.55

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.11.17 13.10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.11.17 13.10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.11.17 13.10	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.11.17 13.10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.11.17 13.10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.11.17 13.10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.11.17 13.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	80-120	09.11.17 13.10		
4-Bromofluorobenzene	460-00-4	115	%	80-120	09.11.17 13.10		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **East**
Lab Sample Id: 562385-005

Matrix: Soil
Date Collected: 09.07.17 12.05

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MNV

Seq Number: 3027331

Date Prep: 09.11.17 09.35

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	22.1	5.00	mg/kg	09.11.17 12.37		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3027227

Date Prep: 09.10.17 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	09.10.17 22.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	55.7	14.9	mg/kg	09.10.17 22.32		1
Oil Range Hydrocarbons (ORO)	PHCG2835	39.9	14.9	mg/kg	09.10.17 22.32		1
Total TPH	PHC635	95.6	14.9	mg/kg	09.10.17 22.32		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	09.10.17 22.32	
o-Terphenyl	84-15-1	93	%	70-135	09.10.17 22.32	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **East**
Lab Sample Id: 562385-005

Matrix: Soil
Date Collected: 09.07.17 12.05

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027284

Date Prep: 09.11.17 08.30

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	09.11.17 13.30	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.11.17 13.30	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.11.17 13.30	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.11.17 13.30	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.11.17 13.30	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.11.17 13.30	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.11.17 13.30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	102	%	80-120	09.11.17 13.30		
4-Bromofluorobenzene	460-00-4	118	%	80-120	09.11.17 13.30		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **East**
Lab Sample Id: 562385-006

Matrix: Soil
Date Collected: 09.07.17 12.10

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MNV

Seq Number: 3027331

Date Prep: 09.11.17 09.35

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21.9	4.91	mg/kg	09.11.17 13.08		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3027227

Date Prep: 09.10.17 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	09.10.17 22.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.10.17 22.53	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.10.17 22.53	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.10.17 22.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	09.10.17 22.53	
o-Terphenyl	84-15-1	92	%	70-135	09.10.17 22.53	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **East**
Lab Sample Id: 562385-006

Matrix: Soil
Date Collected: 09.07.17 12.10

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027284

Date Prep: 09.11.17 08.30

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	09.11.17 13.49	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 13.49	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 13.49	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.11.17 13.49	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 13.49	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 13.49	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 13.49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	83	%	80-120	09.11.17 13.49		
4-Bromofluorobenzene	460-00-4	80	%	80-120	09.11.17 13.49		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **West**
Lab Sample Id: 562385-007

Matrix: Soil
Date Collected: 09.07.17 12.15

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MNV

Seq Number: 3027331

Date Prep: 09.11.17 09.35

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20.8	4.96	mg/kg	09.11.17 13.18		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3027227

Date Prep: 09.10.17 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	09.10.17 23.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.10.17 23.13	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.10.17 23.13	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.10.17 23.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	09.10.17 23.13	
o-Terphenyl	84-15-1	86	%	70-135	09.10.17 23.13	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **West**
Lab Sample Id: 562385-007

Matrix: Soil
Date Collected: 09.07.17 12.15

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027284

Date Prep: 09.11.17 08.30

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	09.11.17 14.08	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.11.17 14.08	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.11.17 14.08	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.11.17 14.08	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.11.17 14.08	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.11.17 14.08	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.11.17 14.08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	80-120	09.11.17 14.08		
4-Bromofluorobenzene	460-00-4	118	%	80-120	09.11.17 14.08		



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **West** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562385-008 Date Collected: 09.07.17 12.20 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21.7	4.97	mg/kg	09.11.17 13.28		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.10.17 23.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.10.17 23.34	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.10.17 23.34	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.10.17 23.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	09.10.17 23.34	
o-Terphenyl	84-15-1	95	%	70-135	09.10.17 23.34	



Certificate of Analytical Results 562385



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **West**
Lab Sample Id: 562385-008

Matrix: Soil
Date Collected: 09.07.17 12.20

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.11.17 14.27	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.11.17 14.27	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.11.17 14.27	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.11.17 14.27	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.11.17 14.27	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.11.17 14.27	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.11.17 14.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	105	%	80-120	09.11.17 14.27		
4-Bromofluorobenzene	460-00-4	114	%	80-120	09.11.17 14.27		

- 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 **SQL** 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 562385

COG Operating LLC

Loco Hills SWD#004

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027331

Matrix: Solid

Prep Method: E300P

MB Sample Id: 730718-1-BLK

LCS Sample Id: 730718-1-BKS

Date Prep: 09.11.17

LCSD Sample Id: 730718-1-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	248	99	226	90	90-110	9	20	mg/kg	09.11.17 11:14	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027331

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 562385-001

MS Sample Id: 562385-001 S

Date Prep: 09.11.17

MSD Sample Id: 562385-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	182	250	431	100	433	100	90-110	0	20	mg/kg	09.11.17 11:45	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027331

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 562386-003

MS Sample Id: 562386-003 S

Date Prep: 09.11.17

MSD Sample Id: 562386-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	559	250	813	102	815	102	90-110	0	20	mg/kg	09.11.17 14:10	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3027227

Matrix: Solid

Prep Method: TX1005P

MB Sample Id: 730692-1-BLK

LCS Sample Id: 730692-1-BKS

Date Prep: 09.10.17

LCSD Sample Id: 730692-1-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	925	93	951	95	70-135	3	35	mg/kg	09.10.17 19:50	
Diesel Range Organics (DRO)	<15.0	1000	1040	104	1050	105	70-135	1	35	mg/kg	09.10.17 19:50	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		98		107		70-135	%	09.10.17 19:50
o-Terphenyl	101		95		102		70-135	%	09.10.17 19:50



QC Summary 562385

COG Operating LLC Loco Hills SWD#004

Analytical Method: TPH By SW8015 Mod

Seq Number: 3027227

Parent Sample Id: 562385-001

Matrix: Soil

MS Sample Id: 562385-001 S

Prep Method: TX1005P

Date Prep: 09.10.17

MSD Sample Id: 562385-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	923	92	930	93	70-135	1	35	mg/kg	09.10.17 20:50	
Diesel Range Organics (DRO)	<15.0	998	1040	104	1020	102	70-135	2	35	mg/kg	09.10.17 20:50	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	101		100		70-135	%	09.10.17 20:50
o-Terphenyl	97		94		70-135	%	09.10.17 20:50

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027284

MB Sample Id: 730731-1-BLK

Matrix: Solid

LCS Sample Id: 730731-1-BKS

Prep Method: SW5030B

Date Prep: 09.11.17

LCSD Sample Id: 730731-1-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	0.0905	90	0.105	104	70-130	15	35	mg/kg	09.11.17 10:15	
Toluene	<0.00202	0.101	0.0929	92	0.107	106	70-130	14	35	mg/kg	09.11.17 10:15	
Ethylbenzene	<0.00202	0.101	0.0898	89	0.103	102	71-129	14	35	mg/kg	09.11.17 10:15	
m,p-Xylenes	<0.00403	0.202	0.173	86	0.200	100	70-135	14	35	mg/kg	09.11.17 10:15	
o-Xylene	<0.00202	0.101	0.0849	84	0.0981	97	71-133	14	35	mg/kg	09.11.17 10:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	89		100		107		80-120	%	09.11.17 10:15
4-Bromofluorobenzene	102		92		99		80-120	%	09.11.17 10:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027289

MB Sample Id: 730732-1-BLK

Matrix: Solid

LCS Sample Id: 730732-1-BKS

Prep Method: SW5030B

Date Prep: 09.11.17

LCSD Sample Id: 730732-1-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	0.100	0.110	110	0.109	108	70-130	1	35	mg/kg	09.11.17 11:03	
Toluene	<0.00200	0.100	0.103	103	0.103	102	70-130	0	35	mg/kg	09.11.17 11:03	
Ethylbenzene	<0.00200	0.100	0.100	100	0.101	100	71-129	1	35	mg/kg	09.11.17 11:03	
m,p-Xylenes	<0.00400	0.200	0.195	98	0.196	97	70-135	1	35	mg/kg	09.11.17 11:03	
o-Xylene	<0.00200	0.100	0.0932	93	0.0941	93	71-133	1	35	mg/kg	09.11.17 11:03	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		99		99		80-120	%	09.11.17 11:03
4-Bromofluorobenzene	80		87		89		80-120	%	09.11.17 11:03



QC Summary 562385

COG Operating LLC Loco Hills SWD#004

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027284

Parent Sample Id: 562385-001

Matrix: Soil

MS Sample Id: 562385-001 S

Prep Method: SW5030B

Date Prep: 09.11.17

MSD Sample Id: 562385-001 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	0.112	111	0.0963	96	70-130	15	35	mg/kg	09.11.17 10:53	
Toluene	<0.00202	0.101	0.105	104	0.0930	93	70-130	12	35	mg/kg	09.11.17 10:53	
Ethylbenzene	<0.00202	0.101	0.105	104	0.0811	81	71-129	26	35	mg/kg	09.11.17 10:53	
m,p-Xylenes	<0.00403	0.202	0.202	100	0.155	78	70-135	26	35	mg/kg	09.11.17 10:53	
o-Xylene	<0.00202	0.101	0.0983	97	0.0804	80	71-133	20	35	mg/kg	09.11.17 10:53	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		92		80-120	%	09.11.17 10:53
4-Bromofluorobenzene	91		87		80-120	%	09.11.17 10:53

