

[Dakota Neel]
[HSE Coordinator]

March 2, 2019

Bradford Billings Oil Conservation Division Santa Fe

Ryan Mann New Mexico State Land Office 2827 N. Dal Paso Suite 117 Hobbs, NM 88240

Re: Closure Letter Houma State #1 API #: 30-015-31491 RP#: 2RP-4417 Eddy County, NM

Mr. Billings/Mr. Mann,

COG Operating, LLC (COG) is pleased to submit for your consideration the following closure report for the Houma State #1. This release occurred on September 27, 2017. Following the releases a site assessment of the impacted soils was conducted. A remediation work plan was submitted to and subsequently approved by the New Mexico Oil Conservation Division (NMOCD) and New Mexico State Land Office (NMSLO). A copy of the approved work plan is attached.

BACKGROUND

On September 27, 2017, a crude oil release occurred at the Houma State # 001. The release was the result of corrosion on the circulation line. On September 27, 2017, Concho reported the release to the NMOCD District 2 Office located in Artesia, New Mexico and the release was assigned the incident number 2RP-4417. The release was reported as approximately thirteen (13) barrels of crude oil released with approximately ten (10) barrels of crude oil recovered, resulting in a net loss of approximately three (3) barrels.

Remediation activities were conducted in accordance with the NMOCD/NMSLO approved workplan. During the excavation additional delineation was completed in the area of T1. The analytical results for this can be found in Appendix 1.

REMEDIAL ACTIONS

- The impacted areas of T1, T2, and AH2 were excavated to a depth of four (4) feet BGS and a 20 mil plastic liner was installed.
- The impacted area of AH1 was excavated to a depth of six (6) inches BGS.
- All of the excavated material was transported to an NMOCD approved solid waste disposal facility.
- The excavation was backfilled with like material and contoured to match the surrounding location.
- The site will be reseeded with the NMSLO Shallow Seed Mixture.

CLOSURE REQUEST

COG Operating, LLC respectfully requests closure approval for 2RP-4417. Should you have any questions or concerns please do not hesitate to contact me.

Sincerely,

Dakota Neel

HSE Coordinator

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Enclosed:

Appendix I: Laboratory Analytical Results

Appendix II: Work Plan (Copy) Appendix III: Initial C-141 (Copy)

Appendix IV: Final C-141

March 2, 2019

APPENDIX I



July 30, 2018

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: HOUMA STATE #1H

Enclosed are the results of analyses for samples received by the laboratory on 07/25/18 13:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Haloacetic Acids (HAA-5)
Method EPA 524.2 Total Trihalomethanes (TTHM)
Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keene

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



Analytical Results For:

COG OPERATING DAKOTA NEEL P. O. BOX 1630 ARTESIA NM, 88210 Fax To: NONE

Received: 07/25/2018

Reported: 07/30/2018

Project Name: HOLIMA STATE #1F

Project Name: HOUMA STATE #1H
Project Number: NONE GIVEN

Project Location: NOT GIVEN

Sampling Date: 07/18/2018

Sampling Type: Soil

Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: T1 - 14.5' (H802029-01)

DTEV 0021D

BTEX 8021B	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/28/2018	ND	1.89	94.3	2.00	4.46	
Toluene*	<0.050	0.050	07/28/2018	ND	1.95	97.7	2.00	4.17	
Ethylbenzene*	<0.050	0.050	07/28/2018	ND	1.98	99.2	2.00	4.22	
Total Xylenes*	<0.150	0.150	07/28/2018	ND	5.82	97.0	6.00	4.83	
Total BTEX	<0.300	0.300	07/28/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	107	% 69.8-14	2						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	07/26/2018	ND	416	104	400	3.77	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/27/2018	ND	195	97.3	200	1.20	
DRO >C10-C28*	85.5	10.0	07/27/2018	ND	234	117	200	1.40	
EXT DRO >C28-C36	23.2	10.0	07/27/2018	ND					
Surrogate: 1-Chlorooctane	96.7	% 41-142	!						
Surrogate: 1-Chlorooctadecane	110	% 37.6-14	7						

Applymed By MC

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager



Analytical Results For:

COG OPERATING DAKOTA NEEL P. O. BOX 1630 ARTESIA NM, 88210 Fax To: NONE

Received: 07/25/2018 Sampling Date: 07/18/2018

Reported: 07/30/2018 Sampling Type: Soil

Project Name: HOUMA STATE #1H Sampling Condition: Cool & Intact Project Number: NONE GIVEN Sample Received By: Tamara Oldaker

Project Location: NOT GIVEN

Sample ID: T1 - 15' (H802029-02)

BTEX 8021B	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/28/2018	ND	1.89	94.3	2.00	4.46	
Toluene*	<0.050	0.050	07/28/2018	ND	1.95	97.7	2.00	4.17	
Ethylbenzene*	<0.050	0.050	07/28/2018	ND	1.98	99.2	2.00	4.22	
Total Xylenes*	<0.150	0.150	07/28/2018	ND	5.82	97.0	6.00	4.83	
Total BTEX	<0.300	0.300	07/28/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	108	% 69.8-14	2						
Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/26/2018	ND	416	104	400	3.77	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/27/2018	ND	195	97.3	200	1.20	
DRO >C10-C28*	77.0	10.0	07/27/2018	ND	234	117	200	1.40	
EXT DRO >C28-C36	16.4	10.0	07/27/2018	ND					
Surrogate: 1-Chlorooctane	92.2	% 41-142	?						
Surrogate: 1-Chlorooctadecane	104	% 37.6-14	7						

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS

recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Company Name:	COG Operating LLC		1				RI	8/1/ 70				١	>	ANAI VSIS	200	- 1	2	H			┚
Project Manager:					P.O. #:	#						╛	J_{s}	_ {\bar{2}{5}}					1	\dashv	
Address: 2208	2208 West Main				Con	Company:		COG Operating LLC	ling LLC						242						
City: Artesia	State: NM	N	Zip	88210	Attn:			Robert McNeill	eii ≀												
Phone #:	(575) 748-6930 Fax #:				Add	Address:		600 W Illinois	nois												
Project #:	Project Owner:				City:			Midland				()									
Project Name: H	Houma State #1H				Stat	State: TX		Zip: 79701													
Project Location:					Pho	Phone #:	(43)	(432) 221-0388													
Sampler Name:	Dakota Neel				Fax #:	#															
FOR LAB USE ONLY				MATRIX		PRESERV.	RV.	SAMPLING	ଜ												
Lab I.D. H882024	Sample I.D.	(G)RAB OR (C)OMP. # CONTAINERS	GROUNDWATER WASTEWATER	SOIL OIL SLUDGE	OTHER:	ACID/BASE: ICE / COOL	OTHER:	DATE	TIME	BTEX	TPH	Chloride									Y .
-	T1- 14.5'	_		×		-	(7/18/18	5	×	×	×		\downarrow	\perp				+	+	
20	T1-15'			×		×		7/18/18	3:00 PM	×	×	×							6		
analyses. All claims including tervice. In no event shall Card affiliates or successors arising.	analyses. All claims including those for negligence and any other cause wintassever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including two unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its substitiaties, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.	y claim air eemed wa without lim irdinal, reg	sing whether ived unless itation, busing ardless of v	or based in contract made in writing an ness interruptions, whether such claim	or tort, sid received in the ceived loss of uside is based	hall be lir d by Card e, or loss upon an	nited to I final with s of profi y of the a	the amount paid thin 30 days after cate its incurred by clies above stated reason	y the client for the completion of the a ompletion of the a nt, its subsidiaries ons or otherwise.	applicable											L
Relinquished By:	Date: 7-25-18 Time: 5-55	Reco	Received By:	Maxi :	(h)	El.	The state of the s	Kli	Phone Result: Fax Result: REMARKS:		□ Yes	O No		Add'l Phone #: Add'l Fax #:	x#:			2		>	
Delivered By: (Circle One)	One) Time:		0	Sample Condition	9	오	ECKED (Initials	CHECKED BY:			s	M		2	NX	7		(,	4	
FORM-000 R 2.0	changes to 575-393-2476	100	1			-	4	2													

APPENDIX II



May 9, 2018

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

Ryan Mann District Resource Specialist Field Operation Division New Mexico State Land Office 2827 N. Dal Paso Suite 117 Hobbs, New Mexico 88240 rmann@slo.state.nm.us

Re: Soil Investigation Summary and Proposed Remediation Workplan Houma State # 001 Release (2RP-4417) GPS: N 32.8355064 W 103.978096 Unit Letter "F", Section 16, Township 17 South, Range 30 East, NMPM Eddy County, New Mexico

Dear Mr. Bratcher and Mr. Mann,

2M Environmental Services, LLC. (2M), on behalf of COG Operating, LLC. (Concho), has prepared this Soil Investigation Summary and Proposed Remediation Workplan (Workplan) for the Houma State # 001H Release Site (Release Site). The purpose of this Workplan is to propose remediation activities designed to advance the Houma State # 001 Release Site toward a New Mexico Oil and Conservation District (NMOCD) approved Site Closure Status. The legal description of the Release Site is Unit Letter "F", Section 16, Township 17 South, Range 30 East, in Eddy County, New Mexico. The subject property is administered by the New Mexico State Land Office (NMSLO). The GPS coordinates for the site are N 32.8355064 W 103.978096. A Site Location Map and Site Detail and Soil Sample Locations Map are provided as Figure 1 and Figure 2, respectively.

On September 27, 2017, a crude oil release occurred at the Houma State # 001. The release was the result of corrosion on the circulation line. On September 27, 2017, Concho reported the release to the NMOCD District 2 Office located in Artesia, New Mexico and the release was assigned the incident number 2RP-4417. A Release Notification and Corrective Action Form (Form C-141) was subsequently submitted to the NMOCD on September 29, 2017. The release was reported as approximately thirteen (13) barrels of crude oil released with approximately ten (10) barrels of crude oil recovered, resulting in a net loss of approximately three (3) barrels. A copy of the NMOCD Release Notification and Corrective Action Form C-141 is attached to this Workplan.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 16, Township 17 South, Range 30 East. A reference map utilized by the New Mexico Oil Conservation Division (NMOCD) Artesia District Office indicates groundwater should be encountered at approximately three hundred (300) 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 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 remediation levels are 10 mg/Kg for benzene, 50 mg/Kg for benzene, toluene, ethylbenzene and xylenes (BTEX) and 5,000 mg/Kg for total petroleum hydrocarbons (TPH). Chloride remediation levels for the Release Site will be 600 mg/Kg, per NMOCD request.

On October 16, 2017, Concho representatives utilized a hand auger and/or a backhoe to collect thirty-three (33) delineation soil samples (AH1- Surface through AH1-5', AH2-Surface through AH2-5', T1-1' through T1-6', T1-8', T1-10', T1-12', T1-14', T2-Surface through T2-6', T2-8', T2-10', T2-12', T2-14') from the stained surface soil. In addition to the soil samples described above, six (6) soil samples (North Surf, North 1', South Surf, South 1', East Surf, and East 1') were collected utilizing a hand auger and/or backhoe approximately five (5) feet from the outer perimeter of the stained surface soil. 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 E-300.1. The analytical results are provided as an attachment (Table 1 Concentrations of Benzene, BTEX, TPH, and Chloride in Soil).

Based on the analytical results of the soil samples collected on October 16, 2017, Concho proposes the following field activities designed to remediate the Houma State # 001 Release:

- Utilizing a backhoe, if applicable, surface staining will be address in the area represented by sample point AH1.
- The area represented by sample point AH2, will be excavated to a depth of approximately four (4) feet bgs. where possible. Due to safety concerns, excavation activities inside the earthen firewall of the battery will be conducted in a manner that protects the structural integrity of the production equipment.

- Background soil samples will be collected outside the impacted area to determine if chloride concentrations at depths greater than four (4) feet in the area represented by sample points T1 and T2 is naturally occurring or impacted.
- If background soil samples indicate chloride concentrations in the areas represented by sample points T1 and T2 is higher than naturally occurring levels additional vertical delineation will be needed in the area represented by T1. Additionally, the areas represented by sample points T1 and T2 will be excavated to a depth of approximately four (4) feet bgs. and a 20-mil polyurethane liner will be installed.
- If background soil samples indicate chloride concentrations in the areas represented by sample points T1 and T2 is naturally occurring the data will be presented to the NMOCD and NMSLO. Additionally, permission will be requested will be requested to excavate T1 and T2 to two and one-half (2.5) feet below ground surface.
- Excavated soil will be stockpiled on a plastic liner adjacent to the excavation pending sample results.
- Collect composite stockpile samples every 50 cubic yards of excavated soil. Soil samples will be submitted to the laboratory for determination of concentrations of BTEX, TPH, and chloride.
- On receipt of analytical results, Concho will backfill the excavation as follows:
 - o If laboratory analytical results indicate composite stockpile soil samples are below NMOCD limits for TPH, BTEX, and chloride concentrations, the stockpiled soil will be used to backfill the excavated area.
 - O If laboratory analytical results indicate composite stockpile soil samples are above NMOCD limits for TPH, BTEX, and/or chloride concentrations, the excavation will be backfilled with locally purchased non-impacted "like" soil or caliche. In addition, impacted soil will be transported under manifest to a NMOCD approved disposal facility.
- The backfilled areas, not located on the caliche pad, will be seeded during the summer monsoon season in Southeastern New Mexico to aid in revegetation. The USDA Soil Map describes the soil at the Release Site as the Kermit-Berino fine sand. Based on this description, the NMSLO Shallow (SH) Sites Seed Mixture will be used to revegetate the Release Site and will be planted in the amount specified in the pounds pure live seed (PLS) per acre. The seed mixture will be spread by a hand-held broadcaster and raked. Since a hand-held broadcaster is used for dispersal, the pounds pure live seed per acre will be doubled as described in the Southeast New Mexico Revegetation Handbook. Site inspections will be performed to assess the revegetation progress and evaluate the site for the presence of primary or secondary noxious weeds. If noxious weeds are identified, the NMSLO will be contacted to determine an effective method for eradication. If the site does not show revegetation after one growing season, the area will be reseeded as appropriate. The NMSLO seed mixture details and corresponding pounds pure live seed per acre are included in this Workplan.
- Prepare and submit a "Remediation Summary and Site Closure Request" to the NMOCD and NMSLO.

Concho 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 432-614-6793 (office) or 432-230-3763 (cell).

Thank you,

Matthew Sceen

Matthew Green, P.G.

President

2M Environmental Services, LLC.

Attachments:

Figure 1 - Site Location Map

Figure 2 - Site Detail and Soil Sample Locations Map

Table 1 - Concentrations of Benzene, BTEX, TPH and Chloride in Soil

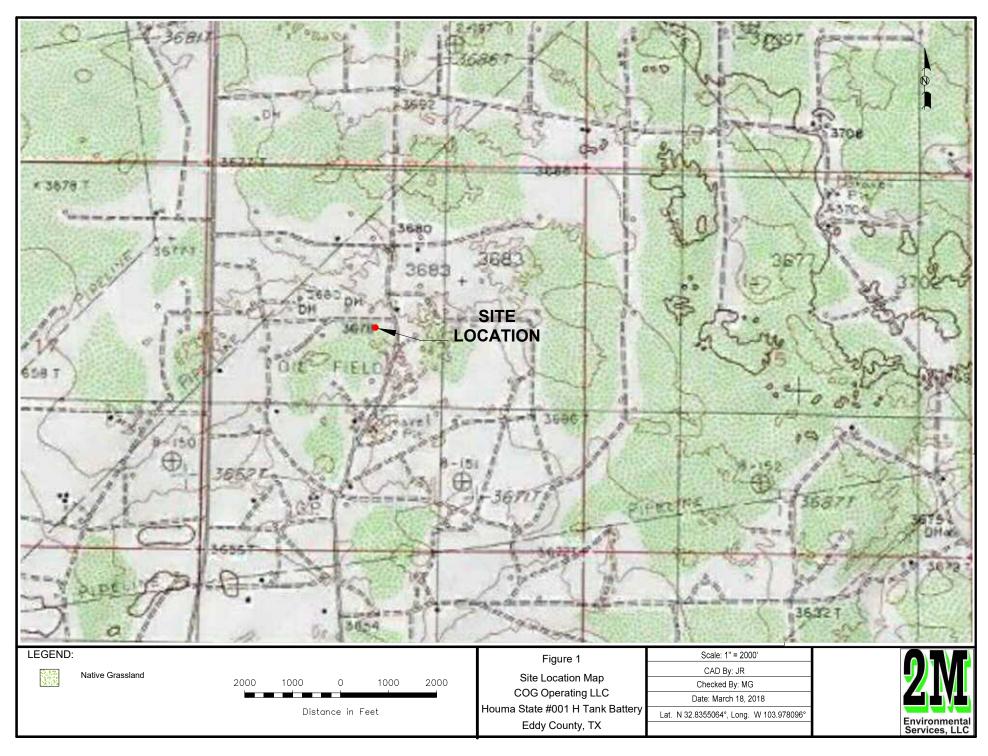
Laboratory Analytical Results

Release Notification and Corrective Action (Form C-141)

