CONCHO

January 16, 2019

Mike Bratcher
Oil Conservation Division, District 2
811 S First St.
Artesia, NM 88210

Shelly Tucker
Bureau of Land Management, CFO
620 E. Green Street
Carlsbad, NM 88220

Work Plan
Unocal HPC Federal #001
API#: 30-015-26774
RP#: 2RP-5043
DOR: October 23, 2018
GPS: 32.4232864, -103.7293396
Unit Letter G, Section 1, Township 22 South, Range 31 East
Eddy County, New Mexico

Mr. Bratcher/Ms. Tucker,

COG Operating, LLC (COG) is pleased to submit the following remediation work plan in response to a release that occurred at the Unocal HPC Federal #001 Tank Battery. The release is located in Unit Letter G, Section 1, Township 22 South and Range 31 East in Eddy County, New Mexico. More specifically the latitude and longitude for the release are 32.4232864 North and -103.7293396 West.

BACKGROUND

The release was discovered on October 23, 2018. A C-141 initial report was submitted to the New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM). The initial C-141 is presented in Appendix A. A tank overflow resulted in the release of approximately forty (40) barrels (bbls) of oil. Vacuum trucks were utilized to recover approximately thirty-six (36) bbls of oil. The fluid remained inside the berms of the battery. A hand auger was utilized to collect soil samples from the impacted area.

GROUNDWATER AND REGULATORY FRAMEWORK

According to the United States Geological Survey (USGS) the nearest water well with measurement data (322333103461401) indicates that groundwater in the project vicinity is approximately one-hundred and twenty-five (125) feet below ground surface (BGS). The water well information is shown in Appendix B.

A risk based evaluation and site determinations were performed in accordance to the New Mexico Oil Conservation Division (NMOCD) Rule (Title 19 Chapter 15 Part 29) for releases on oil and gas development and production in New Mexico (effective August 14, 2018). According to the site characterization evaluation, no other receptors (water wells, playas, karst, water course, lake beds or ordinance boundaries) were located within each specific boundaries or distance from the site. The groundwater data and the site characterization evaluation data is summarized in Appendix B. The delineation and closure criteria are listed below:

GENERAL SITE CHARACTERIZATION AND GROUNDWATER:

Site Characterization	Average Groundwater Depth (ft.)
None Located	>100 feet

DELINEATION AND CLOSURE CRITERIA:

Recommended Remedial Action Levels (RRALs)	
Chlorides	20,000 mg/kg
TPH (GRO and DRO and MRO)	2,500 mg/kg
TPH (GRO and DRO)	1,000 mg/kg
Benzene	10 mg/kg
Total BTEX	50 mg/kg

PROPOSED WORK PLAN

- The impacted area in the vicinity of sample locations AH-1 and AH-3 will be excavated to a depth of one (1) foot BGS.
- The impacted area in the vicinity of sample location AH-2 will be excavated to a depth of three (3) feet BGS.
- All of the excavated material will be hauled to an NMOCD approved solid waste disposal facility.
- The excavation will be backfilled with clean “like” material.

SAMPLING PLAN

Once the excavation is complete confirmation soil samples will be collected from the excavated areas. Five point composite samples will be collected every 200 square feet and analyzed for TPH and BTEX. Discrete soil samples will be collected from any “hot spots” encountered during the excavation.

REMEDIATION TIMEFRAME AND ESTIMATED VOLUME

The remediation will be performed 90 days after the work plan has been approved. Approximately sixty (60) cubic yards of soil will be excavated and hauled offsite for proper disposal.

SITE RECLAMATION AND RESTORATION

All of the fluid remained on the well pad. No reclamation activities will be required at this site.

Should you have any questions or concerns please do not hesitate to contact me.