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027289

Parent Sample Id: 562386-013

Matrix: Soil

MS Sample Id: 562386-013 S

Prep Method: SW5030B

Date Prep: 09.11.17

MSD Sample Id: 562386-013 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	0.201	199	0.142	141	70-130	34	35	mg/kg	09.11.17 12:20	X
Toluene	<0.00202	0.101	0.0803	80	0.0789	78	70-130	2	35	mg/kg	09.11.17 12:20	
Ethylbenzene	<0.00202	0.101	0.0306	30	0.0264	26	71-129	15	35	mg/kg	09.11.17 12:20	X
m,p-Xylenes	<0.00404	0.202	0.0475	24	0.0381	19	70-135	22	35	mg/kg	09.11.17 12:20	X
o-Xylene	<0.00202	0.101	0.0309	31	0.0312	31	71-133	1	35	mg/kg	09.11.17 12:20	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		109		80-120	%	09.11.17 12:20
4-Bromofluorobenzene	42	**	39	**	80-120	%	09.11.17 12:20



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Xenoco Quote # Xenoco Job #

562385

Matrix Codes

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

Client / Reporting Information

Company Name / Branch:
COG Operating LLC

Company Address:
2407 PECOS Avenue Artesia NM 88210

Email:
alieb@concho.com dneel2@concho.com thaskell@concho.com
Phone No: 575-748-1553

Project Contact: Aaron Lieb

Sampler's Name: Aaron Lieb

Project Information

Project Name/Number:
Loco Hills SMD #004

Project Location:
Loco Hills SMD #00

Invoice To: COG Operating LLC
Attn: Robert McNeill
600 W. Illinois
Midland TX 79701

PO Number:

TPH/ EXTENDED
BTEX
Chloride

Analytical Information

Field Comments

No. Field ID / Point of Collection

No.	Field ID / Point of Collection	Sample Depth	Collection		Matrix	# of bottles	Number of preserved bottles								Notes:
			Date	Time			HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	
1	North - Surf	Surf	9/7/17	11:40 am	S	1									
2	North - 1'	1'		11:45 am		1									
3	South - Surf	Surf		11:50 am		1									
4	South - 1'	1'		11:55 am		1									
5	East - Surf	Surf		12:05 pm		1									
6	East - 1'	1'		12:10 pm		1									
7	West - Surf	Surf		12:15 pm		1									
8	West - 1'	1'		12:20 pm		1									
9															
10															

Data Deliverable Information

Same Day TAT

Next Day EMERGENCY

2 Day EMERGENCY

3 Day EMERGENCY

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:	Relinquished By:	Date Time:
1. <i>[Signature]</i>	9/8/17 11:55 am	1. <i>[Signature]</i>	2. <i>[Signature]</i>	9-8-17 11:55 am

Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:
3		3		

Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:
5		5		

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenoco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenoco will be losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenoco. A minimum charge of \$75 will be applied to each project. Xenoco's liability will be limited to the cost of samples. Any samples received will be enforced unless previously negotiated under a fully executed client contract.

Temp: 4.2 IIR ID: R-8
CF: (0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.0 on ICE.



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 09/08/2017 01:45:00 PM

Work Order #: 562385

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

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

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer
Jessica Kramer

Date: 09/11/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 09/11/2017



Certificate of Analysis Summary 562386

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562386-001	562386-002	562386-003	562386-004	562386-005	562386-006
	Field Id:	T1	T1	T1	T1	T1	T2
	Depth:	0-	1- ft	2- ft	3- ft	8- ft	0- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-07-17 09:00	Sep-07-17 09:05	Sep-07-17 09:10	Sep-07-17 09:15	Sep-07-17 09:20	Sep-07-17 09:30
BTEX by EPA 8021B	Extracted:	Sep-11-17 08:45	Sep-11-17 08:30	Sep-11-17 08:45	Sep-11-17 08:30	Sep-11-17 14:00	Sep-11-17 08:30
	Analyzed:	Sep-11-17 19:06	Sep-11-17 15:02	Sep-11-17 20:02	Sep-11-17 16:22	Sep-12-17 07:34	Sep-11-17 16:59
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00353 0.00353	<0.00198 0.00198	<0.00346 0.00346	<0.00200 0.00200	<0.00344 0.00344	<0.00199 0.00199
Toluene		<0.00353 0.00353	<0.00198 0.00198	<0.00346 0.00346	<0.00200 0.00200	<0.00344 0.00344	0.0975 0.00199
Ethylbenzene		<0.00353 0.00353	<0.00198 0.00198	<0.00346 0.00346	<0.00200 0.00200	<0.00344 0.00344	0.0194 0.00199
m,p-Xylenes		<0.00707 0.00707	<0.00396 0.00396	<0.00692 0.00692	<0.00401 0.00401	<0.00687 0.00687	0.300 0.00398
o-Xylene		<0.00353 0.00353	<0.00198 0.00198	0.00436 0.00346	<0.00200 0.00200	<0.00344 0.00344	0.0613 0.00199
Total Xylenes		<0.00353 0.00353	<0.00198 0.00198	0.00436 0.00346	<0.00200 0.00200	<0.00344 0.00344	0.361 0.00199
Total BTEX		<0.00353 0.00353	<0.00198 0.00198	0.00436 0.00346	<0.00200 0.00200	<0.00344 0.00344	0.478 0.00199
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35
	Analyzed:	Sep-11-17 13:39	Sep-11-17 13:49	Sep-11-17 13:59	Sep-11-17 14:30	Sep-11-17 14:41	Sep-11-17 15:12
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1500 25.0	1240 4.99	559 5.00	173 4.90	178 4.93	3050 24.8
TPH By SW8015 Mod	Extracted:	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00
	Analyzed:	Sep-10-17 23:55	Sep-11-17 00:15	Sep-11-17 01:16	Sep-11-17 01:37	Sep-11-17 01:58	Sep-11-17 02:20
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	181 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	2300 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	396 15.0
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	2880 15.0

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 562386

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562386-007	562386-008	562386-009	562386-010	562386-011	562386-012
	Field Id:	T2	T2	T2	T3	T3	T3
	Depth:	1- ft	2- ft	7- ft	0- ft	1- ft	2- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-07-17 09:35	Sep-07-17 09:40	Sep-07-17 09:45	Sep-07-17 10:00	Sep-07-17 10:05	Sep-07-17 10:10
BTEX by EPA 8021B	Extracted:	Sep-11-17 14:00	Sep-11-17 08:30	Sep-11-17 08:30	Sep-11-17 08:30	Sep-11-17 08:30	Sep-11-17 08:30
	Analyzed:	Sep-12-17 07:53	Sep-11-17 17:35	Sep-11-17 17:54	Sep-11-17 18:16	Sep-11-17 18:34	Sep-11-17 18:52
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00339 0.00339	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200
Toluene		<0.00339 0.00339	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200
Ethylbenzene		<0.00339 0.00339	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200
m,p-Xylenes		<0.00678 0.00678	<0.00404 0.00404	<0.00401 0.00401	<0.00398 0.00398	<0.00402 0.00402	<0.00399 0.00399
o-Xylene		<0.00339 0.00339	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200
Total Xylenes		<0.00339 0.00339	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200
Total BTEX		<0.00339 0.00339	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35	Sep-11-17 09:35
	Analyzed:	Sep-11-17 15:22	Sep-11-17 15:32	Sep-11-17 15:43	Sep-11-17 15:53	Sep-11-17 16:04	Sep-11-17 16:14
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		27.3 4.98	25.4 4.98	40.3 4.97	5640 25.0	81.8 4.93	26.6 4.91
TPH By SW8015 Mod	Extracted:	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00	Sep-10-17 14:00
	Analyzed:	Sep-11-17 02:40	Sep-11-17 03:00	Sep-11-17 03:22	Sep-11-17 03:42	Sep-11-17 04:03	Sep-11-17 04:25
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	93.5 15.0	<14.9 14.9	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	17.8 15.0	<14.9 14.9	<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	111 15.0	<14.9 14.9	<15.0 15.0

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 562386

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562386-013	562386-014	562386-015	562386-016	562386-017	562386-018
	Field Id:	T3	T4	T4	T4	T4	T5
	Depth:	7- ft	0- ft	1- ft	2- ft	7- ft	0- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-07-17 10:15	Sep-07-17 10:25	Sep-07-17 10:30	Sep-07-17 10:35	Sep-07-17 10:40	Sep-07-17 10:55
BTEX by EPA 8021B	Extracted:	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 08:45
	Analyzed:	Sep-11-17 13:20	Sep-11-17 13:39	Sep-11-17 13:58	Sep-11-17 14:17	Sep-11-17 14:35	Sep-11-17 14:54
	Units/RL:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Benzene		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00202 0.00202
Toluene		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00202 0.00202
Ethylbenzene		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	0.0117 0.00202
m,p-Xylenes		<0.00403 0.00403	<0.00398 0.00398	<0.00399 0.00399	<0.00396 0.00396	<0.00402 0.00402	0.0129 0.00404
o-Xylene		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	0.00579 0.00202
Total Xylenes		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	0.0187 0.00202
Total BTEX		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	0.0304 0.00202
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15
	Analyzed:	Sep-11-17 17:16	Sep-11-17 17:47	Sep-11-17 17:57	Sep-11-17 18:08	Sep-11-17 18:18	Sep-11-17 18:49
	Units/RL:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Chloride		24.4 4.99	940 4.98	31.8 4.96	35.9 4.96	164 4.93	5120 25.0
TPH By SW8015 Mod	Extracted:	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00
	Analyzed:	Sep-11-17 06:10	Sep-11-17 07:11	Sep-11-17 07:32	Sep-11-17 07:53	Sep-11-17 08:14	Sep-11-17 08:34
	Units/RL:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	231 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	34.7 15.0
Total TPH		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	266 15.0