USDA Soil Description

NMSLO Seed Mixture

cc: File



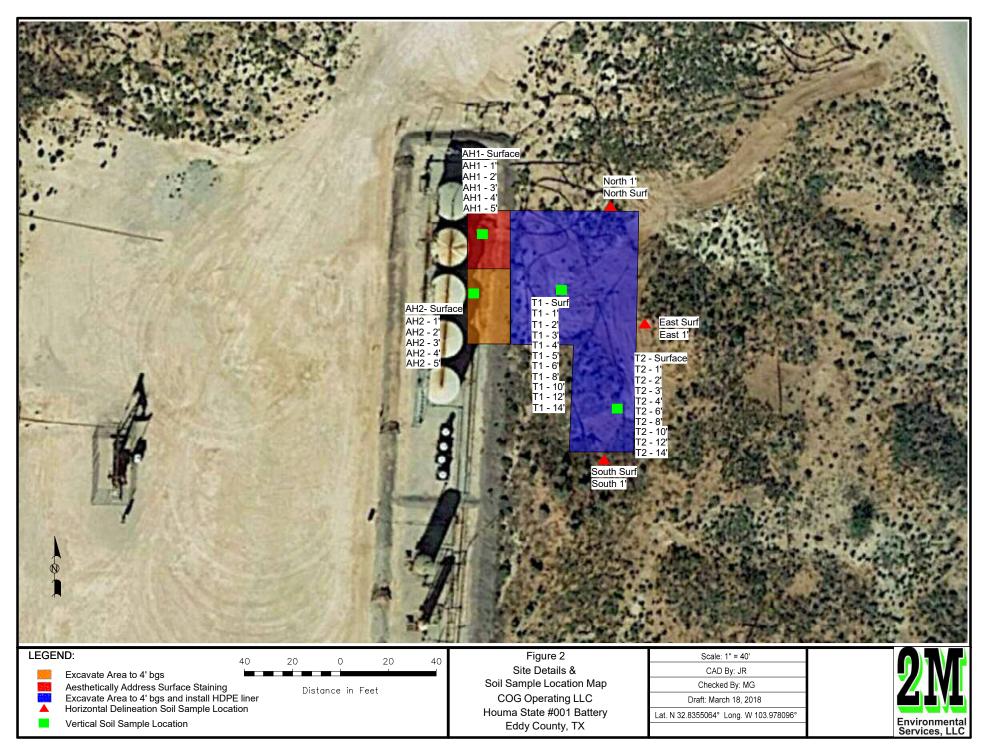


TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

COG OPERATING, LLC

Released to Imaging: 5/9/2023 10:17:05 AM

HOUMA STATE #001H RELEASE SITE EDDY COUNTY, NEW MEXICO

All concentrations are reported in mg/Kg

			1	METHODS:	SW 846-80211	В			M	ETHOD: SW 801	5M		E 300.1
SAMPLE LOCATION	SAMPLE DATE	BENZENE	TOLUENE	ETHYL- BENZENE	m, p - XYLENES	o - XYLENE	TOTAL XYLENES	TOTAL BTEX	TPH GRO C ₆ -C ₁₂	TPH DRO C ₁₂ -C ₂₈	TPH ORO C ₂₈ -C ₃₅	TOTAL TPH C ₆ -C ₃₅	CHLORIDI
Limits		10 mg/Kg						50 mg/Kg				5,000 mg/Kg	600
AH1 - Surface	10/16/2017	0.00965	0.00718	0.00293	0.00428	0.00436	0.00864	0.02840	45.2	592	72.0	709	<1.98
AH1 - 1'	10/16/2017	< 0.00998	0.0206	0.0608	0.157	0.0712	0.228	0.310	<24.9	35.0	<24.9	35.0	43.5
AH1 - 2'	10/16/2017	< 0.0100	< 0.0100	0.0203	0.0425	< 0.0100	0.0425	0.0628	29.5	238	28.1	296	6.43
AH1 - 3'	10/16/2017	< 0.00202	< 0.00202	< 0.00202	< 0.00404	< 0.00202	< 0.00404	< 0.00404	<25.0	<25.0	<25.0	<25.0	11.5
AH1 - 4'	10/16/2017	< 0.00201	< 0.00201	< 0.00201	< 0.00402	< 0.00201	< 0.00402	< 0.00402	<25.0	<25.0	<25.0	<25.0	64.5
AH1 - 5'	10/16/2017	< 0.00198	< 0.00198	< 0.00198	< 0.00396	< 0.00198	< 0.00396	< 0.00396	<25.0	<25.0	<25.0	<25.0	49.4
AH2 - Surface	10/16/2017	0.0352	0.397	0.359	0.355	0.150	0.505	1.2962	3,430	9,930	1,330	14,700	10.6
AH2 - 1'	10/16/2017	16.3	107	67.9	73.2	31.9	105	296.2	5,190	8,440	985	14,600	9.02
AH2 - 2'	10/16/2017	20.8	145	115	121	50.4	171	451.8	5,930	8,230	1,040	15,200	<4.94
AH2 - 3'	10/16/2017	29.6	157	116	118	48.5	167	469.6	4,590	6,760	700	12,100	11.3
AH2 - 4'	10/16/2017	0.0120	0.0766	0.0675	0.0834	0.0356	0.119	0.275	27.3	59.0	<25.0	86.3	< 5.00
AH2 - 5'	10/16/2017	< 0.00199	< 0.00199	0.00336	0.00651	0.00263	0.00914	0.0125	31.0	61.3	<24.9	92.3	9.44
T1 - Surf	10/16/2017	0.0247	2.63	3.69	4.48	2.13	6.61	13.0	1,050	10,900	382	12,300	<4.96
T1 - 1'	10/16/2017	< 0.0200	< 0.0200	0.0613	0.102	0.0302	0.132	0.194	94.7	596	36.2	726.9	7.27
T1 - 2'	10/16/2017	0.0215	0.365	0.377	0.438	0.191	0.629	1.39	2,420	5,820	343	8,580	7.95
T1 - 3'	10/16/2017	< 0.00994	< 0.00994	0.101	0.225	0.0978	0.323	0.424	42.0	215	<24.9	257	248
T1 - 4'	10/16/2017	< 0.00200	< 0.00200	< 0.00200	< 0.00399	< 0.00200	< 0.00399	< 0.00399	<24.9	<24.9	<24.9	<24.9	683
T1 - 5'	10/16/2017												877
T1 - 6'	10/16/2017												3,340
T1 - 8'	10/16/2017												4,190
T1 - 10'	10/16/2017												2,810
T1 - 12'	10/16/2017												733
T1 - 14'	10/16/2017	< 0.00201	< 0.00201	< 0.00201	< 0.00402	< 0.00201	< 0.00402	< 0.00402	<25.0	<25.0	<25.0	<25.0	902
T2 - Surface	10/16/2017	1.74	72.5	98.2	118	52.0	170	342.44	4130	10500	267	14,900	<4.95
T2 - 1'	10/16/2017	4.59	96.2	94.8	97.9	40.9	139	334.59	3360	6850	256	10,500	15.2
T2 - 2'	10/16/2017	6.45	101	95.7	97.9	40.9	139	342.15	2660	5310	220	8,190	<4.97
T2 - 3'	10/16/2017	< 0.00199	< 0.00199	< 0.00199	< 0.00398	< 0.00199	< 0.00398	< 0.00398	<24.9	<24.9	<24.9	<24.9	< 5.00
T2 - 4'	10/16/2017	< 0.00200	< 0.00200	< 0.00200	< 0.00401	< 0.00200	< 0.00401	< 0.00401	<25.0	<25.0	<25.0	<25.0	1,360
T2 - 6'	10/16/2017												1,740
T2 - 8'	10/16/2017												925
T2 - 10'	10/16/2017												555
T2 - 12'	10/16/2017												121

TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

COG OPERATING, LLC

HOUMA STATE #001H RELEASE SITE EDDY COUNTY, NEW MEXICO

All concentrations are reported in mg/Kg

							re reported in mg/K	0					
	CAMPLE			METHODS:	SW 846-80211	3			M	ETHOD: SW 801	5M		E 300.1
SAMPLE LOCATION	SAMPLE DATE	BENZENE	TOLUENE	ETHYL- BENZENE	m, p - XYLENES	o - XYLENE	TOTAL XYLENES	TOTAL BTEX	TPH GRO C ₆ -C ₁₂	TPH DRO C ₁₂ -C ₂₈	TPH ORO C ₂₈ -C ₃₅	TOTAL TPH C ₆ -C ₃₅	CHLORIDE
Limits		10 mg/Kg						50 mg/Kg				5,000 mg/Kg	600
T2 - 14'	10/16/2017	< 0.00200	< 0.00200	< 0.00200	< 0.00399	< 0.00200	< 0.00399	< 0.00399	<25.0	<25.0	<25.0	<25.0	197
North Surf	10/16/2017	0.00558	< 0.00364	< 0.00364	< 0.00727	< 0.00364	< 0.00727	0.00558	<25.0	<25.0	<25.0	<25.0	< 5.00
North 1'	10/16/2017	0.0233	0.0334	0.00385	< 0.00707	< 0.00353	< 0.00707	0.06055	<24.9	<24.9	<24.9	<24.9	<4.98
South Surf	10/16/2017	< 0.00345	< 0.00345	< 0.00345	< 0.00690	< 0.00345	< 0.00690	< 0.00345	<25.0	<25.0	<25.0	<25.0	<4.96
South 1'	10/16/2017	0.0110	0.0157	0.00446	0.00485	0.00262	0.0075	0.03863	<24.9	<24.9	<24.9	<24.9	<1.99
East Surf	10/16/2017	0.00880	< 0.00199	< 0.00199	< 0.00398	0.00221	0.00221	0.01101	<25.0	<25.0	<25.0	<25.0	<1.97
East 1'	10/16/2017	0.00352	0.00806	< 0.00199	< 0.00398	< 0.00199	< 0.00398	0.01158	<25.0	<25.0	<25.0	<25.0	<1.96

Analytical Report 566220

for COG Operating, LLC

Project Manager: Sheldon Hitchcock Houma State #1

31-OCT-17

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

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

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

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





31-OCT-17

Project Manager: Sheldon Hitchcock

COG Operating, LLC

600 W Illinois Midland, TX 79701

Reference: XENCO Report No(s): 566220

Houma State #1

Project Address: Houma State #1

Sheldon Hitchcock:

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) 566220. 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. 566220 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

Knus Roah

Project Manager

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Sample Cross Reference 566220



COG Operating, LLC, Midland, TX

Houma State #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH1 - Surface	S	10-16-17 12:30		566220-001
AH1 - 1'	S	10-16-17 12:30	1	566220-002
AH1 - 2'	S	10-16-17 12:30	2	566220-003
AH1 - 3'	S	10-16-17 12:30	3	566220-004
AH1 - 4'	S	10-16-17 12:30	4	566220-005
AH1 - 5'	S	10-16-17 12:30	5	566220-006
AH2 - Surface	S	10-16-17 12:45		566220-007
AH2 - 1'	S	10-16-17 12:45	1	566220-008
AH2 - 2'	S	10-16-17 12:45	2	566220-009
AH2 - 3'	S	10-16-17 12:45	3	566220-010
AH2 - 4'	S	10-16-17 12:45	4	566220-011
AH2 - 5'	S	10-16-17 12:45	5	566220-012

CASE NARRATIVE

Client Name: COG Operating, LLC Project Name: Houma State #1

Project ID: Report Date: 31-OCT-17
Work Order Number(s): 566220 Date Received: 10/19/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3031663 BTEX by EPA 8021B

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

Batch: LBA-3031744 BTEX by EPA 8021B

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

Batch: LBA-3031768 BTEX by EPA 8021B

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



Certificate of Analysis Summary 566220

COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id: Contact:

Sheldon Hitchcock

Project Location: Houma State #1

Date Received in Lab: Thu Oct-19-17 11:45 am

Report Date: 31-OCT-17 **Project Manager:** Kelsey Brooks

			001						20.4	7.5.220	00.5		20.5
	Lab Id:	566220-	001	566220-	002	566220-0	003	566220-0	004	566220-	005	566220-0	006
Analysis Requested	Field Id:	AH1 - Su	rface	AH1 -	1'	AH1 - 2	2'	AH1 -	3'	AH1 -	4'	AH1 -	5'
Anatysis Requested	Depth:			1-		2-		3-		4-		5-	
	Matrix:	SOII		SOIL	,	SOIL		SOIL	,	SOIL	,	SOIL	,
	Sampled:	Oct-16-17	12:30	Oct-16-17	12:30	Oct-16-17	12:30	Oct-16-17	12:30	Oct-16-17	12:30	Oct-16-17	12:30
BTEX by EPA 8021B	Extracted:	Oct-27-17	10:00	Oct-26-17	16:00	Oct-26-17 1	16:00	Oct-26-17	16:00	Oct-26-17	16:00	Oct-27-17	10:00
	Analyzed:	Oct-27-17	15:44	Oct-27-17	10:04	Oct-27-17 (9:26	Oct-27-17	08:10	Oct-27-17	08:29	Oct-27-17	15:25
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0.00965	0.00202	< 0.00998	0.00998	< 0.0100	0.0100	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00198	0.00198
Toluene		0.00718	0.00202	0.0206	0.00998	< 0.0100	0.0100	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00198	0.00198
Ethylbenzene		0.00293	0.00202	0.0608	0.00998	0.0203	0.0100	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00198	0.00198
m,p-Xylenes		0.00428	0.00403	0.157	0.0200	0.0425	0.0201	< 0.00404	0.00404	< 0.00402	0.00402	< 0.00396	0.00396
o-Xylene		0.00436	0.00202	0.0712	0.00998	< 0.0100	0.0100	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00198	0.00198
Total Xylenes		0.00864	0.00202	0.228	0.00998	0.0425	0.0100	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00198	0.00198
Total BTEX		0.0284	0.00202	0.310	0.00998	0.0628	0.0100	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00198	0.00198
Chloride by EPA 300	Extracted:	Oct-25-17	15:20	Oct-25-17	15:20	Oct-25-17 1	15:20	Oct-25-17	15:20	Oct-25-17	15:20	Oct-25-17	15:20
	Analyzed:	Oct-26-17	10:32	Oct-26-17	10:39	Oct-26-17 1	10:59	Oct-26-17	11:06	Oct-26-17	11:13	Oct-26-17	11:20
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<1.98	1.98	43.5	1.98	6.43	1.99	11.5	1.96	64.5	2.00	49.4	4.95
TPH by Texas1005	Extracted:	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17 1	14:00	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17	14:00
	Analyzed:	Oct-26-17	23:33	Oct-26-17	23:55	Oct-27-17 (00:15	Oct-27-17	00:35	Oct-27-17	01:38	Oct-27-17	01:58
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Range Hydrocarbons		45.2	24.9	<24.9	24.9	29.5	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0
C12-C28 Range Hydrocarbons		592	24.9	35.0	24.9	238	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0
C28-C35 Range Hydrocarbons		72.0	24.9	<24.9	24.9	28.1	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0
Total TPH		709	24.9	35.0	24.9	296	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0

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

Knis Roah



Certificate of Analysis Summary 566220

COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id: Contact:

Sheldon Hitchcock

Project Location: Houma State #1

Date Received in Lab: Thu Oct-19-17 11:45 am

Report Date: 31-OCT-17

Project Manager: Kelsey Brooks

	Lab Id:	566220-	.007	566220-0	08	566220-0	09	566220-0	10	566220-	011	566220-0	012
	Field Id:	AH2 - Su		AH2 - 1		AH2 - 2		AH2 - 3	-	AH2 -		AH2 -	
Analysis Requested		A112 - 5u	irracc						,		-		5
	Depth:			1-		2-		3-		4-		5-	
	Matrix:	SOII	_	SOIL		SOIL		SOIL		SOIL	,	SOIL	
	Sampled:	Oct-16-17	12:45	Oct-16-17 1	2:45	Oct-16-17 1	2:45	Oct-16-17 1	12:45	Oct-16-17	12:45	Oct-16-17	12:45
BTEX by EPA 8021B	Extracted:	Oct-26-17	16:00	Oct-27-17 1	5:00	Oct-27-17 1	0:00	Oct-27-17 1	0:00	Oct-26-17	16:00	Oct-26-17	16:00
	Analyzed:	Oct-27-17	03:34	Oct-27-17 2	2:37	Oct-27-17 1	8:22	Oct-27-17 1	8:03	Oct-27-17	10:23	Oct-27-17	09:45
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0.0352	0.00202	16.3	1.99	20.8	2.01	29.6	2.01	0.0120	0.00201	< 0.00199	0.00199
Toluene		0.397	0.00202	107	1.99	145	2.01	157	2.01	0.0766	0.00201	< 0.00199	0.00199
Ethylbenzene		0.359	0.00202	67.9	1.99	115	2.01	116	2.01	0.0675	0.00201	0.00336	0.00199
m,p-Xylenes		0.355	0.00403	73.2	3.98	121	4.02	118	4.02	0.0834	0.00402	0.00651	0.00398
o-Xylene		0.150	0.00202	31.9	1.99	50.4	2.01	48.5	2.01	0.0356	0.00201	0.00263	0.00199
Total Xylenes		0.505	0.00202	105	1.99	171	2.01	167	2.01	0.119	0.00201	0.00914	0.00199
Total BTEX		1.30	0.00202	296	1.99	452	2.01	469	2.01	0.275	0.00201	0.0125	0.00199
Chloride by EPA 300	Extracted:	Oct-25-17	15:20	Oct-25-17 1	5:20	Oct-25-17 1	5:20	Oct-25-17 1	5:20	Oct-25-17	15:20	Oct-25-17	15:20
	Analyzed:	Oct-26-17	11:26	Oct-26-17 1	1:33	Oct-26-17 1	1:54	Oct-26-17 1	2:00	Oct-26-17	12:21	Oct-26-17	12:28
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride	·	10.6	4.96	9.02	4.94	<4.94	4.94	11.3	5.00	< 5.00	5.00	9.44	4.95
TPH by Texas1005	Extracted:	Oct-26-17	14:00	Oct-26-17 1	4:00	Oct-26-17 1	4:00	Oct-26-17 1	4:00	Oct-26-17	14:00	Oct-26-17	14:00
	Analyzed:	Oct-27-17	02:18	Oct-27-17 0	2:40	Oct-27-17 0	3:00	Oct-27-17 (3:21	Oct-27-17	04:23	Oct-27-17	04:43
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Range Hydrocarbons		3430	125	5190	125	5930	125	4590	125	27.3	25.0	31.0	24.9
C12-C28 Range Hydrocarbons		9930	125	8440	125	8230	125	6760	125	59.0	25.0	61.3	24.9
C28-C35 Range Hydrocarbons		1330	125	985	125	1040	125	700	125	<25.0	25.0	<24.9	24.9
Total TPH		14700	125	14600	125	15200	125	12100	125	86.3	25.0	92.3	24.9