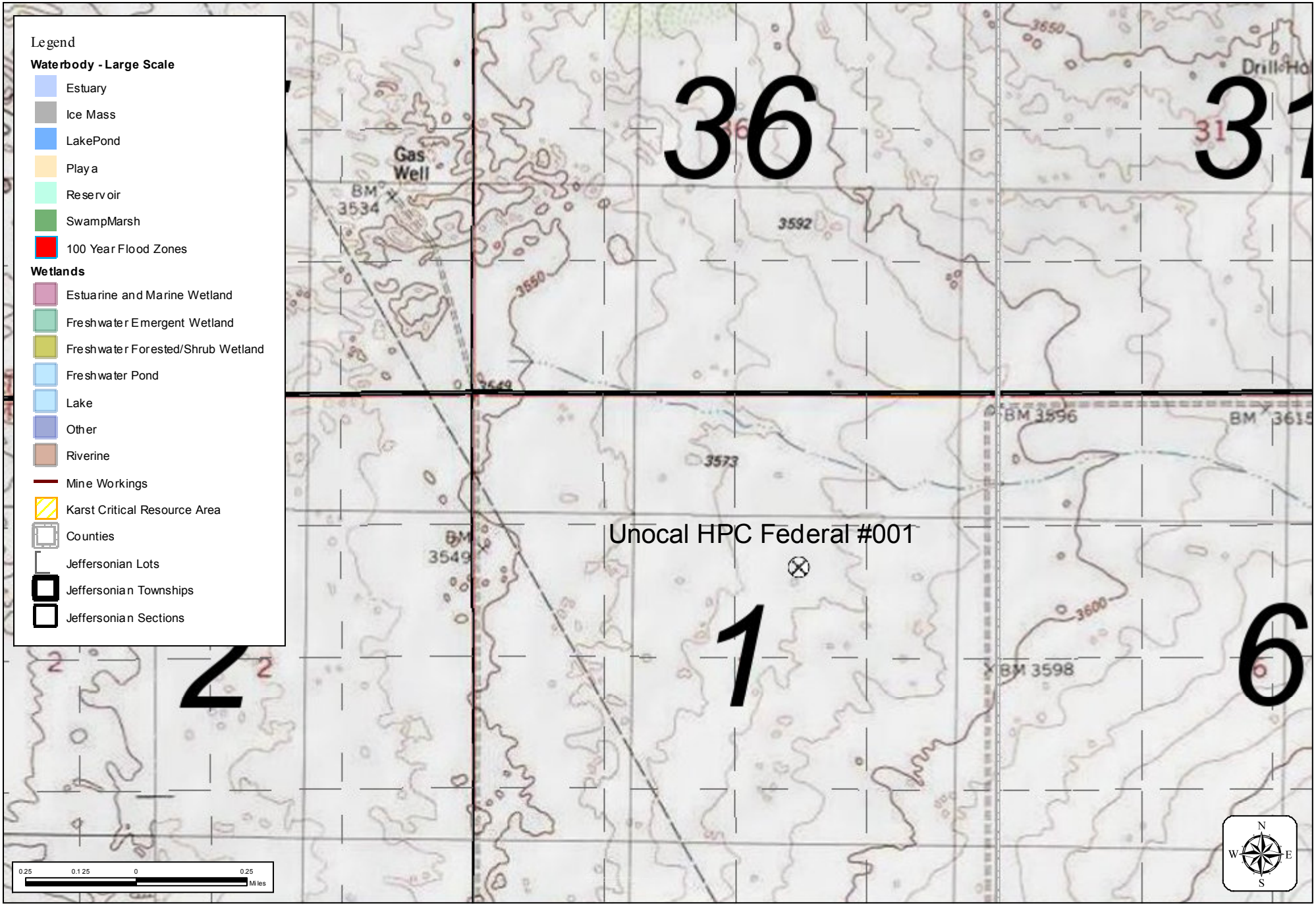
Sincerely,

Sheldon L. Hitchcock
HSE Coordinator
slhitchcock@concho.com

FIGURES

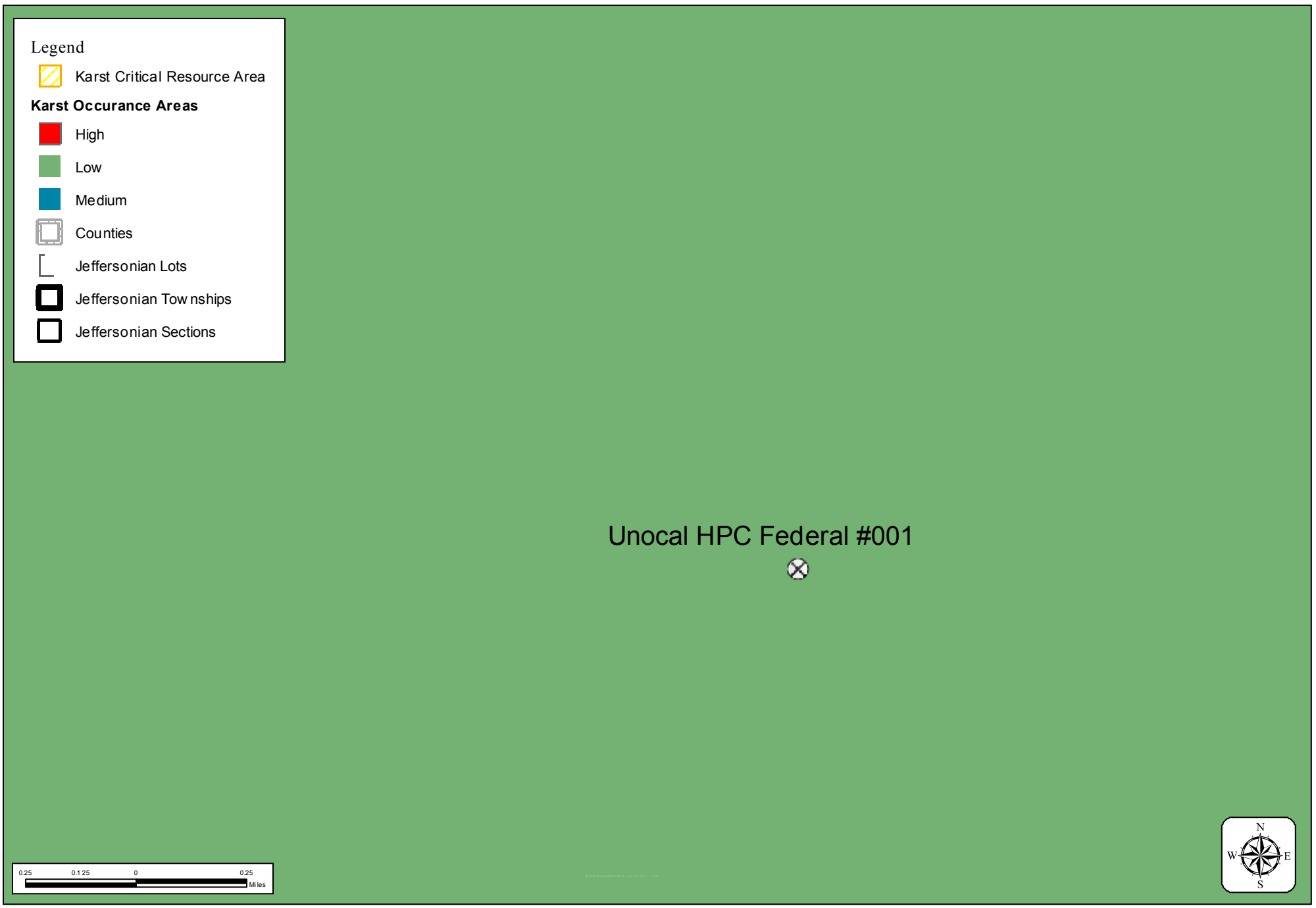
CONCHO

ArcGIS Web Map



CONCHO

ArcGIS Web Map



October 23, 2018

Unocal HPC Federal Oil Battery #001

CONCHO

TABLES

Table 1
COG Operating LLC.
Unocal Federal Oil Battery #001 (10/23/2018)
Eddy County, New Mexico