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 562386

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562386-019	562386-020	562386-021	562386-022	562386-023	562386-024
	Field Id:	T5	T5	T5	T5	T6	T6
	Depth:	1- ft	2- ft	3- ft	8- ft	0- ft	1- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-07-17 11:00	Sep-07-17 11:05	Sep-07-17 11:10	Sep-07-17 11:15	Sep-07-17 11:20	Sep-07-17 11:25
BTEX by EPA 8021B	Extracted:	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 14:00	Sep-11-17 08:45	Sep-11-17 08:45
	Analyzed:	Sep-11-17 15:13	Sep-11-17 15:32	Sep-11-17 15:51	Sep-12-17 08:12	Sep-11-17 17:12	Sep-11-17 17:31
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00347 0.00347	0.00532 0.00202	0.00523 0.00200
Toluene		<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00347 0.00347	0.180 0.00202	0.00239 0.00200
Ethylbenzene		<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00347 0.00347	0.366 0.00202	0.00722 0.00200
m,p-Xylenes		<0.00403 0.00403	<0.00401 0.00401	<0.00401 0.00401	<0.00694 0.00694	0.403 0.00404	0.00822 0.00401
o-Xylene		<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00347 0.00347	0.182 0.00202	0.00561 0.00200
Total Xylenes		<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00347 0.00347	0.585 0.00202	0.0138 0.00200
Total BTEX		<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00347 0.00347	1.14 0.00202	0.0287 0.00200
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15
	Analyzed:	Sep-11-17 18:59	Sep-11-17 19:10	Sep-11-17 19:20	Sep-11-17 19:30	Sep-11-17 19:41	Sep-11-17 20:12
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		59.7 4.97	36.2 5.00	32.9 4.91	83.7 4.93	12000 49.7	8590 49.9
TPH By SW8015 Mod	Extracted:	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00
	Analyzed:	Sep-11-17 08:54	Sep-11-17 09:13	Sep-11-17 09:33	Sep-11-17 09:53	Sep-11-17 10:53	Sep-11-17 11:14
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	132 14.9	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	1410 14.9	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	238 14.9	<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	1780 14.9	<15.0 15.0

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 562386

COG Operating LLC, Artesia, NM

Project Name: Loco Hills SWD#004



Project Id:

Contact: Aaron Lieb

Project Location: Loco Hills SWD#004

Date Received in Lab: Fri Sep-08-17 01:45 pm

Report Date: 12-SEP-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	562386-025	562386-026	562386-027			
	Field Id:	T6	T6	T6			
	Depth:	2- ft	3- ft	8- ft			
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	Sep-07-17 11:28	Sep-07-17 11:30	Sep-07-17 11:31			
BTEX by EPA 8021B	Extracted:	Sep-11-17 08:45	Sep-11-17 08:45	Sep-11-17 08:45			
	Analyzed:	Sep-11-17 17:50	Sep-11-17 18:09	Sep-11-17 18:28			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202			
Toluene		<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202			
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202			
m,p-Xylenes		<0.00402 0.00402	<0.00399 0.00399	<0.00403 0.00403			
o-Xylene		<0.00201 0.00201	0.00251 0.00200	<0.00202 0.00202			
Total Xylenes		<0.00201 0.00201	0.00251 0.00200	<0.00202 0.00202			
Total BTEX		<0.00201 0.00201	0.00251 0.00200	<0.00202 0.00202			
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-11-17 14:15	Sep-11-17 14:15	Sep-11-17 14:15			
	Analyzed:	Sep-11-17 20:22	Sep-11-17 20:53	Sep-11-17 21:04			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		80.3 4.97	25.2 4.91	50.1 4.99			
TPH By SW8015 Mod	Extracted:	Sep-10-17 16:00	Sep-10-17 16:00	Sep-10-17 16:00			
	Analyzed:	Sep-11-17 11:33	Sep-11-17 11:54	Sep-11-17 12:13			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Diesel Range Organics (DRO)		<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			
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0			

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Kelsey Brooks
Project Manager

Analytical Report 562386

**for
COG Operating LLC**

Project Manager: Aaron Lieb

Loco Hills SWD#004

12-SEP-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)



12-SEP-17

Project Manager: **Aaron Lieb**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **562386**

Loco Hills SWD#004

Project Address: Loco Hills SWD#004

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) 562386. 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. 562386 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

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COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1	S	09-07-17 09:00	0	562386-001
T1	S	09-07-17 09:05	1 ft	562386-002
T1	S	09-07-17 09:10	2 ft	562386-003
T1	S	09-07-17 09:15	3 ft	562386-004
T1	S	09-07-17 09:20	8 ft	562386-005
T2	S	09-07-17 09:30	0 ft	562386-006
T2	S	09-07-17 09:35	1 ft	562386-007
T2	S	09-07-17 09:40	2 ft	562386-008
T2	S	09-07-17 09:45	7 ft	562386-009
T3	S	09-07-17 10:00	0 ft	562386-010
T3	S	09-07-17 10:05	1 ft	562386-011
T3	S	09-07-17 10:10	2 ft	562386-012
T3	S	09-07-17 10:15	7 ft	562386-013
T4	S	09-07-17 10:25	0 ft	562386-014
T4	S	09-07-17 10:30	1 ft	562386-015
T4	S	09-07-17 10:35	2 ft	562386-016
T4	S	09-07-17 10:40	7 ft	562386-017
T5	S	09-07-17 10:55	0 ft	562386-018
T5	S	09-07-17 11:00	1 ft	562386-019
T5	S	09-07-17 11:05	2 ft	562386-020
T5	S	09-07-17 11:10	3 ft	562386-021
T5	S	09-07-17 11:15	8 ft	562386-022
T6	S	09-07-17 11:20	0 ft	562386-023
T6	S	09-07-17 11:25	1 ft	562386-024
T6	S	09-07-17 11:28	2 ft	562386-025
T6	S	09-07-17 11:30	3 ft	562386-026
T6	S	09-07-17 11:31	8 ft	562386-027



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Loco Hills SWD#004

Project ID:
Work Order Number(s): 562386

Report Date: 12-SEP-17
Date Received: 09/08/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3027284 BTEX by EPA 8021B

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

Batch: LBA-3027289 BTEX by EPA 8021B

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

Lab Sample ID 562386-013 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Benzene recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 562386-001, -003, -013, -014, -015, -016, -017, -018, -019, -020, -021, -023, -024, -025, -026, -027.

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

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

Samples affected are: 562386-013 S, 562386-013 SD.

Batch: LBA-3027292 BTEX by EPA 8021B

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

Batch: LBA-3027337 Inorganic Anions by EPA 300/300.1

Lab Sample ID 562386-023 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 562386-013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026, -027.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-001 Date Collected: 09.07.17 09.00 Sample Depth: 0
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1500	25.0	mg/kg	09.11.17 13.39		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.10.17 23.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.10.17 23.55	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.10.17 23.55	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.10.17 23.55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	09.10.17 23.55	
o-Terphenyl	84-15-1	97	%	70-135	09.10.17 23.55	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1
Lab Sample Id: 562386-001

Matrix: Soil
Date Collected: 09.07.17 09.00

Date Received: 09.08.17 13.45
Sample Depth: 0

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00353	0.00353	mg/kg	09.11.17 19.06	U	1
Toluene	108-88-3	<0.00353	0.00353	mg/kg	09.11.17 19.06	U	1
Ethylbenzene	100-41-4	<0.00353	0.00353	mg/kg	09.11.17 19.06	U	1
m,p-Xylenes	179601-23-1	<0.00707	0.00707	mg/kg	09.11.17 19.06	U	1
o-Xylene	95-47-6	<0.00353	0.00353	mg/kg	09.11.17 19.06	U	1
Total Xylenes	1330-20-7	<0.00353	0.00353	mg/kg	09.11.17 19.06	U	1
Total BTEX		<0.00353	0.00353	mg/kg	09.11.17 19.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	92	%	80-120	09.11.17 19.06		
4-Bromofluorobenzene	460-00-4	86	%	80-120	09.11.17 19.06		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-002 Date Collected: 09.07.17 09.05 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1240	4.99	mg/kg	09.11.17 13.49		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 00.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 00.15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 00.15	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 00.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	09.11.17 00.15	
o-Terphenyl	84-15-1	101	%	70-135	09.11.17 00.15	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1
Lab Sample Id: 562386-002

Matrix: Soil
Date Collected: 09.07.17 09.05

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.11.17 15.02	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.11.17 15.02	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.11.17 15.02	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	09.11.17 15.02	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.11.17 15.02	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.11.17 15.02	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.11.17 15.02	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	89	%	80-120	09.11.17 15.02		
4-Bromofluorobenzene	460-00-4	104	%	80-120	09.11.17 15.02		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-003 Date Collected: 09.07.17 09.10 Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	559	5.00	mg/kg	09.11.17 13.59		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 01.16	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 01.16	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 01.16	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 01.16	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	09.11.17 01.16	
o-Terphenyl	84-15-1	101	%	70-135	09.11.17 01.16	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1
Lab Sample Id: 562386-003