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

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Kelsey Brooks Project Manager



Flagging Criteria



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

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

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

DL Method Detection Limit

NC Non-Calculable

- + 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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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	

Final 1.000



Project Name: Houma State #1

Work Orders: 566220,

Sample: 566220-001 / SMP

Project ID:

Lab Batch #: 3031679 Date Analyzed: 10/26/17 23:33 T T-- 24 -- ma/lea

Matrix: Soil Batch: 1

Units:	mg/kg	Date Analyzed: 10/26/17 23:33	SU	RROGATE RI	ECOVERY S	STUDY	
	ТРН	I by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl		•	54.4	49.9	109	70-130	
1-Chlorooctane			112	99.7	112	70-130	

Lab Batch #: 3031679 Sample: 566220-002 / SMP Batch: 1 Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/26/17 23:55 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 48.1 49.9 96 70-130 1-Chlorooctane 99.7 102 102 70-130

Lab Batch #: 3031679 Sample: 566220-003 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 00:15 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	46.5	50.0	93	70-130	
1-Chlorooctane	97.8	99.9	98	70-130	

Lab Batch #: 3031679 Sample: 566220-004 / SMP Batch: 1 Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 00:35	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[2]				
o-Terpheny	yl		49.5	49.9	99	70-130			
1-Chlorooc	ctane		100	99.8	100	70-130			

Lab Batch #: 3031679 Sample: 566220-005 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 01:38	SURROGATE RECOVERY STUDY						
	TPl	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl			47.6	50.0	95	70-130			
1-Chloroocta	nne		96.9	99.9	97	70-130			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566220,

Sample: 566220-006 / SMP

Project ID:

Lab Batch #: 3031679 Units: mg/kg Date Analyzed: 10/27/17 01:58

Matrix: Soil Batch:

Units:	mg/kg	Date Analyzed: 10/27/17 01:58	SURROGATE RECOVERY STUDY					
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
o-Terphenyl			49.7	49.9	100	70-130		
1-Chlorooctane			107	99.8	107	70-130		

Lab Batch #: 3031679 Sample: 566220-007 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 02:18 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 59.4 49.9 119 70-130 1-Chlorooctane 111 99.8 111 70-130

Lab Batch #: 3031679 Sample: 566220-008 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 02:40 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	54.9	50.0	110	70-130	
1-Chlorooctane	113	100	113	70-130	

Lab Batch #: 3031679 Sample: 566220-009 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 03:00	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	/1	•	58.2	49.8	117	70-130			
1-Chlorooc	etane		110	99.6	110	70-130			

Lab Batch #: 3031679 Sample: 566220-010 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 03:21	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		11M1, VOS	55.7	49.8	112	70-130			
1-Chloroocta	nne		108	99.6	108	70-130			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566220,

Sample: 566220-007 / SMP

Project ID:

Lab Batch #: 3031663 T T-- 24 -- ma/lea

Date Analyzed: 10/27/17 03:34

Matrix: Soil Batch:

Units:	mg/kg	Date Analyzed: 10/27/17 03:34	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
		Analytes			[D]				
1,4-Difluor	obenzene		0.0269	0.0300	90	80-120			
4-Bromofluorobenzene			0.0298	0.0300	99	80-120			

Lab Batch #: 3031679 Sample: 566220-011 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 04:23 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 47.3 50.0 95 70-130 1-Chlorooctane 97.0 99.9 97 70-130

Lab Batch #: 3031679 Sample: 566220-012 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 04:43 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	48.0	49.9	96	70-130	
1-Chlorooctane	99.3	99.7	100	70-130	

Lab Batch #: 3031663 Sample: 566220-004 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 08:10	SURROGATE RECOVERY STUDY						
	вте	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	robenzene		0.0270	0.0300	90	80-120			
4-Bromoflu	uorobenzene		0.0299	0.0300	100	80-120			

Lab Batch #: 3031663 Sample: 566220-005 / SMP Batch: Matrix: Soil

Units: mg/	/kg	Date Analyzed: 10/27/17 08:29	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluorobenzene		marytes	0.0267	0.0300	89	80-120			
4-Bromofluorobenzene			0.0301	0.0300	100	80-120			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566220,

Project ID:

Lab Batch #: 3031663 **Sample:** 566220-003 / SMP Batch:

Matrix: Soil 1

Units: mg/kg Date Analyzed: 10/27/17 09:26	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1,4-Difluorobenzene	0.0270	0.0300	90	80-120		
4-Bromofluorobenzene	0.0298	0.0300	99	80-120		

Lab Batch #: 3031663 Sample: 566220-012 / SMP Batch: 1 Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 09:45 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0268 0.0300 89 80-120 4-Bromofluorobenzene 0.0277 0.0300 92 80-120

Lab Batch #: 3031663 Sample: 566220-002 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 10:04 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0323	0.0300	108	80-120	

Lab Batch #: 3031663 Sample: 566220-011 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 10:23	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	obenzene	v	0.0246	0.0300	82	80-120			
4-Bromofluorobenzene			0.0328	0.0300	109	80-120			

Lab Batch #: 3031744 Sample: 566220-006 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 15:25	SURROGATE RECOVERY STUDY						
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	obenzene		0.0259	0.0300	86	80-120			
4-Bromoflu	4-Bromofluorobenzene			0.0300	90	80-120			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566220,

Sample: 566220-001 / SMP

Project ID:

Lab Batch #: 3031744 Units: mø/kø

Date Analyzed: 10/27/17 15:44

Matrix: Soil Batch:

Units:	ng/kg	Date Analyzed: 10/27/17 15:44	SURROGATE RECOVERY STUDY					
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluorobenz	ene		0.0268	0.0300	89	80-120		
4-Bromofluorobenzene			0.0293	0.0300	98	80-120		

Lab Batch #: 3031744 Sample: 566220-010 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 18:03 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0260 0.0300 87 80-120 4-Bromofluorobenzene 0.0306 0.0300 102 80-120

Lab Batch #: 3031744 Sample: 566220-009 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 18:22 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0256	0.0300	85	80-120	
4-Bromofluorobenzene	0.0325	0.0300	108	80-120	

Lab Batch #: 3031768 Sample: 566220-008 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 22:37	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	robenzene	•	0.0274	0.0300	91	80-120			
4-Bromofluorobenzene			0.0261	0.0300	87	80-120			

Lab Batch #: 3031679 Sample: 7633287-1-BLK / BLK Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 22:32	SURROGATE RECOVERY STUDY					
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
o-Terphenyl	 [53.6	50.0	107	70-130		
1-Chlorooct	ane		111	100	111	70-130		

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566220, **Lab Batch #:** 3031663

Sample: 7633348-1-BLK / BLK

Project ID:

Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 01:41	SURROGATE RECOVERY STUDY					
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluoro	benzene		0.0272	0.0300	91	80-120		
4-Bromofluorobenzene			0.0264	0.0300	88	80-120		

Lab Batch #: 3031744 **Sample:** 7633415-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/27/17	3:32 SU	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
Analytes			[D]						
1,4-Difluorobenzene	0.0271	0.0300	90	80-120					
4-Bromofluorobenzene	0.0246	0.0300	82	80-120					

Sample: 7633435-1-BLK / BLK **Lab Batch #:** 3031768 Batch: 1 Matrix: Solid

Date Analyzed: 10/27/17 19:59 **Units:** mg/kg SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0337	0.0300	112	80-120	
4-Bromofluorobenzene	0.0352	0.0300	117	80-120	

Lab Batch #: 3031679 **Sample:** 7633287-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 22:52	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	1	Analytes	53.6	50.0	107	70-130			
1-Chlorooc			107	100	107	70-130			

Batch: **Lab Batch #:** 3031663 **Sample:** 7633348-1-BKS / BKS Matrix: Solid

Units: mg/kg	Date Analyzed: 10/26/17 23:47	SURROGATE RECOVERY STUDY						
F	STEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorobenzene	· · · · · · · · · · · · · · · · · · ·	0.0283	0.0300	94	80-120			
4-Bromofluorobenzene		0.0334	0.0300	111	80-120			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Batch:

Project Name: Houma State #1

Work Orders: 566220, **Lab Batch #:** 3031744

Sample: 7633415-1-BKS / BKS

Project ID:

Units: mg/kg Matrix: Solid

Units:	ng/kg	Date Analyzed: 10/27/17 11:38	SURROGATE RECOVERY STUDY					
		by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
	F	Analytes			[D]			
1,4-Difluorobenzene			0.0296	0.0300	99	80-120		
4-Bromofluorobenzene			0.0331	0.0300	110	80-120		

Lab Batch #: 3031768 **Sample:** 7633435-1-BKS / BKS Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 18:25	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕХ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0301	0.0300	100	80-120	
4-Bromofluorobenzene			0.0357	0.0300	119	80-120	

Sample: 7633287-1-BSD / BSD **Lab Batch #:** 3031679 Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/26/17 23:13 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	52.7	50.0	105	70-130	
1-Chlorooctane	114	100	114	70-130	

Sample: 7633348-1-BSD / BSD **Lab Batch #:** 3031663 Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 00:06	SURROGATE RECOVERY STUDY								
	вте	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluor	robenzene		0.0284	0.0300	95	80-120					
4-Bromoflu	uorobenzene		0.0322	0.0300	107	80-120					

Lab Batch #: 3031744 **Sample:** 7633415-1-BSD / BSD Batch: Matrix: Solid

Units: m	g/kg	Date Analyzed: 10/27/17 11:57	SURROGATE RECOVERY STUDY							
		by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluorobenze		ranaiy ws	0.0277	0.0300	92	80-120				
4-Bromofluorober	nzene		0.0305	0.0300	102	80-120				

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Batch:

Project Name: Houma State #1

Work Orders: 566220, **Lab Batch #:** 3031768

Sample: 7633435-1-BSD / BSD

Project ID:

Units: mø/kø **Date Analyzed:** 10/27/17 18:43 Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 18:43	SURROGATE RECOVERY STUDY							
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1,4-Difluorol	benzene		0.0296	0.0300	99	80-120				
4-Bromofluorobenzene			0.0341	0.0300	114	80-120				

Lab Batch #: 3031663 **Sample:** 566216-016 S / MS Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 00:25 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0281 0.0300 94 80-120 4-Bromofluorobenzene 0.0309 0.0300 103 80-120

Lab Batch #: 3031679 Sample: 566220-005 S / MS Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 00:56

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	50.5	49.9	101	70-130	
1-Chlorooctane	99.8	99.7	100	70-130	

Lab Batch #: 3031744 **Sample:** 566341-001 S / MS Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 12:16	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluor	robenzene	Analytes	0.0277	0.0300	92	80-120					
4-Bromoflu	uorobenzene		0.0313	0.0300	104	80-120					

Lab Batch #: 3031768 **Sample:** 566146-004 S / MS Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 19:01	SURROGATE RECOVERY STUDY							
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluorol	benzene	Analytes	0.0340	0.0300	113	80-120				
4-Bromofluo	1,4-Difluorobenzene 4-Bromofluorobenzene			0.0300	120	80-120				

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566220,

Sample: 566216-016 SD / MSD

Project ID:

Lab Batch #: 3031663 Matrix: Soil Batch: Units: mø/kø Date Analyzed: 10/27/17 00:44 SUPPOCATE RECOVERY STUDY

BTEX by EPA 8021B Analytes Amount Found Amount [A] [B] Recovery Limits %R [D]				STUDY	
BTEX by EPA 8021B	Found	Amount		Limits	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0282	0.0300	94	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

Lab Batch #: 3031679 **Sample:** 566220-005 SD / MSD Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 01:17 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 44.5 50.0 89 70-130 1-Chlorooctane 88.7 99.9 70-130 89

Lab Batch #: 3031744 Sample: 566341-001 SD / MSD Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 12:35 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0251	0.0300	84	80-120	

Lab Batch #: 3031768 **Sample:** 566146-004 SD / MSD Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 19:20	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluoro	benzene	Time y ees	0.0315	0.0300	105	80-120					
4-Bromofluo	orobenzene		0.0355	0.0300	118	80-120					

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



BS / BSD Recoveries



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Project Name: Houma State #1

Work Order #: 566220 **Project ID:**

Date Prepared: 10/26/2017 **Date Analyzed:** 10/26/2017 **Analyst:** ALJ

Lab Batch ID: 3031663 **Sample:** 7633348-1-BKS **Batch #:** 1 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00202	0.101	0.0901	89	0.101	0.0884	88	2	70-130	35	
Toluene	< 0.00202	0.101	0.0949	94	0.101	0.0937	93	1	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.108	107	0.101	0.104	103	4	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.211	104	0.201	0.205	102	3	70-135	35	
o-Xylene	< 0.00202	0.101	0.108	107	0.101	0.104	103	4	71-133	35	

Date Prepared: 10/27/2017 **Date Analyzed:** 10/27/2017 **Analyst:** ALJ

Lab Batch ID: 3031744 **Batch #:** 1 Matrix: Solid **Sample:** 7633415-1-BKS

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.103	102	0.100	0.0897	90	14	70-130	35	
Toluene	< 0.00202	0.101	0.107	106	0.100	0.0932	93	14	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.119	118	0.100	0.104	104	13	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.221	109	0.201	0.201	100	9	70-135	35	
o-Xylene	< 0.00202	0.101	0.113	112	0.100	0.102	102	10	71-133	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



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Project Name: Houma State #1

Work Order #: 566220 Project ID:

Analyst: ALJ **Date Prepared:** 10/27/2017 **Date Analyzed:** 10/27/2017

Units:	mg/kg	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY
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BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00202	0.101	0.0809	80	0.100	0.0812	81	0	70-130	35	
Toluene	< 0.00202	0.101	0.0881	87	0.100	0.0911	91	3	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0941	93	0.100	0.0971	97	3	71-129	35	
m,p-Xylenes	< 0.00403	0.202	0.183	91	0.200	0.190	95	4	70-135	35	
o-Xylene	< 0.00202	0.101	0.0911	90	0.100	0.0942	94	3	71-133	35	

Analyst: MNV Date Prepared: 10/25/2017 Date Analyzed: 10/26/2017

Lab Batch ID: 3031640 **Sample:** 7633224-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	< 5.00	250	242	97	250	242	97	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



mg/kg

Units:

BS / BSD Recoveries

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY



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Project Name: Houma State #1

Work Order #: 566220 **Project ID:**

Date Prepared: 10/26/2017 **Date Analyzed:** 10/26/2017 Analyst: ARM

Lab Batch ID: 3031679 **Sample:** 7633287-1-BKS **Batch #:** 1 Matrix: Solid

TPH by Texas1005	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
C6-C12 Range Hydrocarbons	<25.0	1000	1070	107	1000	973	97	9	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	1000	1080	108	1000	1020	102	6	75-125	25	



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Project Name: Houma State #1

Work Order #:

566220 3031663

QC- Sample ID: 566216-016 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/27/2017

Date Prepared: 10/26/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00200	0.0998	0.119	119	0.0996	0.107	107	11	70-130	35	
Toluene	< 0.00200	0.0998	0.110	110	0.0996	0.0972	98	12	70-130	35	
Ethylbenzene	< 0.00200	0.0998	0.105	105	0.0996	0.0886	89	17	71-129	35	
m,p-Xylenes	< 0.00399	0.200	0.212	106	0.199	0.188	94	12	70-135	35	
o-Xylene	< 0.00200	0.0998	0.104	104	0.0996	0.0930	93	11	71-133	35	

3031744 Lab Batch ID:

QC- Sample ID: 566341-001 S

Batch #:

Matrix: Soil

Date Analyzed:

10/27/2017

Date Prepared: 10/27/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

	BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
E	Benzene	0.00630	0.101	0.0589	52	0.100	0.0644	58	9	70-130	35	X
Т	Coluene	0.0546	0.101	0.0688	14	0.100	0.0685	14	0	70-130	35	X
E	Ethylbenzene	0.0235	0.101	0.0584	35	0.100	0.0668	43	13	71-129	35	X
n	n,p-Xylenes	0.124	0.202	0.132	4	0.200	0.141	9	7	70-135	35	X
0	-Xylene	0.0410	0.101	0.0641	23	0.100	0.0714	30	11	71-133	35	X

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





Page 39 of 103

Project Name: Houma State #1

Work Order #: 566220

3031768

QC- Sample ID: 566146-004 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/27/2017

Date Prepared: 10/27/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[0]	[D]	[E]	Kesuit [F]	[G]	70	/0K	70KI D	
Benzene	< 0.00202	0.101	0.0656	65	0.101	0.0651	64	1	70-130	35	X
Toluene	< 0.00202	0.101	0.0749	74	0.101	0.0712	70	5	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0752	74	0.101	0.0759	75	1	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.147	73	0.201	0.149	74	1	70-135	35	
o-Xylene	< 0.00202	0.101	0.0734	73	0.101	0.0751	74	2	71-133	35	

Lab Batch ID:

3031640

QC- Sample ID: 566219-004 S

Batch #:

Matrix: Soil

Date Analyzed:

10/26/2017

Date Prepared: 10/25/2017

Analyst: MNV

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
J. Control of the con		. ,		. ,							
Chloride	<1.99	99.6	101	101	99.6	101	101	0	90-110	20	

Lab Batch ID:

3031640

QC- Sample ID: 566220-008 S

Batch #:

Matrix: Soil

Date Analyzed:

10/26/2017

Date Prepared: 10/25/2017

Analyst: MNV

Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride	9.02	247	258	101	247	261	102	1	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Page 21 of 25

Final 1.000





Page 40 of 103

Project Name: Houma State #1

Work Order #: 566220

566220 3031679

QC- Sample ID: 566220-005 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/27/2017

Date Prepared: 10/26/2017

Analyst: ARM

Reporting Units: mg/kg

2017

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]		Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Range Hydrocarbons	<24.9	997	1020	102	999	893	89	13	75-125	25	
C12-C28 Range Hydrocarbons	<24.9	997	1050	105	999	940	94	11	75-125	25	

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

Stafford, Texas (281-240-4200) Setting the Standard since 1990

Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

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

Phoenix, Arizona (480-355-0900)

Keceived By: Custody Seal # Preserved where applicable On Ice Cooler Temp. Thermo. Corr. Factor	Relinquished by:	Relinquished by:	Delinquiched by Complex	TAT Starts Day received by Lab, if received by 5:00 pm	3 Day EMERGENCY	2 Day EMERGENCY	Next Day EMERGENCY	Same Day TAT	Turnaround Time (Business days)	10	Φ	8	7	,5 - 14141	5 414 - 4:	4 14 11 - 3:	3/4H/ - 2'	2/4/4-7 - /'	1 /+ H-1 - Supt	No. Field ID / Point of Collection		Samplers's Name- Aaron Lieb	Project Contact: Aaron Lieb	slhitchcock@concho.com	Email:	2407 PECOS Avenue Artesia NM 88210	Company Address:	Company Name / Branch: COG Operating LLC	Client / Reporting Information		
ishment of samples constitute	7 0	D.	SAMPLE CUSTODY MI	if received by 5:00 r		Contract TAT	Д 7 рау тат	5 Day TAT																ances & Control Control Haskell & College College	Phone No: 575-748-1553						
Date Time: utes a valid purchase ces beyond the contr	ate lime:	Date Time:	UST BE DOCUME	om										M	2	W	2	-	0 1911911	Sample Depth Date	Collection		PO Number:			Houma	Project	Project			
Received By: 5 order from client company to Xenco	Received By:	Received By:	NTED BELOW EACH TIME SAMPI		TRRP Checklist	Level 3 (CLP Forms)	Level III Std QC+ Forms	Level II Std QC	Data Deli					1 1	~				17 12:30 5 /	Time	otion		Midland TX 79701	600 W. Illinois	- 1	Houma State #1	Project Location:	Project Name/Number: Houma State #1	Project Information		V. AA AA AA
Custody Seal #	Relinquished By:	10-19-17 Relinquished By:	SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER			s) UST/RG-411	orms TRRP Level IV	Level IV (Full Data Pkg /raw data)	Data Deliverable Information											HCI NaOH/Zn Acetate HNO3 H2SO4 NaOH NaHSO4 MEOH	Number of preserved bottles										www.xeiico.com
Preserved wh	Date Time:		OURIER DELIVERY					Pkg /raw data)	-					_	× .	×××	× ;	× × ×	× × ×	TPH/E.BTEX		END	ED							Ana	
Preserved where applicable On Ice	ne: Received By:	ate Time: 1145 Received By:	H Kimanin		Corrected Temp: X		CF:(0-6: -0.2°C)	Tomp: 2 2	Notes:																(20)					Analytical Information	
Ce Cooler Temp. Ther	4	ru d			ig: ,	(C)		8-B.U. BI												Field Co	A=	WW	M.	SL	SW	DW	S =	W =		(018999
Thermo. Corr. Factor not assume any responsibility for	1		1																	Field Comments	A = Air	O = Oil WW= Waste Water	WI = Wipe	SL = Sludge	SW = Surface water	DW = Drinking Water	S = Soil/Sed/Solid	W = Water	anix occase	Matrix Codes	

Released to Imaging: 5/9/2023 10:17:05 AM

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

San Antonio, Texas (210-509-3334)

Phoenix, Arizona (480-355-0900)

Midland, Texas (432-704-5251)

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be involced at \$5 per sample. These alieb@concho.com slhitchcock@concho.com
Project Contact: Aaron Lieb o Samplers's Name- Aaron Lieb Company Address: COG Operating LLC company Name / Branch: Relinquished by: Relinquished by: Relinquished by Sampler TAT Starts Day received by Lab, if received by 5:00 pm 3 Day EMERGENCY 2 Day EMERGENCY **Next Day EMERGENCY** Same Day TAT 2407 PECOS Avenue Client / Reporting Information Turnaround Time (Business days) -Field ID / Point of Collection Artesia NM 88210 dneel2@concho.com rhaskell@concho.com 7 Day TAT Contract TAT SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY 5 Day TAT Phone No: 575-748-1553 Date Time: Date Time: Date Time: Sample 2 Depth 2 Ø Invoice To: COG Operating LLC Project Location: 10/16/17 PO Number Houma State #1 Houma State #1 Project Name/Number: 10/00 Received By: Received By: Received By: 2:45 Attn: Robert Mcneill 600 W. Illinois Midland TX 79701 Time TRRP Checklist Level 3 (CLP Forms) Level III Std QC+ Forms Project Information Level II Std QC 7) Data Deliverable Information www.xenco.com bottles HCI 10-19-17 165 NaOH/Zn HNO3 Relinquished By: Custody Seal # UST / RG -411 TRRP Level IV Level IV (Full Data Pkg /raw data) H2SO4 NaOH NaHSO4 меон Xenco Quote # TPH/ EXTENDED Preserved where applicable BTEX Date Time: Date Time: 10-15-17 Chloride Analytical Information FED-// 45 Received By: Notes: Corrected Temp: 3 CF:(0-6: -0.2°C) Temp: ろみ Received By: Xenco Job # (6-23: +0.2°C) On Ice 130 Cooler Temp. 0 IR ID:R-8 -ield Comments 0 = 01 WI = Wipe OW =Ocean/Sea Water SL = Sludge SW = Surface water P = Product DW = Drinking Water GW =Ground Water S = Soil/Sed/Solid W = Water Thermo. Corr. Factor WW= Waste Water Matrix Codes

Released to Imaging: 5/9/2023 10:17:05 AM



XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating, LLC

Date/ Time Received: 10/19/2017 11:45:00 AM

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

Work Order #: 566220

Temperature Measuring device used: R8

Sample Receipt Chec	cklist	Comments
#1 *Temperature of cooler(s)?	13.2	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	N/A	
#5 Custody Seals intact on sample bottles?	N/A	
#6*Custody Seals Signed and dated?	N/A	
#7 *Chain of Custody present?	Yes	
#8 Any missing/extra samples?	No	
#9 Chain of Custody signed when relinquished/ received?	Yes	
#10 Chain of Custody agrees with sample labels/matrix?	Yes	
#11 Container label(s) legible and intact?	Yes	
#12 Samples in proper container/ bottle?	Yes	
#13 Samples properly preserved?	Yes	
#14 Sample container(s) intact?	Yes	
#15 Sufficient sample amount for indicated test(s)?	Yes	
#16 All samples received within hold time?	Yes	
#17 Subcontract of sample(s)?	No	
#18 Water VOC samples have zero headspace?	N/A	

* Must be d	completed for after-hours de	livery of samples prior to plac	ing in the refrigerator
Analyst:		PH Device/Lot#:	
	Checklist completed by:	Connie Hernandez	Date: 10/23/2017
	Checklist reviewed by:	Huns Hoah Kelsey Brooks	Date: <u>10/23/2017</u>

Analytical Report 566216

for COG Operating, LLC

Project Manager: Sheldon Hitchcock Houma State #1

30-OCT-17

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

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

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

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





30-OCT-17

Project Manager: Sheldon Hitchcock

COG Operating, LLC

600 W Illinois Midland, TX 79701

Reference: XENCO Report No(s): 566216

Houma State #1

Project Address: Houma State #1

Sheldon Hitchcock:

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) 566216. 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. 566216 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

Knus Roah

Project Manager

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Sample Cross Reference 566216

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COG Operating, LLC, Midland, TX

Houma State #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1 - Surf	S	10-16-17 13:00	0	566216-001
T1 - 1'	S	10-16-17 13:00	1	566216-002
T1 - 2'	S	10-16-17 13:00	2	566216-003
T1 - 3'	S	10-16-17 13:00	3	566216-004
T1 - 4'	S	10-16-17 13:00	4	566216-005
T1 - 5'	S	10-16-17 13:30	5	566216-006
T1 - 6'	S	10-16-17 13:30	6	566216-007
T1 - 8'	S	10-16-17 13:30	8	566216-008
T1 - 10'	S	10-16-17 13:30	10	566216-009
T1 - 12'	S	10-16-17 13:30	12	566216-010
T1 - 14'	S	10-16-17 13:30	14	566216-011
T2 - Surface	S	10-16-17 14:00	0	566216-012
T2 - 1'	S	10-16-17 14:00	1	566216-013
T2 - 2'	S	10-16-17 14:00	2	566216-014
T2 - 3'	S	10-16-17 14:00	3	566216-015
T2 - 4'	S	10-16-17 14:00	4	566216-016
T2 - 6'	S	10-16-17 14:00	6	566216-017
T2 - 8'	S	10-16-17 14:00	8	566216-018
T2 - 10'	S	10-16-17 14:00	10	566216-019
T2 - 12'	S	10-16-17 14:00	12	566216-020
T2 - 14'	S	10-16-17 14:05	14	566216-021

CASE NARRATIVE

Client Name: COG Operating, LLC Project Name: Houma State #1

Project ID: Report Date: 30-OCT-17
Work Order Number(s): 566216 Date Received: 10/19/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3031544 Chloride by EPA 300

Lab Sample ID 566216-015 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: 566216-005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021.

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

Batch: LBA-3031655 BTEX by EPA 8021B

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

Batch: LBA-3031663 BTEX by EPA 8021B

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

Batch: LBA-3031744 BTEX by EPA 8021B

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

Batch: LBA-3031768 BTEX by EPA 8021B

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



COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Houma State #1

Date Received in Lab: Thu Oct-19-17 11:45 am

Report Date: 30-OCT-17

Project Manager: Kelsey Brooks

	Lab Id:	566216-	001	566216-0	002	566216-	003	566216-	004	566216-	005	566216-0	006
Analusia Danusatad	Field Id:	T1 - Su	ırf	T1 - 1		T1 - 2	2'	T1 - 3	i'	T1 - 4	.'	T1 - 5	•
Analysis Requested	Depth:	0-		1-		2-		3-		4-		5-	
	Matrix:	SOIL		SOIL		SOIL		SOIL	,	SOIL	,	SOIL	,
	Sampled:	Oct-16-17	13:00	Oct-16-17 13:00		Oct-16-17	13:00	Oct-16-17	13:00	Oct-16-17	13:00	Oct-16-17	13:30
BTEX by EPA 8021B	Extracted:	Oct-27-17	15:00	Oct-27-17	10:00	Oct-26-17	11:00	Oct-26-17	16:00	Oct-26-17	11:00		
	Analyzed:	Oct-27-17	23:04	Oct-27-17	16:22	Oct-26-17	23:11	Oct-27-17	10:42	Oct-26-17	20:21		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		0.0247	0.0200	< 0.0200	0.0200	0.0215	0.00198	< 0.00994	0.00994	< 0.00200	0.00200		
Toluene		2.63	0.0200	< 0.0200	0.0200	0.365	0.00198	< 0.00994	0.00994	< 0.00200	0.00200		
Ethylbenzene		3.69	0.0200	0.0613	0.0200	0.377	0.00198	0.101	0.00994	< 0.00200	0.00200		
p-Xylenes		4.48	0.0400	0.102	0.0401	0.438	0.00397	0.225	0.0199	< 0.00399	0.00399		
o-Xylene		2.13	0.0200	0.0302	0.0200	0.191	0.00198	0.0978	0.00994	< 0.00200	0.00200		
Total Xylenes		6.61	0.0200	0.132	0.0200	0.629	0.00198	0.323	0.00994	< 0.00200	0.00200		
Total BTEX		13.0	0.0200	0.194	0.0200	1.39	0.00198	0.424	0.00994	< 0.00200	0.00200		
Chloride by EPA 300	Extracted:	Oct-25-17	Oct-25-17 11:00		11:00	Oct-25-17	11:00	Oct-25-17	11:00	Oct-25-17	13:00	Oct-25-17	13:00
	Analyzed:	Oct-26-17	01:32	Oct-26-17 01:39		Oct-26-17 01:46		Oct-26-17	01:53	Oct-26-17	02:33	Oct-26-17	02:54
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<4.96	4.96	7.27	4.97	7.95	5.00	248	4.92	683	4.93	877	4.97
TPH by Texas1005	Extracted:	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17	14:00		
	Analyzed:	Oct-26-17	23:27	Oct-26-17	23:47	Oct-27-17	00:07	Oct-27-17	00:27	Oct-27-17	01:27		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
C6-C12 Range Hydrocarbons		1050	125	94.7	25.0	2420	125	42.0	24.9	<24.9	24.9		
C12-C28 Range Hydrocarbons		10900	125	596	25.0	5820	125	215	24.9	<24.9	24.9		
C28-C35 Range Hydrocarbons		382	125	36.2	25.0	343	125	<24.9	24.9	<24.9	24.9		
Total TPH		12300	125	727	25.0	8580	125	257	24.9	<24.9	24.9		

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



COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id: Contact:

Project Location:

Sheldon Hitchcock

Houma State #1

Date Received in Lab: Thu Oct-19-17 11:45 am

Report Date: 30-OCT-17

Project Manager: Kelsey Brooks

	Lab Id:	566216-0	007	566216-0	008	566216-0	09	566216-0	10	566216-	011	566216-0)12
Analusia Paguastad	Field Id:	T1 - 6		T1 - 8'	,	T1 - 10	,	T1 - 12	.	T1 - 1	4'	T2 - Surfa	ace
Analysis Requested	Depth:	6-		8-		10-		12-		14-		0-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-16-17	13:30	Oct-16-17	13:30	Oct-16-17 1	3:30	Oct-16-17	3:30	Oct-16-17	13:30	Oct-16-17	14:00
BTEX by EPA 8021B	Extracted:									Oct-26-17	11:00	Oct-26-17 11:00	
	Analyzed:									Oct-26-17	20:40	Oct-26-17 2	22:52
	Units/RL:									mg/kg	RL	mg/kg	RL
Benzene										< 0.00201	0.00201	1.74	0.495
Toluene										< 0.00201	0.00201	72.5	0.495
Ethylbenzene										< 0.00201	0.00201	98.2	0.495
n,p-Xylenes										< 0.00402	0.00402	118	0.990
o-Xylene										< 0.00201	0.00201	52.0	0.495
Total Xylenes										< 0.00201	0.00201	170	0.495
Total BTEX										< 0.00201	0.00201	342	0.495
Chloride by EPA 300	Extracted:	Oct-25-17	13:00	Oct-25-17 13:00		Oct-25-17 1	3:00	Oct-25-17 1	3:00	Oct-25-17 13:00		Oct-25-17 1	13:00
	Analyzed:	Oct-26-17 (03:00	Oct-26-17 (03:07	Oct-26-17 0	3:14	Oct-26-17 03:34		Oct-26-17	03:41	Oct-26-17 (03:48
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3340	24.8	4190	24.8	2810	25.0	733	4.98	902	4.96	<4.95	4.95
TPH by Texas1005	Extracted:									Oct-26-17	14:00	Oct-26-17 1	14:00
	Analyzed:									Oct-27-17	01:47	Oct-27-17 (02:07
	Units/RL:									mg/kg	RL	mg/kg	RL
C6-C12 Range Hydrocarbons										<25.0	25.0	4130	125
C12-C28 Range Hydrocarbons				<u> </u>						<25.0	25.0	10500	125
C28-C35 Range Hydrocarbons				· · · · · · · · · · · · · · · · · · ·						<25.0	25.0	267	125
Total TPH										<25.0	25.0	14900	125

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

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COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id: Contact:

Sheldon Hitchcock

Project Location: Houma State #1

Date Received in Lab: Thu Oct-19-17 11:45 am

Report Date: 30-OCT-17

Project Manager: Kelsey Brooks

	Lab Id:	566216-0	013	566216-0	014	566216-0)15	566216-	016	566216-0	017	566216-0	18
	Field Id:	T2 - 1	,	T2 - 2'	,	T2 - 3	,	T2 - 4	.'	T2 - 6'		T2 - 8'	
Analysis Requested	Depth:	1-		2-		3-		4-		6-		8-	
	Matrix:	SOIL	,	SOIL		SOIL		SOIL	,	SOIL		SOIL	
	Sampled:	Oct-16-17	14:00	Oct-16-17	14:00	Oct-16-17	14:00	Oct-16-17	14:00	Oct-16-17 1	14:00	Oct-16-17 1	4:00
BTEX by EPA 8021B	Extracted:	Oct-26-17	11:00	Oct-26-17 1	11:00	Oct-26-17	11:00	Oct-26-17	16:00				
•	Analyzed:	Oct-26-17	18:28	Oct-26-17	18:46	Oct-26-17 2	20:59	Oct-27-17	02:00				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene	'	4.59	0.498	6.45	0.505	< 0.00199	0.00199	< 0.00200	0.00200				
Toluene		96.2	0.498	101	0.505	< 0.00199	0.00199	< 0.00200	0.00200				
Ethylbenzene		94.8	0.498	95.7	0.505	< 0.00199	0.00199	< 0.00200	0.00200				
m,p-Xylenes		97.9	0.996	97.9	1.01	< 0.00398	0.00398	< 0.00401	0.00401				
o-Xylene		40.9	0.498	40.9	0.505	< 0.00199	0.00199	< 0.00200	0.00200				
Total Xylenes		139	0.498	139	0.505	< 0.00199	0.00199	< 0.00200	0.00200				
Total BTEX		334	0.498	342	0.505	< 0.00199	0.00199	< 0.00200	0.00200				
Chloride by EPA 300	Extracted:	Oct-25-17 13:00		Oct-25-17 13:00		Oct-25-17	13:00	Oct-25-17	13:00	Oct-25-17 1	3:00	Oct-25-17 1	3:00
	Analyzed:	Oct-26-17	03:55	Oct-26-17 (04:01	Oct-26-17 (04:08	Oct-26-17 04:29		Oct-26-17 0	04:35	Oct-26-17 0	4:56
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		15.2	4.96	<4.97	4.97	< 5.00	5.00	1360	25.0	1740	24.6	925	4.96
TPH by Texas1005	Extracted:	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17	14:00	Oct-26-17	14:00				
	Analyzed:	Oct-27-17	02:27	Oct-27-17 ()2:46	Oct-27-17 (03:06	Oct-27-17	03:25				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C12 Range Hydrocarbons		3360	125	2660	125	<24.9	24.9	<25.0	25.0				
C12-C28 Range Hydrocarbons		6850	125	5310	125	<24.9	24.9	<25.0	25.0				
C28-C35 Range Hydrocarbons		256	125	220	125	<24.9	24.9	<25.0	25.0				
Total TPH		10500	125	8190	125	<24.9	24.9	<25.0	25.0	<u> </u>			