Sample ID	Sample Depth (ft)	Sample Date	Soil Status		TPH (mg/kg)							Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	MRO	*Total*	GRO	DRO	*Total*			
NMOCD RRAL Limits (mg/kg)					**-**	**-**	**-**	**2,500**	**-**	**-**	**1,000**	**10**	**50**	**20,000**
AH-1	0	11/9/2018	X		4870	12900	168	17938.0	4870	12900	17,770.0	2.75	132	35
AH-1	1	11/9/2018	X		36.5	263	18	317.5	36.5	263	299.5	<0.002	0.02	#
AH-1	2	11/9/2018	X		<15.0	17.8	<15.0	17.8	<15.0	17.8	17.8	<0.002	<0.002	#
AH-1	3	11/9/2018	X		<15.0	19.4	<15.0	19.4	<15.0	19.4	19.4	<0.002	<0.002	#
AH-1	4	11/9/2018	X		<15.0	<15.0	<15.0	0.0	<15.0	<15.0	0.0	<0.002	<0.002	#
AH-1	5	11/9/2018	X		<15.0	<15.0	<15.0	0.0	<15.0	<15.0	0.0	<0.002	<0.002	#
AH-2	0	11/9/2018	X		1380	11600	206	13186.0	1380	11600	12,980.0	0.88	27.9	199
AH-2	1	11/9/2018	X		1430	3400	33.4	4863.4	1430	3400	4,830.0	<0.2	21.2	#
AH-2	2	11/9/2018	X		422	1200	24.7	1646.7	422	1200	1,622.0	<0.002	0.163	#
AH-2	3	11/9/2018	X		48.3	177	<15.0	225.3	48.3	177	225.3	<0.002	0.017	#
AH-2	4	11/9/2018	X		<15.0	<15.0	<15.0	0.0	<15.0	<15.0	0.0	<0.002	0.033	#
AH-2	5	11/9/2018	X		<15.0	<15.0	<15.0	0.0	<15.0	<15.0	0.0	<0.002	<0.002	#
AH-3	0	11/9/2018	X		171	6840	131	7142.0	171	6840	7,011.0	<0.002	0.102	<4.99
AH-3	1	11/9/2018	X		<15.0	42.7	<15.0	42.7	<15.0	42.7	42.7	<0.002	0.178	#
AH-3	2	11/9/2018	X		54.3	287	<15.0	341.3	54.3	287	341.3	<0.002	0.032	#
AH-3	3	11/9/2018	X		16.1	109	<15.0	125.1	16.1	109	125.1	<0.002	0.258	#
AH-3	4	11/9/2018	X		28.6	142	<15.0	170.6	28.6	142	170.6	<0.002	0.131	#
AH-3	5	11/9/2018	X		<15.0	67.2	<15.0	67.2	<15.0	67.2	67.2	<0.002	0.047	#

Proposed Excavation

(#) Not Analyzed

APPENDIX A

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Robert McNeill	Contact Telephone	(432) 683-7443
Contact email	RMcNeill@concho.com	Incident # *(assigned by OCD)*	
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.42303 Longitude -103.72929

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Unocal-HPC Federal Oil Battery	Site Type	Tank Battery
Date Release Discovered	October 23, 2018	API# *(if applicable)*	30-015-26774

Unit Letter	Section	Township	Range	County
G	01	22S	31E	Eddy

Surface Owner: ☐ State ■ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

■ Crude Oil	Volume Released (bbls) 40	Volume Recovered (bbls) 36
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a tank overflow from the thief hatch.
The release was on location. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? The volume released was greater than 25 barrels.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Immediate notice was given by DeAnn Grant via e-mail October 23, 2018 at 2:16 pm to Maria Pruett and Shelly Tucker.

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

- ☒ The source of the release has been stopped.
- ☒ The impacted area has been secured to protect human health and the environment.
- ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
- ☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: DeAnn Grant Title: HSE Administrative Assistant

Signature: DeAnn Grant Date: 10/29/2018

email: agrant@concho.com Telephone: (432) 253-4513

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	125 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ■ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ■ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ■ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ■ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☐ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ■ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ■ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ■ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ■ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ■ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ■ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ■ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ■ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ■ Data table of soil contaminant concentration data
- ■ Depth to water determination
- ■ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ■ Topographic/Aerial maps
- ■ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: Sheldon Hitchcock Title: HSE Coordinator