Matrix: Soil
Date Collected: 09.07.17 09.10

Date Received: 09.08.17 13.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00346	0.00346	mg/kg	09.11.17 20.02	U	1
Toluene	108-88-3	<0.00346	0.00346	mg/kg	09.11.17 20.02	U	1
Ethylbenzene	100-41-4	<0.00346	0.00346	mg/kg	09.11.17 20.02	U	1
m,p-Xylenes	179601-23-1	<0.00692	0.00692	mg/kg	09.11.17 20.02	U	1
o-Xylene	95-47-6	0.00436	0.00346	mg/kg	09.11.17 20.02		1
Total Xylenes	1330-20-7	0.00436	0.00346	mg/kg	09.11.17 20.02		1
Total BTEX		0.00436	0.00346	mg/kg	09.11.17 20.02		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	82		%	80-120	09.11.17 20.02	
1,4-Difluorobenzene	540-36-3	92		%	80-120	09.11.17 20.02	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-004 Date Collected: 09.07.17 09.15 Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	173	4.90	mg/kg	09.11.17 14.30		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 01.37	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 01.37	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 01.37	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 01.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	09.11.17 01.37	
o-Terphenyl	84-15-1	92	%	70-135	09.11.17 01.37	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1
Lab Sample Id: 562386-004

Matrix: Soil
Date Collected: 09.07.17 09.15

Date Received: 09.08.17 13.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.11.17 16.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 16.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 16.22	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.11.17 16.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 16.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 16.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 16.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	80-120	09.11.17 16.22		
1,4-Difluorobenzene	540-36-3	93	%	80-120	09.11.17 16.22		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-005 Date Collected: 09.07.17 09.20 Sample Depth: 8 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	178	4.93	mg/kg	09.11.17 14.41		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 01.58	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 01.58	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 01.58	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 01.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	09.11.17 01.58		
o-Terphenyl	84-15-1	104	%	70-135	09.11.17 01.58		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T1
Lab Sample Id: 562386-005

Matrix: Soil
Date Collected: 09.07.17 09.20

Date Received: 09.08.17 13.45
Sample Depth: 8 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027292

Date Prep: 09.11.17 14.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00344	0.00344	mg/kg	09.12.17 07.34	U	1
Toluene	108-88-3	<0.00344	0.00344	mg/kg	09.12.17 07.34	U	1
Ethylbenzene	100-41-4	<0.00344	0.00344	mg/kg	09.12.17 07.34	U	1
m,p-Xylenes	179601-23-1	<0.00687	0.00687	mg/kg	09.12.17 07.34	U	1
o-Xylene	95-47-6	<0.00344	0.00344	mg/kg	09.12.17 07.34	U	1
Total Xylenes	1330-20-7	<0.00344	0.00344	mg/kg	09.12.17 07.34	U	1
Total BTEX		<0.00344	0.00344	mg/kg	09.12.17 07.34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	81	%	80-120	09.12.17 07.34		
1,4-Difluorobenzene	540-36-3	94	%	80-120	09.12.17 07.34		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-006 Date Collected: 09.07.17 09.30 Sample Depth: 0 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3050	24.8	mg/kg	09.11.17 15.12		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	181	15.0	mg/kg	09.11.17 02.20		1
Diesel Range Organics (DRO)	C10C28DRO	2300	15.0	mg/kg	09.11.17 02.20		1
Oil Range Hydrocarbons (ORO)	PHCG2835	396	15.0	mg/kg	09.11.17 02.20		1
Total TPH	PHC635	2880	15.0	mg/kg	09.11.17 02.20		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	09.11.17 02.20	
o-Terphenyl	84-15-1	89	%	70-135	09.11.17 02.20	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2
Lab Sample Id: 562386-006

Matrix: Soil
Date Collected: 09.07.17 09.30

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.11.17 16.59	U	1
Toluene	108-88-3	0.0975	0.00199	mg/kg	09.11.17 16.59		1
Ethylbenzene	100-41-4	0.0194	0.00199	mg/kg	09.11.17 16.59		1
m,p-Xylenes	179601-23-1	0.300	0.00398	mg/kg	09.11.17 16.59		1
o-Xylene	95-47-6	0.0613	0.00199	mg/kg	09.11.17 16.59		1
Total Xylenes	1330-20-7	0.361	0.00199	mg/kg	09.11.17 16.59		1
Total BTEX		0.478	0.00199	mg/kg	09.11.17 16.59		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	90		%	80-120	09.11.17 16.59	
4-Bromofluorobenzene	460-00-4	99		%	80-120	09.11.17 16.59	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-007 Date Collected: 09.07.17 09.35 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	27.3	4.98	mg/kg	09.11.17 15.22		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 02.40	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 02.40	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 02.40	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 02.40	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	09.11.17 02.40	
o-Terphenyl	84-15-1	95	%	70-135	09.11.17 02.40	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2
Lab Sample Id: 562386-007

Matrix: Soil
Date Collected: 09.07.17 09.35

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 14.00

Basis: Wet Weight

Seq Number: 3027292

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00339	0.00339	mg/kg	09.12.17 07.53	U	1
Toluene	108-88-3	<0.00339	0.00339	mg/kg	09.12.17 07.53	U	1
Ethylbenzene	100-41-4	<0.00339	0.00339	mg/kg	09.12.17 07.53	U	1
m,p-Xylenes	179601-23-1	<0.00678	0.00678	mg/kg	09.12.17 07.53	U	1
o-Xylene	95-47-6	<0.00339	0.00339	mg/kg	09.12.17 07.53	U	1
Total Xylenes	1330-20-7	<0.00339	0.00339	mg/kg	09.12.17 07.53	U	1
Total BTEX		<0.00339	0.00339	mg/kg	09.12.17 07.53	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	80-120	09.12.17 07.53		
4-Bromofluorobenzene	460-00-4	81	%	80-120	09.12.17 07.53		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-008 Date Collected: 09.07.17 09.40 Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	25.4	4.98	mg/kg	09.11.17 15.32		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 03.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 03.00	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 03.00	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 03.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	09.11.17 03.00	
o-Terphenyl	84-15-1	104	%	70-135	09.11.17 03.00	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2
Lab Sample Id: 562386-008

Matrix: Soil
Date Collected: 09.07.17 09.40

Date Received: 09.08.17 13.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.11.17 17.35	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.11.17 17.35	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.11.17 17.35	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.11.17 17.35	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.11.17 17.35	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.11.17 17.35	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.11.17 17.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	80-120	09.11.17 17.35		
1,4-Difluorobenzene	540-36-3	92	%	80-120	09.11.17 17.35		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-009 Date Collected: 09.07.17 09.45 Sample Depth: 7 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	40.3	4.97	mg/kg	09.11.17 15.43		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 03.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 03.22	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 03.22	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 03.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	09.11.17 03.22	
o-Terphenyl	84-15-1	104	%	70-135	09.11.17 03.22	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T2
Lab Sample Id: 562386-009

Matrix: Soil
Date Collected: 09.07.17 09.45

Date Received: 09.08.17 13.45
Sample Depth: 7 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027284

Date Prep: 09.11.17 08.30

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	09.11.17 17.54	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 17.54	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 17.54	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.11.17 17.54	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 17.54	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 17.54	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 17.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	91	%	80-120	09.11.17 17.54		
4-Bromofluorobenzene	460-00-4	113	%	80-120	09.11.17 17.54		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-010 Date Collected: 09.07.17 10.00 Sample Depth: 0 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5640	25.0	mg/kg	09.11.17 15.53		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 03.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	93.5	15.0	mg/kg	09.11.17 03.42		1
Oil Range Hydrocarbons (ORO)	PHCG2835	17.8	15.0	mg/kg	09.11.17 03.42		1
Total TPH	PHC635	111	15.0	mg/kg	09.11.17 03.42		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	09.11.17 03.42	
o-Terphenyl	84-15-1	93	%	70-135	09.11.17 03.42	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3
Lab Sample Id: 562386-010

Matrix: Soil
Date Collected: 09.07.17 10.00

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.11.17 18.16	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.11.17 18.16	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.11.17 18.16	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.11.17 18.16	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.11.17 18.16	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.11.17 18.16	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.11.17 18.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	117	%	80-120	09.11.17 18.16		
1,4-Difluorobenzene	540-36-3	103	%	80-120	09.11.17 18.16		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-011 Date Collected: 09.07.17 10.05 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	81.8	4.93	mg/kg	09.11.17 16.04		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	09.11.17 04.03	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	09.11.17 04.03	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	09.11.17 04.03	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	09.11.17 04.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	09.11.17 04.03		
o-Terphenyl	84-15-1	105	%	70-135	09.11.17 04.03		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3
Lab Sample Id: 562386-011

Matrix: Soil
Date Collected: 09.07.17 10.05

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.11.17 18.34	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.11.17 18.34	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.11.17 18.34	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.11.17 18.34	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.11.17 18.34	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.11.17 18.34	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.11.17 18.34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	80-120	09.11.17 18.34		
4-Bromofluorobenzene	460-00-4	112	%	80-120	09.11.17 18.34		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-012 Date Collected: 09.07.17 10.10 Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 09.35 Basis: Wet Weight
Seq Number: 3027331

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	26.6	4.91	mg/kg	09.11.17 16.14		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 14.00 Basis: Wet Weight
Seq Number: 3027227

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 04.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 04.25	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 04.25	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 04.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	09.11.17 04.25	
o-Terphenyl	84-15-1	92	%	70-135	09.11.17 04.25	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3
Lab Sample Id: 562386-012