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COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id: Contact:

Project Location:

Sheldon Hitchcock

Houma State #1

Date Received in Lab: Thu Oct-19-17 11:45 am

Report Date: 30-OCT-17 **Project Manager:** Kelsey Brooks

	Lab Id:	566216-0)19	566216-0	20	566216-0	21		
Analysis Requested	Field Id:	T2 - 10)'	T2 - 12'	'	T2 - 14'	'		
Anaiysis Kequesieu	Depth:	10-		12-		14-			
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Oct-16-17	14:00	Oct-16-17 1	4:00	Oct-16-17 1	4:05		
BTEX by EPA 8021B	Extracted:					Oct-26-17 1	6:00		
	Analyzed:					Oct-27-17 0	7:51		
	Units/RL:					mg/kg	RL		
Benzene	·					< 0.00200	0.00200		
Toluene						< 0.00200	0.00200		
Ethylbenzene						< 0.00200	0.00200		
m,p-Xylenes						< 0.00399	0.00399		
o-Xylene						< 0.00200	0.00200		
Total Xylenes						< 0.00200	0.00200		
Total BTEX						< 0.00200	0.00200		
Chloride by EPA 300	Extracted:	Oct-25-17	13:00	Oct-25-17 13:00		Oct-25-17 13:00			
	Analyzed:	Oct-26-17 (05:02	Oct-26-17 0	5:09	Oct-26-17 0	5:16		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		555	4.95	121	4.93	197	4.98		
TPH by Texas1005	Extracted:					Oct-26-17 1	4:00		
	Analyzed:					Oct-27-17 0	3:45		
	Units/RL:					mg/kg	RL		
C6-C12 Range Hydrocarbons	·					<25.0	25.0		
C12-C28 Range Hydrocarbons						<25.0	25.0		
C28-C35 Range Hydrocarbons						<25.0	25.0		
Total TPH						<25.0	25.0		

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Flagging Criteria



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

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

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

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102 Tempe A7 85282	(602) 437 0330	



Project Name: Houma State #1

Work Orders: 566216,

Sample: 566216-013 / SMP

Project ID:

Lab Batch #: 3031655 Units: mø/kø

Date Analyzed: 10/26/17 18:28

Matrix: Soil Batch:

Units:	mg/kg	Date Analyzed: 10/26/17 18:28	SURROGATE RECOVERY STUDY							
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1,4-Difluoroben	zene		0.0244	0.0300	81	80-120				
4-Bromofluorob	enzene		0.0352	0.0300	117	80-120				

Lab Batch #: 3031655 Sample: 566216-014 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/26/17 18:46 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0256 0.0300 85 80-120 4-Bromofluorobenzene 0.0346 0.0300 115 80-120

Lab Batch #: 3031655 Sample: 566216-005 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/26/17 20:21 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0274	0.0300	91	80-120	
4-Bromofluorobenzene	0.0288	0.0300	96	80-120	

Lab Batch #: 3031655 Sample: 566216-011 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 20:40	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluor	robenzene		0.0272	0.0300	91	80-120					
4-Bromoflu	uorobenzene		0.0278	0.0300	93	80-120					

Sample: 566216-015 / SMP Lab Batch #: 3031655 Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 20:59	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluorober	nzene	may us	0.0280	0.0300	93	80-120					
4-Bromofluoro	benzene		0.0294	0.0300	98	80-120					

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Sample: 566216-012 / SMP

Project ID:

Lab Batch #: 3031655 I Inita Data Analyzad: 10/26/17 22:52 ... _ /1_ _

Matrix: Soil Batch:

Units: mg/kg Date Analyzed: 10/26/17 22:52	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	. ,		[D]		
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0331	0.0300	110	80-120	

Lab Batch #: 3031655 Sample: 566216-003 / SMP Batch: 1 Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 23:11	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluor	obenzene		0.0242	0.0300	81	80-120					
4-Bromoflu	orobenzene		0.0271	0.0300	90	80-120					

Lab Batch #: 3031676 Sample: 566216-001 / SMP Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 10/26/17 23:27 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	61.5	49.9	123	70-130	
1-Chlorooctane	113	99.8	113	70-130	

Lab Batch #: 3031676 **Sample:** 566216-002 / SMP Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 23:47	SURROGATE RECOVERY STUDY					
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
o-Terpheny	<i>i</i> 1	•	57.7	50.0	115	70-130		
1-Chlorooc	etane		98.8	100	99	70-130		

Batch: **Lab Batch #:** 3031676 Sample: 566216-003 / SMP Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 00:07	SURROGATE RECOVERY STUDY					
	TPl	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
o-Terphenyl		11M1, ves	39.3	49.9	79	70-130		
1-Chloroocta	ane		113	99.7	113	70-130		

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Sample: 566216-004 / SMP

Project ID:

Lab Batch #: 3031676 Units: mø/kø **Date Analyzed:** 10/27/17 00:27

Matrix: Soil Batch:

Units:	mg/kg	Date Analyzed: 10/27/17 00:27	SURROGATE RECOVERY STUDY					
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
- T1		Analytes	46.4	40.0		70.120		
o-Terphenyl			46.4	49.8	93	70-130		
1-Chloroocta	ne		82.0	99.6	82	70-130		

Lab Batch #: 3031676 Sample: 566216-005 / SMP Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 01:27 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 47.2 49.9 95 70-130 1-Chlorooctane 84.5 99.7 85 70-130

Lab Batch #: 3031676 Sample: 566216-011 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 01:47 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	51.2	50.0	102	70-130	
1-Chlorooctane	92.7	99.9	93	70-130	

Lab Batch #: 3031663 **Sample:** 566216-016 / SMP Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 02:00	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	robenzene	- Indig to 5	0.0285	0.0300	95	80-120			
4-Bromoflu	uorobenzene		0.0302	0.0300	101	80-120			

Lab Batch #: 3031676 Sample: 566216-012 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 02:07	SURROGATE RECOVERY STUDY					
	TPl	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
o-Terphenyl		Analytes	63.7	50.0	127	70-130		
1-Chloroocta	ane		128	99.9	128	70-130		

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Sample: 566216-013 / SMP

Project ID:

Lab Batch #: 3031676 I Inite. mø/kø Date Analyzed: 10/27/17 02:27

Matrix: Soil Batch: 1

Units:	mg/kg	Date Analyzed: 10/27/17 02:27	SURROGATE RECOVERY STUDY					
	TPl	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
T. 1 1		Analytes	40.0			50.100		
o-Terphenyl			42.9	50.0	86	70-130		
1-Chloroocta	nne		124	100	124	70-130		

Lab Batch #: 3031676 Sample: 566216-014 / SMP Batch: 1 Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 02:46 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 44.0 49.8 88 70-130 1-Chlorooctane 107 99.6 107 70-130

Lab Batch #: 3031676 Sample: 566216-015 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 03:06 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	51.8	49.8	104	70-130	
1-Chlorooctane	93.0	99.6	93	70-130	

Lab Batch #: 3031676 **Sample:** 566216-016 / SMP Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 03:25	SURROGATE RECOVERY STUDY					
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
o-Terpheny	<i>i</i> 1	•	52.1	50.0	104	70-130		
1-Chlorooc	etane		94.2	99.9	94	70-130		

Lab Batch #: 3031676 **Sample:** 566216-021 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 03:45	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
o-Terpheny	<i>i</i> 1		51.2	49.9	103	70-130			
1-Chlorooc	tane		92.4	99.8	93	70-130			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Project ID:

Lab Batch #: 3031663 Matrix: Soil **Sample:** 566216-021 / SMP Batch: 1 I Inite Date Analyzed: 10/27/17 07:51 ma/lea

Units: mg/kg Date Analyzed: 10/27/17 07:51	SU	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Analytes							
1,4-Difluorobenzene	0.0267	0.0300	89	80-120			
4-Bromofluorobenzene	0.0301	0.0300	100	80-120			

Lab Batch #: 3031663 Sample: 566216-004 / SMP Batch: 1 Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 10:42 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0263 0.0300 88 80-120 4-Bromofluorobenzene 0.0349 0.0300 116 80-120

Lab Batch #: 3031744 Sample: 566216-002 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 16:22 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0273	0.0300	91	80-120	
4-Bromofluorobenzene	0.0353	0.0300	118	80-120	

Lab Batch #: 3031768 Sample: 566216-001 / SMP Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 23:04	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			رما				
1,4-Difluor	robenzene		0.0277	0.0300	92	80-120			
4-Bromoflu	uorobenzene		0.0290	0.0300	97	80-120			

Lab Batch #: 3031655 **Sample:** 7633345-1-BLK / BLK Batch: Matrix: Solid

Units: m	g/kg	Date Analyzed: 10/26/17 15:27	SURROGATE RECOVERY STUDY						
		by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorobenze			0.0288	0.0300	96	80-120			
4-Bromofluorober	4-Bromofluorobenzene			0.0300	88	80-120			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216, **Lab Batch #:** 3031676

Sample: 7633285-1-BLK / BLK

Project ID:

Matrix: Solid Batch:

Units: mg/kg

Date Analyzed: 10/26/17 19:49

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	58.3	50.0	117	70-130	
1-Chlorooctane	105	100	105	70-130	

Lab Batch #: 3031663 Sample: 7633348-1-BLK / BLK Batch: Matrix: Solid

Units: mg/kg Date Analyzed: 10/27/17 01:41 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0272 0.0300 91 80-120 4-Bromofluorobenzene 0.0264 0.0300 88 80-120

Lab Batch #: 3031744 Matrix: Solid Sample: 7633415-1-BLK / BLK Batch:

Units: mg/kg Date Analyzed: 10/27/17 13:32 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0271	0.0300	90	80-120	
4-Bromofluorobenzene	0.0246	0.0300	82	80-120	

Lab Batch #: 3031768 Sample: 7633435-1-BLK / BLK Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 19:59	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	robenzene		0.0337	0.0300	112	80-120			
4-Bromoflu	4-Bromofluorobenzene			0.0300	117	80-120			

Lab Batch #: 3031655 **Sample:** 7633345-1-BKS / BKS Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 13:17	SURROGATE RECOVERY STUDY					
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluore	1,4-Difluorobenzene		0.0279	0.0300	93	80-120		
4-Bromoflu	4-Bromofluorobenzene			0.0300	104	80-120		

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Project ID:

Lab Batch #: 3031676 **Sample:** 7633285-1-BKS / BKS Matrix: Solid Batch: 1 ma/lea

Units:	mg/kg	Date Analyzed: 10/26/17 20:09	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl	<u> </u>	Analytes	60.7	50.0	121	70-130			
1-Chlorooct	1-Chlorooctane			100	112	70-130			

Lab Batch #: 3031663 **Sample:** 7633348-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg Date Analyzed: 10/26/17 2	3:47 SU	SURROGATE RECOVERY STUDY						
	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	Analytes			[D]					
1,4-Difluorol	benzene	0.0283	0.0300	94	80-120				
4-Bromofluo	robenzene	0.0334	0.0300	111	80-120				

Sample: 7633415-1-BKS / BKS **Lab Batch #:** 3031744 Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/27/17 11:38 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0296	0.0300	99	80-120	
4-Bromofluorobenzene	0.0331	0.0300	110	80-120	

Lab Batch #: 3031768 **Sample:** 7633435-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 18:25	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1.4.70:0	1	Analytes							
1,4-Difluor	robenzene		0.0301	0.0300	100	80-120			
4-Bromofluorobenzene			0.0357	0.0300	119	80-120			

Lab Batch #: 3031655 **Sample:** 7633345-1-BSD / BSD Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 13:36	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobenzene			0.0288	0.0300	96	80-120	
4-Bromofluorobenzene			0.0294	0.0300	98	80-120	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216, **Lab Batch #:** 3031676

Sample: 7633285-1-BSD / BSD

Project ID:

I Inite **Date Analyzed:** 10/26/17 20:29 ma/lea

Matrix: Solid Batch: 1

Units: mg/kg D	ate Analyzed: 10/26/17 20:29	SURROGATE RECOVERY STUDY					
TPH by T	Cexas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Anal	ytes			[D]			
o-Terphenyl		63.5	50.0	127	70-130		
1-Chlorooctane		110	100	110	70-130		

Lab Batch #: 3031663 **Sample:** 7633348-1-BSD / BSD Batch: 1 Matrix: Solid

Units:	its: mg/kg Date Analyzed: 10/27/17 00:06 SURROGATE RECOVERY STUDY							
	BTEX by	EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	An	alytes			[D]			
1,4-Difluorob	enzene		0.0284	0.0300	95	80-120		
4-Bromofluor	obenzene		0.0322	0.0300	107	80-120		

Sample: 7633415-1-BSD / BSD **Lab Batch #:** 3031744 Batch: 1 Matrix: Solid

Date Analyzed: 10/27/17 11:57 **Units:** mg/kg SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0305	0.0300	102	80-120	

Sample: 7633435-1-BSD / BSD **Lab Batch #:** 3031768 Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/27/17 18:43	SURROGATE RECOVERY STUDY						
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	robenzene	Analytes	0.0296	0.0300	99	80-120			
4-Bromoflu	uorobenzene		0.0341	0.0300	114	80-120			

Batch: **Lab Batch #:** 3031655 **Sample:** 566321-002 S / MS Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 13:55	7 13:55 SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorobe	enzene	Timury ees	0.0283	0.0300	94	80-120			
4-Bromofluoro	obenzene		0.0318	0.0300	106	80-120			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Sample: 566219-001 S / MS

Project ID:

Lab Batch #: 3031676 I Inite. mø/kø Date Analyzed: 10/26/17 21:08

Matrix: Soil Batch: 1

Units:	mg/kg	Date Analyzed: 10/26/17 21:08	SURROGATE RECOVERY STUDY						
	TPH	I by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[2]				
o-Terphenyl			57.9	50.0	116	70-130			
1-Chlorooctane			108	99.9	108	70-130			

Lab Batch #: 3031663 **Sample:** 566216-016 S / MS Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 00:25 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Recovery Limits Amount Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0281 0.0300 94 80-120 4-Bromofluorobenzene 0.0309 0.0300 103 80-120

Lab Batch #: 3031744 Sample: 566341-001 S / MS Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/27/17 12:16 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

Lab Batch #: 3031768 **Sample:** 566146-004 S / MS Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 19:01	SURROGATE RECOVERY STUDY						
	вте	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	robenzene		0.0340	0.0300	113	80-120			
4-Bromoflu	uorobenzene		0.0359	0.0300	120	80-120			

Lab Batch #: 3031655 Sample: 566321-002 SD / MSD Batch: Matrix: Soil

Units: mg/	mg/kg Date Analyzed: 10/26/17 14:13 SURROGATE RECOVERY STUDY						
		oy EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene		marytes	0.0337	0.0300	112	80-120	
4-Bromofluorobenze	ene		0.0355	0.0300	118	80-120	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566216,

Sample: 566219-001 SD / MSD

Project ID:

Lab Batch #: 3031676 I Inits: mø/kø **Date Analyzed:** 10/26/17 21:28 Batch: 1 Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 21:28	SURROGATE RECOVERY STUDY				
	TP	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes			[D]		
o-Terphenyl			59.0	49.9	118	70-130	
1-Chloroocta	nne		111	99.8	111	70-130	

Lab Batch #: 3031663 **Sample:** 566216-016 SD / MSD Batch: 1 Matrix: Soil

Units:	Units: mg/kg Date Analyzed: 10/27/17 00:44 SURROGATE RECOVERY STUDY							
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluor	obenzene		0.0282	0.0300	94	80-120		
4-Bromoflu	orobenzene		0.0313	0.0300	104	80-120		

Lab Batch #: 3031744 **Sample:** 566341-001 SD / MSD Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 10/27/17 12:35 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0251	0.0300	84	80-120	

Lab Batch #: 3031768 **Sample:** 566146-004 SD / MSD Batch: 1 Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/27/17 19:20	SURROGATE RECOVERY STUDY					
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1.4-Difluorobenz	7000	Analytes	0.0215	0.0200		90.120		
4-Bromofluorobe			0.0315 0.0355	0.0300	105	80-120 80-120		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



BS / BSD Recoveries



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Project Name: Houma State #1