Signature: Sheldon Hitchcock Date: 1/16/2019

email: slhitchcock@concho.com Telephone: 575-746-2010

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ■ Detailed description of proposed remediation technique
- ■ Scaled sitemap with GPS coordinates showing delineation points
- ■ Estimated volume of material to be remediated
- ■ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ■ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Sheldon Hitchcock Title: HSE Coordinator

Signature: Sheldon Hitchcock Date: 1/16/2018

email: slhitchcock@concho.com Telephone: 575-746-2010

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

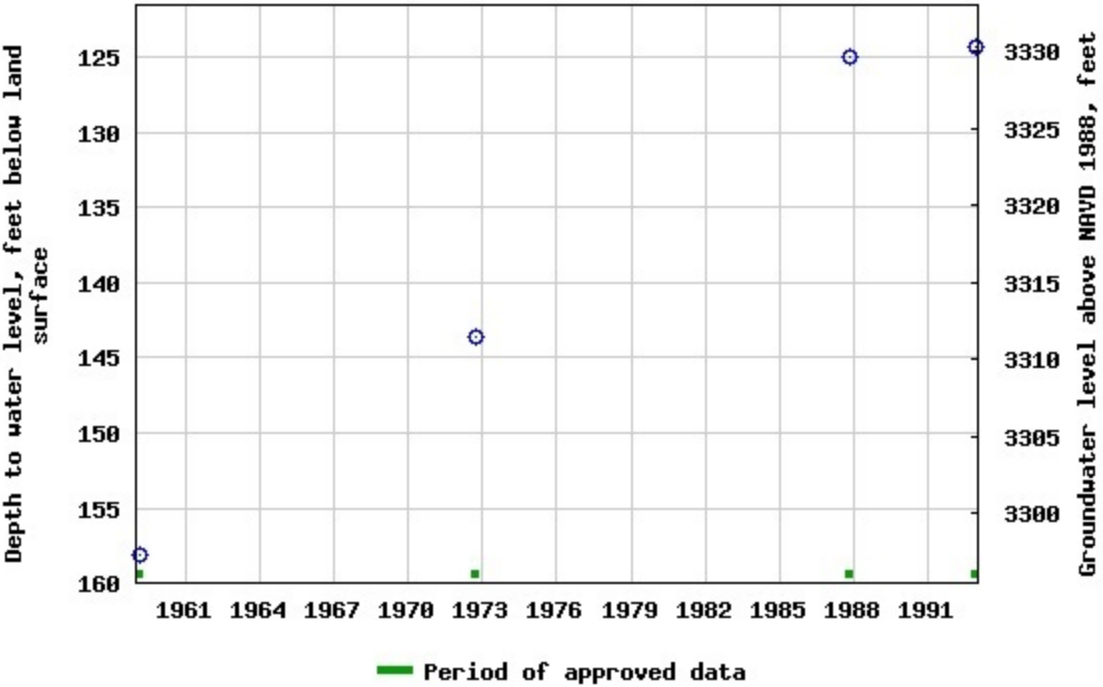
Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