Matrix: Soil
Date Collected: 09.07.17 10.10

Date Received: 09.08.17 13.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.30

Basis: Wet Weight

Seq Number: 3027284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.11.17 18.52	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 18.52	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 18.52	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.11.17 18.52	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 18.52	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 18.52	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 18.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	80-120	09.11.17 18.52		
1,4-Difluorobenzene	540-36-3	91	%	80-120	09.11.17 18.52		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-013 Date Collected: 09.07.17 10.15 Sample Depth: 7 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	24.4	4.99	mg/kg	09.11.17 17.16		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 06.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 06.10	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 06.10	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 06.10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	09.11.17 06.10	
o-Terphenyl	84-15-1	97	%	70-135	09.11.17 06.10	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T3
Lab Sample Id: 562386-013

Matrix: Soil
Date Collected: 09.07.17 10.15

Date Received: 09.08.17 13.45
Sample Depth: 7 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.11.17 13.20	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.11.17 13.20	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.11.17 13.20	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.11.17 13.20	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.11.17 13.20	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.11.17 13.20	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.11.17 13.20	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	86	%	80-120	09.11.17 13.20		
1,4-Difluorobenzene	540-36-3	100	%	80-120	09.11.17 13.20		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T4** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-014 Date Collected: 09.07.17 10.25 Sample Depth: 0 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	940	4.98	mg/kg	09.11.17 17.47		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	09.11.17 07.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	09.11.17 07.11	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	09.11.17 07.11	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	09.11.17 07.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	09.11.17 07.11	
o-Terphenyl	84-15-1	103	%	70-135	09.11.17 07.11	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T4
Lab Sample Id: 562386-014

Matrix: Soil
Date Collected: 09.07.17 10.25

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.11.17 13.39	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.11.17 13.39	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.11.17 13.39	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.11.17 13.39	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.11.17 13.39	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.11.17 13.39	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.11.17 13.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	87	%	80-120	09.11.17 13.39		
1,4-Difluorobenzene	540-36-3	98	%	80-120	09.11.17 13.39		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T4** Matrix: **Soil** Date Received: 09.08.17 13.45
Lab Sample Id: 562386-015 Date Collected: 09.07.17 10.30 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: **MNV** % Moisture:
Analyst: **MNV** Date Prep: 09.11.17 14.15 Basis: **Wet Weight**
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	31.8	4.96	mg/kg	09.11.17 17.57		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: **ARM** % Moisture:
Analyst: **ARM** Date Prep: 09.10.17 16.00 Basis: **Wet Weight**
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 07.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 07.32	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 07.32	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 07.32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	09.11.17 07.32	
o-Terphenyl	84-15-1	106	%	70-135	09.11.17 07.32	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T4**
Lab Sample Id: 562386-015

Matrix: Soil
Date Collected: 09.07.17 10.30

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.11.17 13.58	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 13.58	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 13.58	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.11.17 13.58	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 13.58	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 13.58	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 13.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	87	%	80-120	09.11.17 13.58		
1,4-Difluorobenzene	540-36-3	99	%	80-120	09.11.17 13.58		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T4** Matrix: **Soil** Date Received: 09.08.17 13.45
Lab Sample Id: 562386-016 Date Collected: 09.07.17 10.35 Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: **MNV** % Moisture:
Analyst: **MNV** Date Prep: 09.11.17 14.15 Basis: **Wet Weight**
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	35.9	4.96	mg/kg	09.11.17 18.08		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: **ARM** % Moisture:
Analyst: **ARM** Date Prep: 09.10.17 16.00 Basis: **Wet Weight**
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 07.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 07.53	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 07.53	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 07.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	09.11.17 07.53	
o-Terphenyl	84-15-1	99	%	70-135	09.11.17 07.53	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T4
Lab Sample Id: 562386-016

Matrix: Soil
Date Collected: 09.07.17 10.35

Date Received: 09.08.17 13.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.11.17 14.17	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.11.17 14.17	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.11.17 14.17	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	09.11.17 14.17	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.11.17 14.17	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.11.17 14.17	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.11.17 14.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	84	%	80-120	09.11.17 14.17		
1,4-Difluorobenzene	540-36-3	98	%	80-120	09.11.17 14.17		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T4** Matrix: **Soil** Date Received: 09.08.17 13.45
Lab Sample Id: 562386-017 Date Collected: 09.07.17 10.40 Sample Depth: 7 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: **MNV** % Moisture:
Analyst: **MNV** Date Prep: 09.11.17 14.15 Basis: **Wet Weight**
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	164	4.93	mg/kg	09.11.17 18.18		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: **ARM** % Moisture:
Analyst: **ARM** Date Prep: 09.10.17 16.00 Basis: **Wet Weight**
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 08.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 08.14	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 08.14	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 08.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	09.11.17 08.14	
o-Terphenyl	84-15-1	99	%	70-135	09.11.17 08.14	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T4
Lab Sample Id: 562386-017

Matrix: Soil
Date Collected: 09.07.17 10.40

Date Received: 09.08.17 13.45
Sample Depth: 7 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.11.17 14.35	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.11.17 14.35	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.11.17 14.35	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.11.17 14.35	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.11.17 14.35	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.11.17 14.35	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.11.17 14.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	87	%	80-120	09.11.17 14.35		
1,4-Difluorobenzene	540-36-3	99	%	80-120	09.11.17 14.35		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-018 Date Collected: 09.07.17 10.55 Sample Depth: 0 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5120	25.0	mg/kg	09.11.17 18.49		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 08.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	231	15.0	mg/kg	09.11.17 08.34		1
Oil Range Hydrocarbons (ORO)	PHCG2835	34.7	15.0	mg/kg	09.11.17 08.34		1
Total TPH	PHC635	266	15.0	mg/kg	09.11.17 08.34		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	09.11.17 08.34	
o-Terphenyl	84-15-1	103	%	70-135	09.11.17 08.34	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5
Lab Sample Id: 562386-018

Matrix: Soil
Date Collected: 09.07.17 10.55

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.11.17 14.54	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.11.17 14.54	U	1
Ethylbenzene	100-41-4	0.0117	0.00202	mg/kg	09.11.17 14.54		1
m,p-Xylenes	179601-23-1	0.0129	0.00404	mg/kg	09.11.17 14.54		1
o-Xylene	95-47-6	0.00579	0.00202	mg/kg	09.11.17 14.54		1
Total Xylenes	1330-20-7	0.0187	0.00202	mg/kg	09.11.17 14.54		1
Total BTEX		0.0304	0.00202	mg/kg	09.11.17 14.54		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95		%	80-120	09.11.17 14.54	
4-Bromofluorobenzene	460-00-4	86		%	80-120	09.11.17 14.54	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-019 Date Collected: 09.07.17 11.00 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	59.7	4.97	mg/kg	09.11.17 18.59		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 08.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 08.54	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 08.54	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 08.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	116	%	70-135	09.11.17 08.54	
o-Terphenyl	84-15-1	116	%	70-135	09.11.17 08.54	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5
Lab Sample Id: 562386-019

Matrix: Soil
Date Collected: 09.07.17 11.00

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3027289

Date Prep: 09.11.17 08.45

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	09.11.17 15.13	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.11.17 15.13	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.11.17 15.13	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.11.17 15.13	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.11.17 15.13	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.11.17 15.13	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.11.17 15.13	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	80-120	09.11.17 15.13		
4-Bromofluorobenzene	460-00-4	87	%	80-120	09.11.17 15.13		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-020 Date Collected: 09.07.17 11.05 Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	36.2	5.00	mg/kg	09.11.17 19.10		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 09.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 09.13	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 09.13	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 09.13	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	09.11.17 09.13		
o-Terphenyl	84-15-1	105	%	70-135	09.11.17 09.13		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5
Lab Sample Id: 562386-020

Matrix: Soil
Date Collected: 09.07.17 11.05

Date Received: 09.08.17 13.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.11.17 15.32	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 15.32	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 15.32	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.11.17 15.32	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 15.32	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 15.32	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 15.32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	82	%	80-120	09.11.17 15.32		
1,4-Difluorobenzene	540-36-3	97	%	80-120	09.11.17 15.32		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-021 Date Collected: 09.07.17 11.10 Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.9	4.91	mg/kg	09.11.17 19.20		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 09.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 09.33	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 09.33	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 09.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	113	%	70-135	09.11.17 09.33	
o-Terphenyl	84-15-1	113	%	70-135	09.11.17 09.33	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5
Lab Sample Id: 562386-021

Matrix: Soil
Date Collected: 09.07.17 11.10

Date Received: 09.08.17 13.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.11.17 15.51	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 15.51	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 15.51	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.11.17 15.51	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.11.17 15.51	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.11.17 15.51	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.11.17 15.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	80-120	09.11.17 15.51		
4-Bromofluorobenzene	460-00-4	85	%	80-120	09.11.17 15.51		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5 Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-022 Date Collected: 09.07.17 11.15 Sample Depth: 8 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	83.7	4.93	mg/kg	09.11.17 19.30		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 09.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 09.53	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 09.53	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 09.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	09.11.17 09.53	
o-Terphenyl	84-15-1	106	%	70-135	09.11.17 09.53	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: T5
Lab Sample Id: 562386-022

Matrix: Soil
Date Collected: 09.07.17 11.15

Date Received: 09.08.17 13.45
Sample Depth: 8 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 14.00