Work Order #: 566216 **Project ID:**

Date Prepared: 10/26/2017 **Date Analyzed:** 10/26/2017 **Analyst:** ALJ

Lab Batch ID: 3031655 **Sample:** 7633345-1-BKS **Batch #:** 1 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.0958	96	0.0998	0.0867	87	10	70-130	35	
Toluene	< 0.00200	0.100	0.101	101	0.0998	0.0908	91	11	70-130	35	
Ethylbenzene	< 0.00200	0.100	0.110	110	0.0998	0.0997	100	10	71-129	35	
m,p-Xylenes	< 0.00401	0.200	0.216	108	0.200	0.196	98	10	70-135	35	
o-Xylene	< 0.00200	0.100	0.108	108	0.0998	0.0977	98	10	71-133	35	

ALJ **Date Prepared:** 10/26/2017 **Date Analyzed:** 10/26/2017 **Analyst:**

Lab Batch ID: 3031663 **Batch #:** 1 Matrix: Solid **Sample:** 7633348-1-BKS

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.0901	89	0.101	0.0884	88	2	70-130	35	
Toluene	< 0.00202	0.101	0.0949	94	0.101	0.0937	93	1	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.108	107	0.101	0.104	103	4	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.211	104	0.201	0.205	102	3	70-135	35	
o-Xylene	< 0.00202	0.101	0.108	107	0.101	0.104	103	4	71-133	35	



BS / BSD Recoveries



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Project Name: Houma State #1

Work Order #: 566216

Project ID:

Analyst: ALJ

Date Prepared: 10/27/2017

Date Analyzed: 10/27/2017

Lab Batch ID: 3031744

Sample: 7633415-1-BKS **Batch #:** 1

Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.103	102	0.100	0.0897	90	14	70-130	35	
Toluene	< 0.00202	0.101	0.107	106	0.100	0.0932	93	14	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.119	118	0.100	0.104	104	13	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.221	109	0.201	0.201	100	9	70-135	35	
o-Xylene	< 0.00202	0.101	0.113	112	0.100	0.102	102	10	71-133	35	

Analyst: ALJ Date Prepared: 10/27/2017 Date Analyzed: 10/27/2017

Units: mg/kg BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[D]	[C]	[D]	[E]	Kesuit [F]	լցյ				
Benzene	< 0.00202	0.101	0.0809	80	0.100	0.0812	81	0	70-130	35	
Toluene	< 0.00202	0.101	0.0881	87	0.100	0.0911	91	3	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0941	93	0.100	0.0971	97	3	71-129	35	
m,p-Xylenes	< 0.00403	0.202	0.183	91	0.200	0.190	95	4	70-135	35	
o-Xylene	< 0.00202	0.101	0.0911	90	0.100	0.0942	94	3	71-133	35	



BS / BSD Recoveries



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Project Name: Houma State #1

Project ID: Work Order #: 566216

Date Prepared: 10/25/2017 **Analyst:** MNV **Date Analyzed:** 10/25/2017

Lab Batch ID: 3031539 **Sample:** 7633172-1-BKS **Batch #:** 1 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	< 5.00	250	248	99	250	246	98	1	90-110	20	

MNV **Date Prepared:** 10/25/2017 **Date Analyzed:** 10/26/2017 **Analyst:**

Lab Batch ID: 3031544 **Batch #:** 1 Matrix: Solid **Sample:** 7633220-1-BKS

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	< 5.00	250	248	99	250	253	101	2	90-110	20	

Analyst: **ARM Date Prepared:** 10/26/2017 **Date Analyzed:** 10/26/2017

Lab Batch ID: 3031676 Sample: 7633285-1-BKS **Batch #:** 1 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Range Hydrocarbons	<25.0	1000	965	97	1000	981	98	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	1000	1000	100	1000	1010	101	1	75-125	25	



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Project Name: Houma State #1

Work Order #:

566216 3031655

QC- Sample ID: 566321-002 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: **Date Analyzed:**

10/26/2017

Date Prepared: 10/26/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[0]	[D]	[E]	Result [F]	[G]	70	/013	/UKI D	
Benzene	0.00211	0.100	0.111	109	0.101	0.113	110	2	70-130	35	
Toluene	0.00542	0.100	0.0991	94	0.101	0.0928	87	7	70-130	35	
Ethylbenzene	< 0.00201	0.100	0.0881	88	0.101	0.0768	76	14	71-129	35	
m,p-Xylenes	< 0.00402	0.201	0.176	88	0.202	0.152	75	15	70-135	35	
o-Xylene	< 0.00201	0.100	0.0847	85	0.101	0.0753	75	12	71-133	35	

Lab Batch ID:

3031663

QC- Sample ID: 566216-016 S

Batch #:

Matrix: Soil

Date Analyzed:

10/27/2017

Date Prepared: 10/26/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.00200	0.0998	0.119	119	0.0996	0.107	107	11	70-130	35	
Toluene	< 0.00200	0.0998	0.110	110	0.0996	0.0972	98	12	70-130	35	
Ethylbenzene	< 0.00200	0.0998	0.105	105	0.0996	0.0886	89	17	71-129	35	
m,p-Xylenes	< 0.00399	0.200	0.212	106	0.199	0.188	94	12	70-135	35	
o-Xylene	< 0.00200	0.0998	0.104	104	0.0996	0.0930	93	11	71-133	35	

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





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Project Name: Houma State #1

Work Order #: 566216 **Project ID:**

Lab Batch ID:

3031744

QC- Sample ID: 566341-001 S

Batch #:

Matrix: Soil

Date Analyzed:

10/27/2017

Date Prepared: 10/27/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[0]	[D]	[E]	Tresure [2]	[G]	,,	, , ,	, , , , ,	
Benzene	0.00630	0.101	0.0589	52	0.100	0.0644	58	9	70-130	35	X
Toluene	0.0546	0.101	0.0688	14	0.100	0.0685	14	0	70-130	35	X
Ethylbenzene	0.0235	0.101	0.0584	35	0.100	0.0668	43	13	71-129	35	X
m,p-Xylenes	0.124	0.202	0.132	4	0.200	0.141	9	7	70-135	35	X
o-Xylene	0.0410	0.101	0.0641	23	0.100	0.0714	30	11	71-133	35	X

Lab Batch ID:

3031768

QC- Sample ID: 566146-004 S

Batch #:

Matrix: Soil

Date Analyzed:

10/27/2017

Date Prepared: 10/27/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.00202	0.101	0.0656	65	0.101	0.0651	64	1	70-130	35	X
Toluene	< 0.00202	0.101	0.0749	74	0.101	0.0712	70	5	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0752	74	0.101	0.0759	75	1	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.147	73	0.201	0.149	74	1	70-135	35	
o-Xylene	< 0.00202	0.101	0.0734	73	0.101	0.0751	74	2	71-133	35	

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





Page 68 of 103

Project Name: Houma State #1

Work Order #:

566216 3031539

QC- Sample ID: 566212-008 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/26/2017

Date Prepared: 10/25/2017

Analyst: MNV

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride	47.3	249	310	106	249	310	106	0	90-110	20	

Lab Batch ID: 3031539 **QC- Sample ID:** 566215-002 S Batch #:

Date Prepared: 10/25/2017

Matrix: Soil

Date Analyzed: Reporting Units:

mg/kg

10/25/2017

Analyst: MNV

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	5.80	248	266	105	248	269	106	1	90-110	20	

3031544 **QC- Sample ID:** 566216-005 S Batch #: Matrix: Soil Lab Batch ID: 1

10/26/2017 **Date Analyzed:**

Date Prepared: 10/25/2017 Analyst: MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride	683	247	892	85	247	873	77	2	90-110	20	X

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





Page 69 of 103

Project Name: Houma State #1

Work Order #: 566216

566216 3031544

QC- Sample ID: 566216-015 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/26/2017

Date Prepared: 10/25/2017

Analyst: MNV

Analyst: ARM

Reporting Units:

mg/kg

inalyst: Willy

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	< 5.00	250	269	108	250	269	108	0	90-110	20	

Lab Batch ID: 3031676 **QC- Sample ID:** 566219-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/26/2017 **Date Prepared:** 10/26/2017

•

Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005	Parent Sample Result	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits %RPD	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%KPD	
C6-C12 Range Hydrocarbons	<25.0	999	941	94	998	957	96	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	999	977	98	998	967	97	1	75-125	25	

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

Stafford, Texas (281-240-4200) Setting the Standard since 1990

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

Phoenix, Arizona (480-355-0900)

	www.xenco.com	Xenco Qu		56621	
			Analytical Information	4000	Matrix Codes
-	Project Information				
Project Nai Houma S	ne/Number: late #1				W = Water
Project Loc	ation:				S = Soil/Sed/Solid GW =Ground Water DW = Drinking Water
Phone No: 575-748-1553 Invoice To:	1 (2				P = Product
					SW = Surface water SL = Sludge
PO Number		ED.			OW =Ocean/Sea Water WI = Wipe
		NDI			0 = 0il
Collection					WW= Waste Water A = Air
	Zn	EX			
Sample Depth Date	Matrix bottles HCI	H2SO4 NaOH NaHSO MEOH NONE		1	
a 10/16/2	5 1	×	-		Confinence
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17	_		× :		
_	Data Deliverable Informati	-			
	Level II Std QC	Level IV (Full Data Pkg /raw data			
	Level III Std QC+ Forms	TRRP Level IV	CF:(0-6	: -0.k C)	
	Level 3 (CLP Forms)	UST / RG -411	(6-2	23: +0.2 C)	
	TRRP Checklist		Collect	(a) - 0:110: (
TAT Starts Day received by Lab, if received by 5:00 pm			FED-EX / UPS: T	racking #	
JUST BE DOCUMENTE	D BELOW EACH TIME SAMPLES CHANGE PO				
10/2417 600	received By: 10-19-1	Relinquished By:	145	lived By:	200
	Received By:	Relinquished By:		ived By:	+
Date Time:	Received By:	Custody Seal # Pro	eserved where applicable	On Ice Cooler Temp.	Thermo. Corr. Factor
les a valid purchase orders beyond the control of t	ar from client company to Xenco, its affiliates and : Xenco. A minimum charge of \$75 will be applied t	ubcontractors. It assigns standard terms and each project. Xenco's liability will be limited	d conditions of service. Xenco will be	liable only for the cost of samples and sh received by Xenco but not analyzed will I	hall not assume any responsibility for
	Project Nam Hourna Sia Hourna Sia Hourna Sia Invoice To: Sample Depth Date Po Number Date Time: Date Time: Date Time: Date Time: Date Time:	Project Name/Number:	Project NameNumber: Project NameNumber: Project Information Project Information	Project Name/Number: Project Information Project Name/Number: Project Name/Number:	Project Information Project I

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Phoenix, Arizona (480-355-0900)

				www.xenco.com	la I		Xenc	Xenco Quote #	*		×	Xenco Job#		51062	62	5	
Client / Reporting Information			Draiget	Project Information					Analy	Analytical Information	rmatior			_		Matrix Codes	
Company Name / Branch: COG Operating LLC		Project Name/Number:	ne/Number:		~											W = Water	
Company Address: 2407 PECOS Avenue Artesia NM 88210		Project Location:	ation:				\perp									S = Soil/Sed/Solid GW = Ground Water	er
Email:	Phone No: 575-748-1553	Invoice To: C	COG Operating LLC	ng LLC												P = Product	
alieb@concho.com dneel2@concho.com rhaskell@concho.com slhitchcock@concho.com	askell@concho.com			/cneill												SW = Surface water SL = Sludge	er
Project Contact: Aaron Lieb		Boline		9701			D.									OW =Ocean/Sea Water WI = Wine	Vater
Samplers's Name- Aaron Lieb		O Real Pool					NDE									0 = 0il	
		Collection			Number of preserved bottles	served bottles	TEN									WW= Waste Water	7
No. Field ID / Point of Collection	ם				n		EX		de					_			
	Sample Depth	ple Date	Time Matrix	bottles	laOH/Zr cetate INO3	IaOH IaHSO4 IEOH	ONE	BTEX	Chlori								
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Turnaround Time (Business days)				Data Deliverable Information	nformation		-		-		Notes:			-			
Same Day TAT	5 Day TAT		Level II Std QC	Std QC	Lev	Level IV (Full Data Pkg /ra	kg /raw d	w data)			Ten	Temp: 2					
Next Day EMERGENCY	7 Day TAT		Level III	Level III Std QC+ Forms	TRI	TRRP Level IV					SF:	CF:(0-6: -0 2°C)	ر د د)	77	IR ID:R-8	
2 Day EMERGENCY	Contract TAT		Level 3 (Level 3 (CLP Forms)		UST / RG -411						(6-23: +0.2°C)	 +0 i	3, 4		ı	
3 Day EMERGENCY			TRRP Checklist	necklist							Corr	Corrected Temp: 2	Ter	np:	N	I	
TAT Starts Day received by Lab, if received by 5:00 pm	eceived by 5:00 pm									FED LE	X/UPS	FED-EX / UPS: 118001113	Ü	-	(1	
Relinquished by Sampler:	SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER Date Time: Date Time:	BE DOCUMENTE	BELOW EACH T	IME SAMPLES CHA	NGE POSSESSIO	N, INCLUDING CO	URIER DEI	DELIVERY									
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Relinquished by:	Date Time:	ime:	Received By:		Cust	Custody Seal #		Preser	ved whe	Preserved where applicable	able 4		On Ice	0	Cooler Temp.	emp. Thermo. Corr. Factor	٦
any losses or expenses incurred by the Client is such losse as are due to circumstances beyond the control of Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for terms will be enforced unless neviously neoritated under a fully expense that not applicable and shall not assume any responsibility for terms will be enforced unless neviously neoritated under a fully expense that not applied to each project. Xenco's liability will be limited to the cost of samples and shall not assume any responsibility for terms will be enforced unless neviously neoritated under a fully expense that not applied to each project. Xenco's liability will be limited to the cost of samples and shall not assume any responsibility for terms will be enforced unless neviously neoritated under a fully expense that not applied to each project. Xenco's liability will be limited to the cost of samples and shall not assume any responsibility for terms.	ant of samples constitutes a variety of samples constitutes a variety of the samples constitutes and the samples constitutes a variety of the samples constitutes and the samples constitutes a variety of the samples constitutes and the samples constitutes and the sample constitutes a variety of the samples constitutes and the sample constitutes a variety of the samples constitutes and the sample constitutes and the sample constitutes a variety of the sample constitutes and th	alid purchase orde ond the control of	r from client compa Xenco. A minimum	ny to Xenco, its affilicharge of \$75 will be	ates and subcontrac applied to each pro	ctors. It assigns sta bject. Xenco's liabili	ndard terms by will be lin	s and co	nditions of he cost of	service. X	enco will	be liable	only for t	ne cost o	f samples	and shall not assume any respons	sibility for
refills will be efficied unless previously negotiated under a	fully executed client contract.			1		Jan A coulog o Habil	7 11111 00 1111	Intention to	ile cost of	salliples. A	VIIV Same	les recelv	red by Xe	nco but r	ot analyz	and will be invoiced at CE per camp	1. Those

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

Phoenix, Arizona (480-355-0900)

Company Name / Branch: COG Operating LLC Company Address: Price Company Add	Project Name/Number: Hourna State #1	Matrix Codes
LLC Avenue Artesia NM 88210	Project Name/Number:	
Avenue Artesia NM 88210	- Callia Otale #	W = Water
	Project Location:	S = Soil/Sed/Solid GW =Ground Water
Email: Phone No: 575-748-1553 Inv. alieb@concho.com dneel2@concho.com rhaskell@concho.com shirtchcock@concho.com	Invoice To: COG Operating LLC Attn: Robert Mcneill	P = Product SW = Surface water
6	Midland TX 79701	OW =Ocean/Sea Water
Samplers's Name- Aaron Lieb	DE	WI = Wipe
		WW= Waste Water
No. Field ID / Point of Collection	Collection Number of preserved bottles	
Sample Depth	Date Time Marin bottles (CI LaoH/Zn LaoH ABO4 LaoH LaoH LaoH LaoH LaoH LaoH LaoH LaoH	TEX
1 12-14 14 16		•
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4		
Ci		
6		
7		
8		
9		
10		
Turnaround Time (Business days)	Data Deliverable Information	
Same Day TAT 5 Day TAT	Level II Std QC Level IV (Full Data Pkg /raw data)	Temp: 3.2
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	(6-23: +0.2°C)
3 Day EMERGENCY	TRRP Checklist	Corrected Temp: 3
IAT Starts Day received by Lab, if received by 5:00 pm		FED-EX / UPS: Tracking #
Relinquished by Sampler: SAMPLE CUSTODY MUST BE DOCU	CUMENTED	
4	Received By: 10-19-17 Relinguished By: 12 1001 Seed South 10 A 2 Seed South	Date Time: // Repeived By:
3 Pate Time:		101
5 Cooler Temp. Thermo. Corr. Factor Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Years the difference of the control of the contr	Received By: Clistody Seal #	Date Time: Received By:



XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating, LLC

Date/ Time Received: 10/19/2017 11:45:00 AM

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

Work Order #: 566216

Temperature Measuring device used: R8

	Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?		13.2	
#2 *Shipping container in good condition?		Yes	
#3 *Samples received on ice?		Yes	
#4 *Custody Seals intact on shipping contai	ner/ 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 relinquish	ned/ received?	Yes	
#10 Chain of Custody agrees with sample la	abels/matrix?	Yes	
#11 Container label(s) legible and intact?		Yes	
#12 Samples in proper container/ bottle?		Yes	
#13 Samples properly preserved?		Yes	
#14 Sample container(s) intact?		Yes	
#15 Sufficient sample amount for indicated	test(s)?	Yes	
#16 All samples received within hold time?		Yes	
#17 Subcontract of sample(s)?		No	
#18 Water VOC samples have zero headsp	ace?	N/A	

Must be compl	eted for after-hours de	livery of samples prior to plac	ing in the refrigerator
Analyst:		PH Device/Lot#:	
Ch	ecklist completed by:	Connie Hernandez	Date: 10/23/2017
C	hecklist reviewed by:	Kelsey Brooks	Date: 10/23/2017