Basis: Wet Weight

Seq Number: 3027292

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00347	0.00347	mg/kg	09.12.17 08.12	U	1
Toluene	108-88-3	<0.00347	0.00347	mg/kg	09.12.17 08.12	U	1
Ethylbenzene	100-41-4	<0.00347	0.00347	mg/kg	09.12.17 08.12	U	1
m,p-Xylenes	179601-23-1	<0.00694	0.00694	mg/kg	09.12.17 08.12	U	1
o-Xylene	95-47-6	<0.00347	0.00347	mg/kg	09.12.17 08.12	U	1
Total Xylenes	1330-20-7	<0.00347	0.00347	mg/kg	09.12.17 08.12	U	1
Total BTEX		<0.00347	0.00347	mg/kg	09.12.17 08.12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	92	%	80-120	09.12.17 08.12		
4-Bromofluorobenzene	460-00-4	87	%	80-120	09.12.17 08.12		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-023 Date Collected: 09.07.17 11.20 Sample Depth: 0 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12000	49.7	mg/kg	09.11.17 19.41		10

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	132	14.9	mg/kg	09.11.17 10.53		1
Diesel Range Organics (DRO)	C10C28DRO	1410	14.9	mg/kg	09.11.17 10.53		1
Oil Range Hydrocarbons (ORO)	PHCG2835	238	14.9	mg/kg	09.11.17 10.53		1
Total TPH	PHC635	1780	14.9	mg/kg	09.11.17 10.53		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	09.11.17 10.53	
o-Terphenyl	84-15-1	98	%	70-135	09.11.17 10.53	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6**
Lab Sample Id: 562386-023

Matrix: Soil
Date Collected: 09.07.17 11.20

Date Received: 09.08.17 13.45
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.00532	0.00202	mg/kg	09.11.17 17.12		1
Toluene	108-88-3	0.180	0.00202	mg/kg	09.11.17 17.12		1
Ethylbenzene	100-41-4	0.366	0.00202	mg/kg	09.11.17 17.12		1
m,p-Xylenes	179601-23-1	0.403	0.00404	mg/kg	09.11.17 17.12		1
o-Xylene	95-47-6	0.182	0.00202	mg/kg	09.11.17 17.12		1
Total Xylenes	1330-20-7	0.585	0.00202	mg/kg	09.11.17 17.12		1
Total BTEX		1.14	0.00202	mg/kg	09.11.17 17.12		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	82	%	80-120	09.11.17 17.12		
4-Bromofluorobenzene	460-00-4	110	%	80-120	09.11.17 17.12		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-024 Date Collected: 09.07.17 11.25 Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8590	49.9	mg/kg	09.11.17 20.12		10

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 11.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 11.14	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 11.14	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 11.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	09.11.17 11.14	
o-Terphenyl	84-15-1	104	%	70-135	09.11.17 11.14	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6**
Lab Sample Id: 562386-024

Matrix: Soil
Date Collected: 09.07.17 11.25

Date Received: 09.08.17 13.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.00523	0.00200	mg/kg	09.11.17 17.31		1
Toluene	108-88-3	0.00239	0.00200	mg/kg	09.11.17 17.31		1
Ethylbenzene	100-41-4	0.00722	0.00200	mg/kg	09.11.17 17.31		1
m,p-Xylenes	179601-23-1	0.00822	0.00401	mg/kg	09.11.17 17.31		1
o-Xylene	95-47-6	0.00561	0.00200	mg/kg	09.11.17 17.31		1
Total Xylenes	1330-20-7	0.0138	0.00200	mg/kg	09.11.17 17.31		1
Total BTEX		0.0287	0.00200	mg/kg	09.11.17 17.31		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	91	%	80-120	09.11.17 17.31		
4-Bromofluorobenzene	460-00-4	97	%	80-120	09.11.17 17.31		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-025 Date Collected: 09.07.17 11.28 Sample Depth: 2 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	80.3	4.97	mg/kg	09.11.17 20.22		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 11.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 11.33	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 11.33	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 11.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-135	09.11.17 11.33	
o-Terphenyl	84-15-1	109	%	70-135	09.11.17 11.33	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6**
Lab Sample Id: 562386-025

Matrix: Soil
Date Collected: 09.07.17 11.28

Date Received: 09.08.17 13.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.11.17 17.50	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.11.17 17.50	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.11.17 17.50	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.11.17 17.50	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.11.17 17.50	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.11.17 17.50	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.11.17 17.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	94	%	80-120	09.11.17 17.50		
1,4-Difluorobenzene	540-36-3	93	%	80-120	09.11.17 17.50		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-026 Date Collected: 09.07.17 11.30 Sample Depth: 3 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	25.2	4.91	mg/kg	09.11.17 20.53		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 11.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 11.54	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 11.54	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 11.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	09.11.17 11.54	
o-Terphenyl	84-15-1	106	%	70-135	09.11.17 11.54	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6**
Lab Sample Id: 562386-026

Matrix: Soil
Date Collected: 09.07.17 11.30

Date Received: 09.08.17 13.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.11.17 18.09	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.11.17 18.09	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.11.17 18.09	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.11.17 18.09	U	1
o-Xylene	95-47-6	0.00251	0.00200	mg/kg	09.11.17 18.09		1
Total Xylenes	1330-20-7	0.00251	0.00200	mg/kg	09.11.17 18.09		1
Total BTEX		0.00251	0.00200	mg/kg	09.11.17 18.09		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	80	%	80-120	09.11.17 18.09		
1,4-Difluorobenzene	540-36-3	104	%	80-120	09.11.17 18.09		



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6** Matrix: Soil Date Received: 09.08.17 13.45
Lab Sample Id: 562386-027 Date Collected: 09.07.17 11.31 Sample Depth: 8 ft
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Tech: MNV % Moisture:
Analyst: MNV Date Prep: 09.11.17 14.15 Basis: Wet Weight
Seq Number: 3027337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	50.1	4.99	mg/kg	09.11.17 21.04		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.10.17 16.00 Basis: Wet Weight
Seq Number: 3027228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	09.11.17 12.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	09.11.17 12.13	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	09.11.17 12.13	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.11.17 12.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	113	%	70-135	09.11.17 12.13	
o-Terphenyl	84-15-1	113	%	70-135	09.11.17 12.13	



Certificate of Analytical Results 562386



COG Operating LLC, Artesia, NM

Loco Hills SWD#004

Sample Id: **T6**
Lab Sample Id: 562386-027

Matrix: Soil
Date Collected: 09.07.17 11.31

Date Received: 09.08.17 13.45
Sample Depth: 8 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.11.17 08.45

Basis: Wet Weight

Seq Number: 3027289

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.11.17 18.28	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.11.17 18.28	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.11.17 18.28	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.11.17 18.28	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.11.17 18.28	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.11.17 18.28	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.11.17 18.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	92	%	80-120	09.11.17 18.28		
4-Bromofluorobenzene	460-00-4	91	%	80-120	09.11.17 18.28		

- 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 **SQL** 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	

COG Operating LLC
Loco Hills SWD#004**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3027331

Matrix: Solid

Prep Method: E300P

MB Sample Id: 730718-1-BLK

LCS Sample Id: 730718-1-BKS

Date Prep: 09.11.17

LCSD Sample Id: 730718-1-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	248	99	226	90	90-110	9	20	mg/kg	09.11.17 11:14	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027337

Matrix: Solid

Prep Method: E300P

MB Sample Id: 730721-1-BLK

LCS Sample Id: 730721-1-BKS

Date Prep: 09.11.17

LCSD Sample Id: 730721-1-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	246	98	246	98	90-110	0	20	mg/kg	09.11.17 16:55	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027331

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 562385-001

MS Sample Id: 562385-001 S

Date Prep: 09.11.17

MSD Sample Id: 562385-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	182	250	431	100	433	100	90-110	0	20	mg/kg	09.11.17 11:45	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027331

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 562386-003

MS Sample Id: 562386-003 S

Date Prep: 09.11.17

MSD Sample Id: 562386-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	559	250	813	102	815	102	90-110	0	20	mg/kg	09.11.17 14:10	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027337

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 562386-013

MS Sample Id: 562386-013 S

Date Prep: 09.11.17

MSD Sample Id: 562386-013 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	24.4	250	258	93	258	93	90-110	0	20	mg/kg	09.11.17 17:26	

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3027337

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 562386-023

MS Sample Id: 562386-023 S

Date Prep: 09.11.17

MSD Sample Id: 562386-023 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12000	249	11800	0	11900	0	90-110	1	20	mg/kg	09.11.17 19:51	X



COG Operating LLC

Loco Hills SWD#004

Analytical Method: TPH By SW8015 Mod

Seq Number: 3027227

MB Sample Id: 730692-1-BLK

Matrix: Solid

LCS Sample Id: 730692-1-BKS

Prep Method: TX1005P

Date Prep: 09.10.17

LCSD Sample Id: 730692-1-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	925	93	951	95	70-135	3	35	mg/kg	09.10.17 19:50	
Diesel Range Organics (DRO)	<15.0	1000	1040	104	1050	105	70-135	1	35	mg/kg	09.10.17 19:50	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		98		107		70-135	%	09.10.17 19:50
o-Terphenyl	101		95		102		70-135	%	09.10.17 19:50