Analytical Report 566219

for COG Operating, LLC

Project Manager: Sheldon Hitchcock Houma State #1

30-OCT-17

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

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

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

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





30-OCT-17

Project Manager: Sheldon Hitchcock

COG Operating, LLC

600 W Illinois Midland, TX 79701

Reference: XENCO Report No(s): 566219

Houma State #1

Project Address: Houma State #1

Sheldon Hitchcock:

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) 566219. 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. 566219 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

Knus Roah

Project Manager

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



Sample Cross Reference 566219



COG Operating, LLC, Midland, TX

Houma State #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North Surf	S	10-16-17 14:00	0	566219-001
North 1'	S	10-16-17 14:00	1	566219-002
South Surf	S	10-16-17 14:00	0	566219-003
South 1'	S	10-16-17 14:00	1	566219-004
East Surf	S	10-16-17 14:00	0	566219-005
East 1'	S	10-16-17 14:00	1	566219-006

CASE NARRATIVE

Client Name: COG Operating, LLC Project Name: Houma State #1

Project ID: Report Date: 30-OCT-17 Work Order Number(s): 566219 Date Received: 10/19/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3031638 BTEX by EPA 8021B

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

Batch: LBA-3031732 BTEX by EPA 8021B

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



Certificate of Analysis Summary 566219

COG Operating, LLC, Midland, TX

Project Name: Houma State #1



Project Id: Contact:

Project Location:

Sheldon Hitchcock Houma State #1 **Date Received in Lab:** Thu Oct-19-17 11:45 am

Report Date: 30-OCT-17 **Project Manager:** Kelsey Brooks

	Lab Id:	566219-0	001	566219-0	002	566219-0	003	566219-	004	566219-	005	566219-	006
Amaluaia Dogunated	Field Id:	North S	urf	North	1'	South S	urf	South	1'	East Su	ırf	East 1	.'
Analysis Requested	Depth:	0-		1-		0-		1-		0-		1-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	.	SOIL	
	Sampled:	Oct-16-17	14:00										
BTEX by EPA 8021B	Extracted:	Oct-26-17	10:30	Oct-26-17	10:30	Oct-26-17	10:30	Oct-25-17	10:30	Oct-25-17	10:30	Oct-25-17	10:30
	Analyzed:	Oct-26-17	12:24	Oct-26-17	12:42	Oct-26-17	13:04	Oct-26-17	04:58	Oct-26-17	07:41	Oct-26-17	08:01
	Units/RL:	mg/kg	RL										
Benzene		0.00558	0.00364	0.0233	0.00353	< 0.00345	0.00345	0.0110	0.00201	0.00880	0.00199	0.00352	0.00199
Toluene		< 0.00364	0.00364	0.0334	0.00353	< 0.00345	0.00345	0.0157	0.00201	< 0.00199	0.00199	0.00806	0.00199
Ethylbenzene		< 0.00364	0.00364	0.00385	0.00353	< 0.00345	0.00345	0.00446	0.00201	< 0.00199	0.00199	< 0.00199	0.00199
m,p-Xylenes		< 0.00727	0.00727	< 0.00707	0.00707	< 0.00690	0.00690	0.00485	0.00402	< 0.00398	0.00398	< 0.00398	0.00398
o-Xylene		< 0.00364	0.00364	< 0.00353	0.00353	< 0.00345	0.00345	0.00262	0.00201	0.00221	0.00199	< 0.00199	0.00199
Total Xylenes		< 0.00364	0.00364	< 0.00353	0.00353	< 0.00345	0.00345	0.00747	0.00201	0.00221	0.00199	< 0.00199	0.00199
Total BTEX		0.00558	0.00364	0.0606	0.00353	< 0.00345	0.00345	0.0386	0.00201	0.0110	0.00199	0.0116	0.00199
Chloride by EPA 300	Extracted:	Oct-25-17	13:00	Oct-25-17	13:00	Oct-25-17	13:00	Oct-25-17	15:20	Oct-25-17	15:20	Oct-25-17	15:20
	Analyzed:	Oct-26-17	05:23	Oct-26-17	05:30	Oct-26-17	05:36	Oct-26-17	09:58	Oct-26-17	10:19	Oct-26-17	10:25
	Units/RL:	mg/kg	RL										
Chloride		< 5.00	5.00	<4.98	4.98	<4.96	4.96	<1.99	1.99	<1.97	1.97	<1.96	1.96
TPH by Texas1005	Extracted:	Oct-26-17	14:00										
	Analyzed:	Oct-26-17	20:48	Oct-26-17	21:48	Oct-26-17	22:08	Oct-26-17	22:28	Oct-26-17	22:47	Oct-26-17	23:07
	Units/RL:	mg/kg	RL										
C6-C12 Range Hydrocarbons		<25.0	25.0	<24.9	24.9	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0
C12-C28 Range Hydrocarbons		<25.0	25.0	<24.9	24.9	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0
C28-C35 Range Hydrocarbons		<25.0	25.0	<24.9	24.9	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0
Total TPH		<25.0	25.0	<24.9	24.9	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0

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



Flagging Criteria



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

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

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

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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2525 W. Huntington Dr Suite 102 Tempe A7 85282	(602) 437 0330	



Project Name: Houma State #1

Work Orders: 566219,

Sample: 566219-004 / SMP

Project ID:

Lab Batch #: 3031732 T T-- 24 -- ma/lea

Date Analyzed: 10/26/17 04:58

Matrix: Soil Batch: 1

Units:	mg/kg	Date Analyzed: 10/26/17 04:58	SU	RROGATE RE	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluore	obenzene		0.0272	0.0300	91	80-120	
4-Bromoflu	orobenzene		0.0313	0.0300	104	80-120	

Lab Batch #: 3031732 Sample: 566219-005 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/26/17 07:41 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0252 0.0300 84 80-120 4-Bromofluorobenzene 0.0284 0.0300 95 80-120

Lab Batch #: 3031732 Sample: 566219-006 / SMP Matrix: Soil Batch:

Units: mg/kg **Date Analyzed:** 10/26/17 08:01 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0247	0.0300	82	80-120	
4-Bromofluorobenzene	0.0277	0.0300	92	80-120	

Lab Batch #: 3031638 **Sample:** 566219-001 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 12:24	SU	RROGATE RE	ECOVERY S	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene	Analytes	0.0304	0.0300	101	80-120	
4-Bromoflu	iorobenzene		0.0354	0.0300	118	80-120	

Lab Batch #: 3031638 Sample: 566219-002 / SMP Batch: Matrix: Soil

Units: m	g/kg	Date Analyzed: 10/26/17 12:42	SU	RROGATE RE	ECOVERY S	STUDY	
	BTEX	Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenze	ne	Analyces	0.0354	0.0300	118	80-120	
4-Bromofluorober	nzene		0.0351	0.0300	117	80-120	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566219,

Sample: 566219-003 / SMP

Project ID:

Lab Batch #: 3031638 T T-- 24 -- -Date Analyzed: 10/26/17 13:04 ma/lea

Matrix: Soil Batch: 1

Units:	mg/kg	Date Analyzed: 10/26/17 13:04	SU	RROGATE RE	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0282	0.0300	94	80-120	
4-Bromoflu	orobenzene		0.0331	0.0300	110	80-120	

Lab Batch #: 3031676 Sample: 566219-001 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/26/17 20:48 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 54.2 49.9 109 70-130 1-Chlorooctane 97.6 99.8 98 70-130

Lab Batch #: 3031676 Sample: 566219-002 / SMP Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/26/17 21:48 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	53.2	49.8	107	70-130	
1-Chlorooctane	96.1	99.6	96	70-130	

Lab Batch #: 3031676 Sample: 566219-003 / SMP Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 22:08	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	yl		52.4	50.0	105	70-130			
1-Chlorood	ctane		94.4	99.9	94	70-130			

Sample: 566219-004 / SMP Lab Batch #: 3031676 Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 22:28	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		•	51.6	49.9	103	70-130			
1-Chloroocta	ane		94.3	99.7	95	70-130			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566219,

Sample: 566219-005 / SMP

Project ID:

Lab Batch #: 3031676 Units: mø/kø

Date Analyzed: 10/26/17 22:47

Matrix: Soil Batch:

Units:	mg/kg	Date Analyzed: 10/26/17 22:47	SURROGATE RECOVERY STUDY					
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			[D]			
o-Terphenyl			53.4	49.9	107	70-130		
1-Chloroocta	ane		96.4	99.8	97	70-130		

Lab Batch #: 3031676 Sample: 566219-006 / SMP Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/26/17 23:07 SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** o-Terphenyl 49.9 49.9 100 70-130 1-Chlorooctane 92.6 99.8 93 70-130

Lab Batch #: 3031732 Sample: 7633241-1-BLK / BLK Batch: Matrix: Solid

Units: mg/kg Date Analyzed: 10/25/17 22:59 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0255	0.0300	85	80-120	
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Sample: 7633352-1-BLK / BLK **Lab Batch #:** 3031638 Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 11:18	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	robenzene		0.0311	0.0300	104	80-120			
4-Bromoflu	uorobenzene		0.0346	0.0300	115	80-120			

Lab Batch #: 3031676 Sample: 7633285-1-BLK / BLK Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 19:49	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		•	58.3	50.0	117	70-130			
1-Chloroocta	ane		105	100	105	70-130			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566219,

Sample: 7633241-1-BKS / BKS

Project ID:

Lab Batch #: 3031732 Units: mg/kg

Date Analyzed: 10/25/17 21:07

Matrix: Solid Batch:

Units:	mg/kg	Date Analyzed: 10/25/17 21:07	SURROGATE RECOVERY STUDY					
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluorob	enzene		0.0274	0.0300	91	80-120		
4-Bromofluor	obenzene		0.0294	0.0300	98	80-120		

Lab Batch #: 3031638 Sample: 7633352-1-BKS / BKS Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 09:43	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluore	obenzene		0.0295	0.0300	98	80-120	
4-Bromoflu	iorobenzene		0.0351	0.0300	117	80-120	

Sample: 7633285-1-BKS / BKS **Lab Batch #:** 3031676 Batch: Matrix: Solid

Units: mg/kg Date Analyzed: 10/26/17 20:09 SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	60.7	50.0	121	70-130	
1-Chlorooctane	112	100	112	70-130	

Lab Batch #: 3031732 **Sample:** 7633241-1-BSD / BSD Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/25/17 21:25	SURROGATE RECOVERY STUDY						
	вте	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			נען				
1,4-Difluor	robenzene		0.0278	0.0300	93	80-120			
4-Bromofli	uorobenzene		0.0297	0.0300	99	80-120			

Lab Batch #: 3031638 **Sample:** 7633352-1-BSD / BSD Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 10/26/17 10:01	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorobe	enzene	Analytes	0.0302	0.0300	101	80-120			
4-Bromofluoro	benzene		0.0354	0.0300	118	80-120			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

Work Orders: 566219,

Sample: 7633285-1-BSD / BSD

Project ID:

Lab Batch #: 3031676 Matrix: Solid Batch: Units: mø/kø **Date Analyzed:** 10/26/17 20:29 SUDDOCATE DECOVEDY STUDY

SURROGATE RECOVERY STUDY							
TPH by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
o-Terphenyl	63.5	50.0	127	70-130			
1-Chlorooctane	110	100	110	70-130			

Lab Batch #: 3031732 **Sample:** 566212-007 S / MS Batch: Matrix: Soil

Units: mg/kg **Date Analyzed:** 10/25/17 21:43 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0291 0.0300 97 80-120 4-Bromofluorobenzene 0.0327 0.0300 109 80-120

Lab Batch #: 3031638 Sample: 566321-001 S / MS Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 10/26/17 10:19 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0352	0.0300	117	80-120	
4-Bromofluorobenzene	0.0352	0.0300	117	80-120	

Lab Batch #: 3031676 **Sample:** 566219-001 S / MS Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/26/17 21:08	SU	RROGATE R	ECOVERY S	STUDY	
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes			[D]		
o-Terpheny	1		57.9	50.0	116	70-130	
1-Chlorooc	tane		108	99.9	108	70-130	

Lab Batch #: 3031732 Sample: 566212-007 SD / MSD Batch: Matrix: Soil

Units:	mg/kg	Date Analyzed: 10/25/17 22:02	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobe	nzene		0.0291	0.0300	97	80-120	
4-Bromofluoro	benzene		0.0320	0.0300	107	80-120	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: Houma State #1

 Work Orders: 566219,
 Project ID:

 Lab Batch #: 3031638
 Sample: 566321-001 SD / MSD
 Batch: 1 Matrix: Soil

Units: Date Analyzed: 10/26/17 10:37 mg/kg SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Found Amount Limits Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0336 0.0300 112 80-120 4-Bromofluorobenzene 0.0356 0.0300 119 80-120

Lab Batch #: 3031676 **Sample:** 566219-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 10/26/17 21:28	SU	RROGATE RI	ECOVERY S	STUDY	
	TP	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
o-Terphenyl			59.0	49.9	118	70-130	
1-Chloroocta	ane		111	99.8	111	70-130	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



BS / BSD Recoveries



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Project Name: Houma State #1

Work Order #: 566219 **Project ID:**

Date Prepared: 10/25/2017 **Date Analyzed:** 10/25/2017 **Analyst:** ALJ

Lab Batch ID: 3031732 **Sample:** 7633241-1-BKS **Batch #:** 1 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.126	125	0.101	0.125	124	1	70-130	35	
Toluene	< 0.00202	0.101	0.124	123	0.101	0.124	123	0	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.119	118	0.101	0.121	120	2	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.239	118	0.201	0.242	120	1	70-135	35	
o-Xylene	< 0.00202	0.101	0.116	115	0.101	0.118	117	2	71-133	35	

ALJ **Date Prepared:** 10/26/2017 **Date Analyzed:** 10/26/2017 **Analyst:**

Lab Batch ID: 3031638 **Batch #:** 1 Matrix: Solid **Sample:** 7633352-1-BKS

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00202	0.101	0.0831	82	0.100	0.0804	80	3	70-130	35	
Toluene	< 0.00202	0.101	0.0941	93	0.100	0.0894	89	5	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0997	99	0.100	0.0943	94	6	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.196	97	0.200	0.185	93	6	70-135	35	
o-Xylene	< 0.00202	0.101	0.0958	95	0.100	0.0907	91	5	71-133	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project ID:

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Project Name: Houma State #1

Work Order #: 566219

Analyst: MNV **Date Prepared:** 10/25/2017 **Date Analyzed:** 10/26/2017

Units: mg/kg		BLAN	K /BLANK S	SPIKE / 1	BLANK	SPIKE DUP	LICATE	RECOVI	ERY STUI	ÒΥ			
Chloride by EPA 300	Blank Sample Result [A]	pple Result Added Spike Spike Added Spike Dup. RPD Limits Limits Flag F											
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]						
Chloride	< 5.00	250	248	99	250	253	101	2	90-110	20			

Analyst: MNV Date Prepared: 10/25/2017 Date Analyzed: 10/26/2017

Lab Batch ID: 3031640 **Sample:** 7633224-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	<5.00	250	242	97	250	242	97	0	90-110	20	

Analyst: ARM **Date Prepared:** 10/26/2017 **Date Analyzed:** 10/26/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Range Hydrocarbons	<25.0	1000	965	97	1000	981	98	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	1000	1000	100	1000	1010	101	1	75-125	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



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Project Name: Houma State #1

Work Order #:

566219 3031638

QC- Sample ID: 566321-001 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/26/2017

Date Prepared: 10/26/2017

Analyst: ALJ

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00199	0.0996	0.118	118	0.0992	0.117	118	1	70-130	35	
Toluene	0.00315	0.0996	0.112	109	0.0992	0.103	101	8	70-130	35	
Ethylbenzene	< 0.00199	0.0996	0.0959	96	0.0992	0.0847	85	12	71-129	35	
m,p-Xylenes	< 0.00398	0.199	0.190	95	0.198	0.167	84	13	70-135	35	
o-Xylene	< 0.00199	0.0996	0.0904	91	0.0992	0.0786	79	14	71-133	35	

Lab Batch ID:

3031732

QC- Sample ID: 566212-007 S

Batch #:

Matrix: Soil

Date Analyzed:

10/25/2017

Date Prepared: 10/25/2017

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.00199	0.0996	0.123	123	0.100	0.112	112	9	70-130	35	
Toluene	< 0.00199	0.0996	0.110	110	0.100	0.0992	99	10	70-130	35	
Ethylbenzene	< 0.00199	0.0996	0.104	104	0.100	0.0924	92	12	71-129	35	
m,p-Xylenes	< 0.00398	0.199	0.213	107	0.200	0.189	95	12	70-135	35	
o-Xylene	< 0.00199	0.0996	0.106	106	0.100	0.0953	95	11	71-133	35	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E



Form 3 - MS / MSD Recoveries



Page 89 of 103

Project Name: Houma State #1

Work Order #: 566219

566219 3031544

QC- Sample ID: 566216-005 S

Batch #:

Matrix: Soil

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/26/2017

Date Prepared: 10/25/2017

Analyst: MNV

Reporting Units:

mg/kg

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	683	247	892	85	247	873	77	2	90-110	20	X

Lab Batch ID: 3031544 **QC- Sample ID:** 566216-015 S **Batch #:**

Date Analyzed: 10/26/2017

Date Prepared: 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg

MATERIAL CRIES / MA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride	<5.00	250	269	108	250	269	108	0	90-110	20	

Lab Batch ID: 3031640 **QC- Sample ID:** 566219-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/26/2017

Date Prepared: 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample	. 1	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride	<1.99	99.6	101	101	99.6	101	101	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference RPD = 200*(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E



Form 3 - MS / MSD Recoveries



Page 90 of 103

Project Name: Houma State #1

Work Order #: 566219

566219 3031640

QC- Sample ID: 566220-008 S

Batch #:

Matrix: Soil

Project ID:

Lab Batch ID: Date Analyzed:

10/26/2017

Date Prepared: 10/25/2017

Analyst: MNV

Reporting Units:

mg/kg

2017 Analyst: Will v

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	9.02	247	258	101	247	261	102	1	90-110	20	

Lab Batch ID: 3031676 **QC- Sample ID:** 566219-001 S

Batch #: 1 Mat

Matrix: Soil

Date Analyzed:

10/26/2017

Date Prepared: 10/26/2017

Analyst: ARM

Reporting Units:

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Range Hydrocarbons	<25.0	999	941	94	998	957	96	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	999	977	98	998	967	97	1	75-125	25	

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

CHAIN OF CUSTOD

San Antonio, Texas (210-509-3334)

Phoenix, Arizona (480-355-0900)

Notice: Notice: Signature of this document and relinquishment of samples of	5 Reinquisned by:	3	Relinquished by:	Relinquished by Sampler:	IAI Starts Day received by Lab, if received by 5:00 pm	3 Day EMERGENCY	2 Day EMERGENCY Contract TAT	Next Day EMERGENCY \(\bigcap_7 Day TAT	Same Day TAT 5 Day TAT	lurnaround lime (Business days)	10	Θ	00	7	6 CAST 1	5 East Sust	4 South - 1'	3 South - Supt	2 Noeth- 1'	1 NORTH SURF	1/2/1/	No. Field ID / Point of Collection		Samplers's Name- Aaron Lieb	rioject comact: Adioii Lieb	Stritter Cortest Agen Lieb	alieb@concho.com dneel2@concho.com rhaskell@concho.com	Email:	2407 PECOS Avenue Artesia NM 88210	COG Operating LLC	Client / Reporting Information			Dallas Texas (214-902-0300)
	Date Time:			Date Time:	5:00 pm		Т								1 1	9		φ	1	0 10/16/17		Sample Depth Date	Collection		PO Number:		1000	Houma State #1	Project Location:	Project Name/Num Houma State #1				Midland,
5	Received By:	Received By:	10 way Sed Butter 100	IPLES		TRRP Checklist	Level 3 (CLP Forms)	Level III Std QC+ Forms	Level II Std QC	Data Deliverable Information										2:00 pm S 1	H Z A				Midland TX 79701	600 W. Illinois	Attn: Robert Mcneill	0	cation:	Project Name/Number: Houma State #1	Project Information		www.xenco.com	Midland, Texas (432-704-5251)
	Custody Seal #	Relinquished By:	2 Sel Sutter	Belinguished Bu			UST / RG -411	TRRP Level IV	Level IV (Full Data Pkg /raw data)							×,	×	×	×	~ ×	M N N	2SO4 aOH aHSO4 EOH PH/ E)	Number of preserved bottles	ND	ED								Xenco	
	Preserved where applicable On Ice		10-19-17 / 2 9-1	!	FED-EX / UPS: Tracking #	Corrected Temp: 3	(6-23: +0.2°C)	CF:(0-6: -0.2°C)		Notes:					X - X - X - X - X - X - X - X - X - X -	X :	× :	× × ×	×	× ×	+	BTEX										Analytical Information	Xenco Quote # Xenco Job #	
/3^	Cooler Temp. Thermo. Corr. Factor		Tare			p: 53	C)		IR ID:R-8	_											Field Comments		A = Air	O = Oil	WI = Wipe	OW =Ocean/Sea Water	SW = Surface water	P = Product	GW = Orinking Water DW = Drinking Water	W = Water		Matrix Codes	566219	

reviews. In views - supriaure or into succurrent and reinquistance to isamples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for terms will be enforced unless previously negotiated under a fully executed client contract.

A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These



XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating, LLC

Date/ Time Received: 10/19/2017 11:45:00 AM

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

Date: 10/23/2017

Work Order #: 566219

Temperature Measuring device used: R8

	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		13.2
#2 *Shipping container in good condition	?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on shipping cor	ntainer/ cooler?	N/A
#5 Custody Seals intact on sample bottle	es?	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 relinqu	uished/ received?	Yes
#10 Chain of Custody agrees with sampl	e 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 indicate	ed test(s)?	Yes
#16 All samples received within hold time	e?	Yes
#17 Subcontract of sample(s)?		No
#18 Water VOC samples have zero head	dspace?	N/A
* Must be completed for after-hours de	livery of samples prior to placing in	the refrigerator
Analyst:	PH Device/Lot#:	
Checklist completed by:	Connie Hernandez	Date: 10/23/2017

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

State of New Mexico Energy Minerals and Natural Resources SEP 29 2017

Form C-141 Revised August 8, 2011

Subr**RECETMED** propriate District Office in accordance with 19.15.29 NMAC.

Oil Conservation Division 1220 South St. Francis Dr.

1220 S. St. Fran	icis Dr., Santa	Fe, NM 87505		Sa	ınta Fe	, NM 875	05					
			Rele	ase Notific	ation	and Co	rrective A	ction	1			.,
NABI72	372511	08				OPERA T	ГOR			al Report	П	Final Report
Name of Co	ompany: C	OG Operation		OGRID] 22913	7	Contact: Ro	bert McNeill					
		nois Avenue		d TX 79701			No. 432-230-007	77				
Facility Na	me: HOUN	1A STATE #	#001			Facility Typ	e: Battery					
Surface Ow	ner: State	<u> </u>		Mineral C)wner: \$	State			API No	. 30-015-3	1491	
				LOCA	ATION	N OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the	North	South Line	Feet from the		West Line		Cour	. •
F	16	17S	30E	2310		North	2310	<u> </u>	West		Edo	dy
				Latitude 32	2.835506	4 Longitude	- 103.978096					
				NAT	URE	OF RELI						
Type of Rele	ease:					Volume of				Recovered:		
Source of Re	lease:		•			13 bbls O	lour of Occurrenc	·e·	10 bbls (Hour of Dis	cover	v.
Flowline		_				9-27-2017	9:00 am		9-27-201			,
Was Immedi	ate Notice (Vac 🏻	No ⊠ Not R	aguired	If YES, To	Whom?					
D. Whom?		L	i es 🗠	NO M NOTE	equileu	Date and H						
By Whom? Was a Water	course Read	hed?					lour: lume Impacting t	the Wat	ercourse.			
			Yes 🗵	No		1 120, 10				Mayica Oi	í I	
If a Watercon	urse was Im	pacted, Descri	be Fully.*			1	Please re	eter to	the New	Mexico Oi ebsite for		
		,	•				updated			EDSILE IOI		
							upuated http://w	יייייטיי ג איאיאי	mnrd.stat	e.nm.us/		
		_					OCD/ fo			Thank yo	u	
Describe Cau	use of Probl	em and Remed	dial Action	n Taken.*								_
The release	occurred wh	en the circula	tion line i	nside the firewall	began to	leak from co	orrosion. The circ	culation	line was is	olated and v	will be	replaced.
Describe Are	ea Affected	and Cleanup A	Action Tak	cen.*	.,,							
The release of	occurred wit	hin the unline	d facility :	and impacted the	adiacent	nasture to the	e east of the facili	itv Vac	uum trueks	were disnat	tched t	to recover all
				valuated for any								
NMOCD for	approval p	rior to any sign	nificant re	mediation activiti	es.							
I hereby cert	ify that the i	nformation gi	ven above	is true and comp	lete to th	ne best of my	knowledge and u	ındersta	nd that purs	suant to NM	OCD	rules and
regulations a	ll operators	are required to	o report ar	nd/or file certain r	elease n	otifications ar	nd perform correc	ctive act	ions for rel	eases which	may e	endanger
				ce of a C-141 report investigate and r								
or the enviro	nment. In a	ddition, NMC	CD accep	otance of a C-141	report d	oes not reliev	e the operator of	respons	ibility for c	ompliance v	with ar	ny other
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Map Unit Description: Kermit-Berino fine sands, 0 to 3 percent slopes---Eddy Area, New Mexico

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Some minor components, however, have properties and behavior characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Map Unit Description: Kermit-Berino fine sands, 0 to 3 percent slopes—Eddy Area, New Mexico

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Eddy Area, New Mexico

KM-Kermit-Berino fine sands, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1w4q Elevation: 3,100 to 4,200 feet

Mean annual precipitation: 10 to 14 inches Mean annual air temperature: 60 to 64 degrees F

Frost-free period: 190 to 230 days



Web Soil Survey National Cooperative Soil Survey 3/7/2018 Page 2 of 4 Farmland classification: Not prime farmland

Map Unit Composition

Kermit and similar soils: 50 percent Berino and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

Description of Kermit

Setting

Landform: Alluvial fans, plains

Landform position (three-dimensional): Rise, talf

Down-slope shape: Linear, convex

Across-slope shape: Linear

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 7 inches: fine sand H2 - 7 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches Natural drainage class: Excessively drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very

high (20.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 1.0

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Ecological site: Deep Sand (R042XC005NM)

Hydric soil rating: No

Description of Berino

Setting

Landform: Fan piedmonts, plains

Landform position (three-dimensional): Riser

Down-slope shape: Convex Across-slope shape: Linear

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 17 inches: fine sand

H2 - 17 to 50 inches: fine sandy loam



Map Unit Description: Kermit-Berino fine sands, 0 to 3 percent slopes—Eddy Area, New Mexico

H3 - 50 to 58 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent

Salinity, maximum in profile: Very slightly saline to slightly saline

(2.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 1.0

Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: Loamy Sand (R042XC003NM)

Hydric soil rating: No

Minor Components

Active dune land

Percent of map unit: Hydric soil rating: No

Data Source Information

Soil Survey Area: Eddy Area, New Mexico Survey Area Data: Version 13, Sep 9, 2017

NMSLO Seed Mix

Shallow (SH)

SHALLOW (SH) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX	
Grasses:				9
Sideoats grama	Vaughn, El Reno	4.0	F	
Blue grama	Lovington, Hachita	3.0	D	
Little bluestem	Pastura, Cimmaron	1.5	F	
Green sprangletop	VNS, Southern	1.0	D	
Plains bristlegrass	VNS, Southern	1.0	D	
Forbs: Firewheel (Gaillardia)	VNS, Southern	1.0	D	
Shrubs: Fourwing saltbush Common winterfat	Marana, Santa Rita VNS, Southern	1.0 0.5	D F	
	Total PLS/acro	13.0		

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require
 other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at http://plants.usda.gov.



APPENDIX III

Form C-141

Revised August 8, 2011

<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II 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**

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

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

			Rele	ase Notific	ation	and Co	orrective A	ction	1			
						OPERA			Initia	l Report	Fin	al Report
				OGRID] 22913′			bert McNeill	77				
		nois Avenue IA STATE ‡		d TX 79701		Facility Typ	No. 432-230-007 be: Battery	/ /				
,				1.0					1 1 2 2 2 2	20.015.21	101	
Surface Ow	ner: State			Mineral O	wner: S	State			API No.	30-015-31	491	
	1					OF REI						
Unit Letter F	Section 16	Township 17S	Range 30E	Feet from the 2310		South Line North	Feet from the 2310		West Line West		County Eddy	
				Latitude 32	.835506	54 Longitude	e - 103.978096					
				NAT	URE	OF RELI	EASE					
Type of Rele	ase:					Volume of			Volume R			
Oil Source of Re	lease:					13 bbls O	11 Iour of Occurrenc	e:	10 bbls O	oll Hour of Disco	overv:	
Flowline						9-27-2017	9:00 am		9-27-2017			
Was Immedi	ate Notice G	_	Yes 🗵	No Not Re	quired	If YES, To	Whom?					
By Whom?						Date and H						
Was a Water	course Reac		Yes 🗵	No		If YES, Vo	olume Impacting t	he Wate	ercourse.			
If a Watercou	ırse was Imp	pacted, Descri	ibe Fully.*	•								
	•		•									
Describe Cau	ise of Proble	m and Remed	dial Action	n Taken.*								
				nside the firewall	began to	o leak from co	orrosion. The circ	culation	line was iso	olated and wi	ll be replac	ced.
									, 1111 0 , , 4 15 150			
Describe Are	a Affected a	and Cleanup A	Action Tak	en.*								
				and impacted the a								
				mediation activitie		impact iroin	ine release and wi	e wiii pi	resem a rem	ediation wor	k pian to u	ie
I hereby certi	fy that the i	nformation gi	ven above	is true and compl	ete to th	ne best of my	knowledge and u	ndersta	nd that pursi	ant to NMO	CD rules a	and
regulations a	ll operators a	are required to	o report an	d/or file certain re	elease no	otifications ar	nd perform correc	tive act	ions for rele	ases which n	nay endang	ger
				e of a C-141 repo investigate and re								
or the enviro	nment. In ac	ddition, NMC	CD accep	tance of a C-141 i								
federal, state	or local law	vs and/or regu	llations.				OIL CON	CEDV	ATION	DIVISIO	NT .	
							OIL CON	<u>SLIC v</u>	ATION	D1 V 15101	<u>. Y</u>	
	1	Lot New				Ammorrad by	Envisonmental Co	manialia	4.			
Signature:						Approved by	Environmental S ₁	pecians	t:			
Printed Name	e: Dakota N	eel										
Title: HSE C	oordinator					Approval Dat	te:		Expiration I	Date:		
E-mail Addre	ess: dneel2@	concho.com				Conditions of	f Approval:			A44- 1 1		
Date: Sent			one: 575-7	VA6 2010						Attached		

^{*} Attach Additional Sheets If Necessary

APPENDIX IV

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

Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe. NM 87505 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

				Sa	inta Fe	e, NM 875	05					
			Rele	ease Notific	ation	and Co	rrective A	ctio	n			
						OPERA	ΓOR		☐ Initia	l Report	\bowtie	Final Report
				OGRID] 22913			bert McNeill					
		inois Avenue		d TX 79701			No. 432-230-007	77				
Facility Nat	ne: HOUN	// A STATE #	‡ 001]	Facility Typ	e: Battery					
Surface Ow	ner: State			Mineral C)wner S	State			API No	30-015-3	1491	
Bullace 3 II	ner. State								1111110.	30 013 3	1171	
Unit Letter	Section	Township	Range	Feet from the		N OF REI	Feet from the	Fact/	West Line		Coun	ıtsı
F	16	17S	30E	2310		North	2310		West Line		Edd	•
				Latitude 30	2.835506	54 Longitude	- 103.978096					
						_						
Type of Rele				NAT	UKE	OF RELI			Volume R			
Oil	ase:					13 bbls O			10 bbls C			
Source of Re	lease:						Iour of Occurrence	ce:		Hour of Dis	covery	· ·
Flowline	. 37	7' 0				9-27-2017			9-27-2017	9:00 am		
Was Immedi	ate Notice (Yes 🗵	No 🛛 Not Re	equired	If YES, To	Whom?					
By Whom?			105	110 23 110114	equired	Date and H	Ioue.					
Was a Water	course Read	ched?					olume Impacting t	the Wat	tercourse.			
			Yes 🗵] No		,	1 0					
If a Watercou	ırse was Im	pacted, Descri	be Fully.	*								
Describe Cau	se of Probl	em and Remed	dial Action	n Taken.*								
The release	occurred wh	nen the circula	tion line i	nside the firewall	hegan to	leak from co	orrosion The circ	culation	n line was isc	olated and v	vill he	renlaced
The release v	securica wi	ion the enedia	tion fine i	nside the mewan	oogan to	reak nom ev	oriosion. The env	curation	i iiie was isc	rated and v	, III oc 1	replaced.
Describe Are	a Affected	and Cleanup A	Action Tak	ken.*								
The release of	ccurred wit	hin the unline	d facility :	and impacted the	adiacent	nasture to th	e east of the facili	ity All	remedial act	ivities have	heen 1	nerformed in
				oved workplan.	aajacent	pusture to ur	e cust of the facili	ity. 7 mi	remediar act	ivities have	occii i	ochornica m
T1 1	6 4 . 4 .		1	• • •	1	1	1 1 1 1	1 .	1.1.	>D.4	OCD	1 1
				is true and comp nd/or file certain r								
				ce of a C-141 repo								
should their	perations h	ave failed to a	dequately	investigate and r	emediate	e contaminati	on that pose a thr	eat to g	ground water,	surface wa	ater, hu	ıman health
				otance of a C-141	report do	oes not reliev	e the operator of	respons	sibility for co	mpliance v	ith any	y other
rederal, state,	or local lav	ws and/or regu	lations.				OIL CON	CEDI	JATION	DIVICIO)NI	
							OIL CON	<u>SER (</u>	VATION	DIVISIC	<u>//\</u>	
	٨	abox New										
Signature:	12.	aport leaf			1	Approved by	Environmental S	pecialis	st:	60 . 70	1-1	
~-8									NAN	ley W	axi	well
Printed Name	e: Dakota N	Neel										
Title: HSE C	oordinator				1	Approval Dat	te: 05/09/2023	3	Expiration I	Date:		
E moil Add	neer decalar	Maanaha aar-							-			
E-man Addre	ss. <u>uneer20</u>	@concho.com				Conditions of	Approvar:			Attached		

Date: March 2, 2019

Phone: 575-746-2010

^{*} Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II 811 S. First St., Artesia, NM 88210 Phone:(575) 748-1283 Fax:(575) 748-9720 District III

1000 Rio Brazos Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170

1220 S. St Francis Dr., Santa Fe, NM 87505 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 206624

CONDITIONS

Operator:	OGRID:
Spur Energy Partners LLC	328947
9655 Katy Freeway	Action Number:
Houston, TX 77024	206624
	Action Type:
	[IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
amaxwel	I None	5/9/2023