Analytical Method: TPH By SW8015 Mod

Seq Number: 3027228

MB Sample Id: 730694-1-BLK

Matrix: Solid

LCS Sample Id: 730694-1-BKS

Prep Method: TX1005P

Date Prep: 09.10.17

LCSD Sample Id: 730694-1-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	964	96	1040	104	70-135	8	35	mg/kg	09.11.17 05:26	
Diesel Range Organics (DRO)	<15.0	1000	1090	109	1120	112	70-135	3	35	mg/kg	09.11.17 05:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	101		104		107		70-135	%	09.11.17 05:26
o-Terphenyl	103		98		104		70-135	%	09.11.17 05:26

Analytical Method: TPH By SW8015 Mod

Seq Number: 3027227

Parent Sample Id: 562385-001

Matrix: Soil

MS Sample Id: 562385-001 S

Prep Method: TX1005P

Date Prep: 09.10.17

MSD Sample Id: 562385-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	923	92	930	93	70-135	1	35	mg/kg	09.10.17 20:50	
Diesel Range Organics (DRO)	<15.0	998	1040	104	1020	102	70-135	2	35	mg/kg	09.10.17 20:50	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	101		100		70-135	%	09.10.17 20:50
o-Terphenyl	97		94		70-135	%	09.10.17 20:50



QC Summary 562386

COG Operating LLC

Loco Hills SWD#004

Analytical Method: TPH By SW8015 Mod

Seq Number: 3027228

Parent Sample Id: 562386-013

Matrix: Soil

MS Sample Id: 562386-013 S

Prep Method: TX1005P

Date Prep: 09.10.17

MSD Sample Id: 562386-013 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	1060	106	945	95	70-135	11	35	mg/kg	09.11.17 06:30	
Diesel Range Organics (DRO)	<15.0	999	1120	112	1100	110	70-135	2	35	mg/kg	09.11.17 06:30	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	112		105		70-135	%	09.11.17 06:30
o-Terphenyl	106		101		70-135	%	09.11.17 06:30

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027284

MB Sample Id: 730731-1-BLK

Matrix: Solid

LCS Sample Id: 730731-1-BKS

Prep Method: SW5030B

Date Prep: 09.11.17

LCSD Sample Id: 730731-1-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	0.0905	90	0.105	104	70-130	15	35	mg/kg	09.11.17 10:15	
Toluene	<0.00202	0.101	0.0929	92	0.107	106	70-130	14	35	mg/kg	09.11.17 10:15	
Ethylbenzene	<0.00202	0.101	0.0898	89	0.103	102	71-129	14	35	mg/kg	09.11.17 10:15	
m,p-Xylenes	<0.00403	0.202	0.173	86	0.200	100	70-135	14	35	mg/kg	09.11.17 10:15	
o-Xylene	<0.00202	0.101	0.0849	84	0.0981	97	71-133	14	35	mg/kg	09.11.17 10:15	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	89		100		107		80-120	%	09.11.17 10:15
4-Bromofluorobenzene	102		92		99		80-120	%	09.11.17 10:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027289

MB Sample Id: 730732-1-BLK

Matrix: Solid

LCS Sample Id: 730732-1-BKS

Prep Method: SW5030B

Date Prep: 09.11.17

LCSD Sample Id: 730732-1-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	0.100	0.110	110	0.109	108	70-130	1	35	mg/kg	09.11.17 11:03	
Toluene	<0.00200	0.100	0.103	103	0.103	102	70-130	0	35	mg/kg	09.11.17 11:03	
Ethylbenzene	<0.00200	0.100	0.100	100	0.101	100	71-129	1	35	mg/kg	09.11.17 11:03	
m,p-Xylenes	<0.00400	0.200	0.195	98	0.196	97	70-135	1	35	mg/kg	09.11.17 11:03	
o-Xylene	<0.00200	0.100	0.0932	93	0.0941	93	71-133	1	35	mg/kg	09.11.17 11:03	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		99		99		80-120	%	09.11.17 11:03
4-Bromofluorobenzene	80		87		89		80-120	%	09.11.17 11:03

COG Operating LLC
Loco Hills SWD#004

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027292

MB Sample Id: 730734-1-BLK

Matrix: Solid

LCS Sample Id: 730734-1-BKS

Prep Method: SW5030B

Date Prep: 09.11.17

LCSD Sample Id: 730734-1-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	0.106	105	0.106	106	70-130	0	35	mg/kg	09.11.17 20:57	
Toluene	<0.00202	0.101	0.100	99	0.100	100	70-130	0	35	mg/kg	09.11.17 20:57	
Ethylbenzene	<0.00202	0.101	0.0995	99	0.0991	99	71-129	0	35	mg/kg	09.11.17 20:57	
m,p-Xylenes	<0.00403	0.202	0.193	96	0.192	96	70-135	1	35	mg/kg	09.11.17 20:57	
o-Xylene	<0.00202	0.101	0.0941	93	0.0931	93	71-133	1	35	mg/kg	09.11.17 20:57	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	93		97		96		80-120	%	09.11.17 20:57
4-Bromofluorobenzene	86		92		89		80-120	%	09.11.17 20:57

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027284

Parent Sample Id: 562385-001

Matrix: Soil

MS Sample Id: 562385-001 S

Prep Method: SW5030B

Date Prep: 09.11.17

MSD Sample Id: 562385-001 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	0.112	111	0.0963	96	70-130	15	35	mg/kg	09.11.17 10:53	
Toluene	<0.00202	0.101	0.105	104	0.0930	93	70-130	12	35	mg/kg	09.11.17 10:53	
Ethylbenzene	<0.00202	0.101	0.105	104	0.0811	81	71-129	26	35	mg/kg	09.11.17 10:53	
m,p-Xylenes	<0.00403	0.202	0.202	100	0.155	78	70-135	26	35	mg/kg	09.11.17 10:53	
o-Xylene	<0.00202	0.101	0.0983	97	0.0804	80	71-133	20	35	mg/kg	09.11.17 10:53	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		92		80-120	%	09.11.17 10:53
4-Bromofluorobenzene	91		87		80-120	%	09.11.17 10:53

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027289

Parent Sample Id: 562386-013

Matrix: Soil

MS Sample Id: 562386-013 S

Prep Method: SW5030B

Date Prep: 09.11.17

MSD Sample Id: 562386-013 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	0.201	199	0.142	141	70-130	34	35	mg/kg	09.11.17 12:20	X
Toluene	<0.00202	0.101	0.0803	80	0.0789	78	70-130	2	35	mg/kg	09.11.17 12:20	
Ethylbenzene	<0.00202	0.101	0.0306	30	0.0264	26	71-129	15	35	mg/kg	09.11.17 12:20	X
m,p-Xylenes	<0.00404	0.202	0.0475	24	0.0381	19	70-135	22	35	mg/kg	09.11.17 12:20	X
o-Xylene	<0.00202	0.101	0.0309	31	0.0312	31	71-133	1	35	mg/kg	09.11.17 12:20	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		109		80-120	%	09.11.17 12:20
4-Bromofluorobenzene	42	**	39	**	80-120	%	09.11.17 12:20



QC Summary 562386

COG Operating LLC

Loco Hills SWD#004

Analytical Method: BTEX by EPA 8021B

Seq Number: 3027292

Parent Sample Id: 562388-001

Matrix: Soil

MS Sample Id: 562388-001 S

Prep Method: SW5030B

Date Prep: 09.11.17

MSD Sample Id: 562388-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0733	73	0.0791	79	70-130	8	35	mg/kg	09.11.17 21:35	
Toluene	<0.00200	0.100	0.0618	62	0.0692	69	70-130	11	35	mg/kg	09.11.17 21:35	X
Ethylbenzene	<0.00200	0.100	0.0549	55	0.0587	59	71-129	7	35	mg/kg	09.11.17 21:35	X
m,p-Xylenes	<0.00400	0.200	0.103	52	0.109	54	70-135	6	35	mg/kg	09.11.17 21:35	X
o-Xylene	<0.00200	0.100	0.0553	55	0.0565	57	71-133	2	35	mg/kg	09.11.17 21:35	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		98		80-120	%	09.11.17 21:35
4-Bromofluorobenzene	87		91		80-120	%	09.11.17 21:35



Page 1 of 3

Phoenix, Arizona (480-355-0900)

Xenco Quote #	Xenco Job #
	567386

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

Temp: 4.2 IR ID: R-
CF: (0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.0



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

CHAIN OF CUSTODY

Page 2 of 3

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

Phoenix, Arizona (480-355-0900)

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Xenco Quote #

Xenco Job #

562386

Client / Reporting Information

Company Name / Branch:

COG Operating LLC

Company Address:

2407 PECOS Avenue Artesia NM 88210

Email:

alieb@concho.com dree12@concho.com thaskel@concho.com

Project Contact: Aaron Lieb

Project Name: Aaron Lieb

Project Information

Project Name/Number:

LOCO Hills SMD #004

Project Location:

Loco Hills SMD #00

Invoice To: COG Operating LLC

Attn: Robert McNeill

600 W. Illinois

Midland TX 79701

PO Number:

Analytical Information

Matrix Codes

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

No. Field ID / Point of Collection

Collection

Sample

Depth

Date

Time

Matrix

of bottles

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MEOH

NONE

TPH/ EXTENDED

BTEX

Chloride

Field Comments

Notes:

Turnaround Time (Business days)

Data Deliverable Information

Level I Std QC

Level II Std QC

Level III Std QC+ Forms

Level IV (Full Data Pkg /raw data)

TRRP Level IV

Level 3 (CLP Forms)

UST / RG -411

TRRP Checklist

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

Relinquished by Sampler:

Relinquished By:

Date Time:

Received By:

Date Time:

Relinquished by:

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Received By:</



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

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

Phoenix, Arizona (480-355-0900)

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CHAIN OF CUSTODY

Page 3 of 3

Xenco Quote #

Xenco Job #

561386

Client / Reporting Information

Project Information

Analytical Information

Matrix Codes

Company Name / Branch:

Project Name/Number:

COG Operating LLC

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

Company Address:

Project Location:

Loco Hills SWD #04

2407 PECOS Avenue Artesia NM 88210

Phone No: 575-748-1553

Invoice To:

COG Operating LLC

Attn: Robert McNeill

Email: alleb@concho.com dneel2@concho.com thaskell@concho.com

600 W. Illinois

Midland TX 79701

Project Contact: Aaron Lieb

Po Number:

Field Comments

Sampler's Name: Aaron Lieb

TPH/ EXTENDED

BTEX

Chloride

No. Field ID / Point of Collection

Sample Depth

Date

Time

Matrix

of bottles

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MEOH

NONE

1 T5 - Surf

Surf

9/17/17

10:55 AM

S

1

X

X

X

X

X

X

X

X

2 T5 - 2'

1

11:00 AM

1

X

X

X

X

X

X

X

X

X

3 T5 - 3'

2

11:05 AM

1

X

X

X

X

X

X

X

X

X

4 T5 - 3'

3

11:10 AM

1

X

X

X

X

X

X

X

X

X

5 T5 - 8'

8

11:15 AM

1

X

X

X

X

X

X

X

X

X

6 T6 - Surf

Surf

11:20 AM

1

X

X

X

X

X

X

X

X

X

7 T6 - 1'

1

11:25 AM

1

X

X

X

X

X

X

X

X

X

8 T6 - 2'

2

11:28 AM

1

X

X

X

X

X

X

X

X

X

9 T6 - 3'

3

11:30 AM

1

X

X

X

X

X

X

X

X

X

10 T6 - 8'

8

11:31 AM

1

X

X

X

X

X

X

X

X

X

Turnaround Time (Business days)

Data Deliverable Information

Notes:

Same Day TAT

5 Day TAT

Level II Std QC

Level IV (Full Data Pkg / raw data)

Next Day EMERGENCY

7 Day TAT

Level III Std QC+ Forms

TRRP Level IV

2 Day EMERGENCY

Contract TAT

Level 3 (CLP Forms)

UST / RG -411

3 Day EMERGENCY

TRRP Checklist

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

FED-EX / UPS: Tracking #

Relinquished by Sampler:

Date Time:

Received By:

Relinquished By:

Date Time:

Received By:

Relinquished By:

Date Time:

Received By:

Relinquished By:

Date Time:

Received By:

Relinquished By:

Date Time:

Relinquished by:

Date Time:

Received By:

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Date Time:

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Relinquished By:

Date Time:

Received By:

Relinquished By:

Date Time:

Received By:

Relinquished By:

Date Time:

Received By:

Relinquished By:

Date Time:

Temp: 4.2 IR ID: R-6
CF: (0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.0



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 09/08/2017 01:45:00 PM

Work Order #: 562386

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

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

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer
Jessica Kramer

Date: 09/11/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 09/11/2017

NM OIL CONSERVATION

ARTESIA DISTRICT

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

AUG 23 2017

Form C-141
Revised August 8, 2011

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

Release Notification and Corrective Action

0AB172403A504

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: Loco Hills SWD 33 #004		Facility Type: SWD	
Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-37269	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	33	17S	30E	840	South	660	East	Eddy

Latitude 32.7860756 Longitude -103.9705276

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 100 bbl. Oil & 600 bbl. Pw	Volume Recovered: 95 bbl. Oil & 590 Produced Water
Source of Release: Lightning Strike	Date and Hour of Occurrence: August 21, 2017 2:00 am	Date and Hour of Discovery: August 21, 2017 2:00 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Ms. Weaver - NMOCD / Ms. Tucker - BLM	
By Whom? Dakota Neel	Date and Hour: August 21, 2017 4:57 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The release occurred when lightning struck the facility. The facility and equipment were a total loss.

Describe Area Affected and Cleanup Action Taken.*

The release remained within the bermed area. 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: <u>Rebecca Haskell</u>	OIL CONSERVATION DIVISION	
Printed Name: Rebecca Haskell	Approved by Environmental Specialist: <u>Crystal W...</u>	
Title: Senior HSE Coordinator	Approval Date: <u>8/28/17</u>	Expiration Date: <u>N/A</u>
E-mail Address: rhaskell@concho.com	Conditions of Approval: <u>see attached</u>	Attached: <u>X</u> <u>APP-4359</u>
Date: August 23, 2017 Phone: 432-683-7443		

* Attach Additional Sheets If Necessary

8/28/17 AB

Operator/Responsible Party,

The OCD has received the form C-141 you provided on **8/23/17** regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number ARP-4359 has been assigned. **Please refer to this case number in all future correspondence.**

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

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

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District II office in Artesia on or before 9/23/17. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

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

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

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

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

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

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

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

Jim Griswold

OCD Environmental Bureau Chief

1220 South St. Francis Drive

Santa Fe, New Mexico 87505

505-476-3465

jim.griswold@state.nm.us

Weaver, Crystal, EMNRD

From: Weaver, Crystal, EMNRD
Sent: Friday, August 25, 2017 3:50 PM
To: 'Rebecca Haskell'; stucker@blm.gov
Cc: Bratcher, Mike, EMNRD; Jim Amos (jamos@blm.gov)
Subject: RE: (C-141 Initial) LOCO HILLS SWD 33 #004 8/21/2017 (30-015-37269)

Hello Becky,

On the C-141 it states "release remained in the bermed area," however when I look on Google Earth I show (as of most current imagery date 2/1/17) that the bermed area around the tank battery is also lined. So I called COG cause I noticed the volume recovered was pretty high and we talked about the status of the liner. It sounds like as far as COG could tell it didn't sustain much direct impact from the lightning and seems to have held up for the most part thru the fire. OCD will in this case require that the liner be fully checked for any breaches and delineation be conducted at any sites where a breach had occurred. Photos also will be helpful on this one. Glad to hear that the liner appears to have held for the most part. Following this email a signed C-141 with COAs attached will be sent soon by OCD. In the mean time please proceed with any immediate response action and drafting a delineation plan.

Thank you kindly,

Crystal Weaver

Environmental Specialist
OCD – Artesia District II
811 S. 1st Street
Artesia, NM 88210
Office: 575-748-1283 ext. 101
Cell: 575-840-5963
Fax: 575-748-9720

From: Rebecca Haskell [mailto:RHaskell@concho.com]
Sent: Wednesday, August 23, 2017 7:26 AM
To: Weaver, Crystal, EMNRD <Crystal.Weaver@state.nm.us>; stucker@blm.gov
Cc: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Jim Amos (jamos@blm.gov) <jamos@blm.gov>
Subject: (C-141 Initial) LOCO HILLS SWD 33 #004 8/21/2017 (30-015-37269)

Ms. Weaver / Ms. Tucker,

Please see the attached Initial C-141 for your consideration. If you have any questions or concerns please contact me.

Thank You,

Becky Haskell
Senior HSE Coordinator
COG Operating LLC
600 W Illinois Avenue | Midland, TX 79701
Direct: 432-818-2372 | Main: 432.683.7443



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From: Dakota Neel
Sent: Monday, August 21, 2017 4:57 PM
To: Weaver, Crystal, EMNRD (Crystal.Weaver@state.nm.us); stucker@blm.gov; Mike.Bratcher@state.nm.us
Cc: James_Amos@blm.gov; Robert McNeill; Rebecca Haskell
Subject: (Notification) LOCO HILLS SWD 33 #004 8/21/2017 (30-015-37269)

Ms. Weaver/Ms. Tucker,

COG Operating LLC is reporting a release at the LOCO HILLS SWD 33 #004 (30-015-37269)

Unit P Section 33 Township 17S Range 30E

OGRID# [229137]

The release occurred on 8/21/2017 at approximately 2:00:00 AM

Estimated Released: Approx: >25 bbls

Estimated Recovered: Approx: Unknown at this time. (Fluid recovery is ongoing)

The release occurred when lightning struck the facility. The facility and equipment were a total loss. The flow lines coming into the facility were isolated and the release remained within the bermed area. Vacuum trucks are on site recovering fluid and an updated released and recovered amount will be provided with the C-141. If you have any additional questions please don't hesitate to contact me.

Thank you,

Dakota Neel
HSE Coordinator
COG Operating LLC
Cell: [432-215-2783](tel:432-215-2783)
dneel2@concho.com

2407 Pecos Ave.
Artesia , NM 88210



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Bratcher, Mike, EMNRD

From: Dakota Neel <DNeel2@concho.com>
Sent: Monday, August 21, 2017 3:57 PM
To: Weaver, Crystal, EMNRD; stucker@blm.gov; Bratcher, Mike, EMNRD
Cc: James_Amos@blm.gov; Robert McNeill; Rebecca Haskell
Subject: (Notification) LOCO HILLS SWD 33 #004 8/21/2017 (30-015-37269)

Ms. Weaver/Ms. Tucker,

COG Operating LLC is reporting a release at the LOCO HILLS SWD 33 #004 (30-015-37269)

Unit P Section 33 Township 17S Range 30E

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Thank you,

Dakota Neel
HSE Coordinator
COG Operating LLC
Cell: 432-215-2783
dneel2@concho.com

2407 Pecos Ave.
Artesia , NM 88210



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