APPENDIX B

USGS

USGS 322333103461401 22S.31E.15.13214



APPENDIX C

Certificate of Analysis Summary 605115

COG Operating LLC, Artesia, NM

Project Name: Unocal #PC Fed #1

Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy Co. NM

Date Received in Lab: Sat Nov-10-18 09:00 am

Report Date: 19-NOV-18

Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	605115-001		605115-002		605115-003		605115-004		605115-005		605115-006	
	Field Id:	AH-1 0'		AH-1 1'		AH-1 2'		AH-1 3'		AH-1 4'		AH-1 5'	
	Depth:	0-		1-		1-		3-		4-		5-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-18 10:50		Nov-09-18 10:55		Nov-09-18 11:00		Nov-09-18 11:05		Nov-09-18 11:10		Nov-09-18 11:15	
BTEX by EPA 8021B	***Extracted:***	Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30	
	Analyzed:	Nov-18-18 04:43		Nov-18-18 01:23		Nov-18-18 01:50		Nov-18-18 02:11		Nov-18-18 02:33		Nov-18-18 03:01	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		2.75	0.994	<0.00200	0.00200	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00201	0.00201
Toluene		26.7	0.994	<0.00200	0.00200	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00201	0.00201
Ethylbenzene		20.5	0.994	0.00281	0.00200	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00201	0.00201
m,p-Xylenes		54.3	1.99	0.00614	0.00399	<0.00401	0.00401	<0.00403	0.00403	<0.00398	0.00398	<0.00402	0.00402
o-Xylene		28.2	0.994	0.0118	0.00200	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00201	0.00201
Total Xylenes		82.5	0.994	0.0179	0.00200	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00201	0.00201
Total BTEX		132	0.994	0.0208	0.00200	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00201	0.00201
Chloride by EPA 300	***Extracted:***	Nov-13-18 12:00											
	Analyzed:	Nov-13-18 16:01											
	Units/RL:	mg/kg	RL										
Chloride		35.0	4.95										
TPH By SW8015 Mod	***Extracted:***	Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00	
	Analyzed:	Nov-12-18 22:10		Nov-12-18 22:29		Nov-12-18 22:48		Nov-12-18 23:45		Nov-13-18 00:04		Nov-13-18 00:23	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons		4870	74.9	36.5	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	<15.0	15.0
Diesel Range Organics		12900	74.9	263	15.0	17.8	15.0	19.4	15.0	<14.9	14.9	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)		168	74.9	18.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	<15.0	15.0
Total TPH		17900	74.9	318	15.0	17.8	15.0	19.4	15.0	<14.9	14.9	<15.0	15.0

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 605115

COG Operating LLC, Artesia, NM

Project Name: Unocal #PC Fed #1

Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy Co. NM

Date Received in Lab: Sat Nov-10-18 09:00 am

Report Date: 19-NOV-18

Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	605115-007		605115-008		605115-009		605115-010		605115-011		605115-012	
	Field Id:	AH-2 0'		AH-2 1'		AH-2 2'		AH-2 3'		AH-2 4'		AH-2 5'	
	Depth:	0-		1-		2-		3-		4-		5-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-18 11:20		Nov-09-18 11:25		Nov-09-18 11:30		Nov-09-18 11:35		Nov-09-18 11:40		Nov-09-18 11:45	
BTEX by EPA 8021B	***Extracted:***	Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30	
	Analyzed:	Nov-18-18 03:56		Nov-18-18 04:20		Nov-18-18 11:52		Nov-18-18 03:31		Nov-18-18 01:01		Nov-18-18 06:19	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0.888	0.198	<0.200	0.200	<0.00200	0.00200	<0.00201	0.00201	<0.00199	0.00199	<0.00199	0.00199
Toluene		7.14	0.198	3.90	0.200	0.00404	0.00200	<0.00201	0.00201	<0.00199	0.00199	<0.00199	0.00199
Ethylbenzene		3.54	0.198	3.32	0.200	0.0293	0.00200	0.00287	0.00201	0.00674	0.00199	<0.00199	0.00199
m,p-Xylenes		11.8	0.397	9.81	0.399	0.0896	0.00399	0.00896	0.00402	0.0193	0.00398	<0.00398	0.00398
o-Xylene		4.49	0.198	4.12	0.200	0.0405	0.00200	0.00553	0.00201	0.00681	0.00199	<0.00199	0.00199
Total Xylenes		16.3	0.198	13.9	0.200	0.130	0.00200	0.0145	0.00201	0.0261	0.00199	<0.00199	0.00199
Total BTEX		27.9	0.198	21.2	0.200	0.163	0.00200	0.0174	0.00201	0.0329	0.00199	<0.00199	0.00199
Chloride by EPA 300	***Extracted:***	Nov-13-18 12:00											
	Analyzed:	Nov-13-18 16:44											
	Units/RL:	mg/kg	RL										
Chloride		199	5.00										
TPH By SW8015 Mod	***Extracted:***	Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00	
	Analyzed:	Nov-13-18 00:42		Nov-13-18 01:01		Nov-13-18 01:20		Nov-13-18 01:39		Nov-13-18 02:36		Nov-13-18 02:55	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons		1380	74.7	1430	15.0	422	15.0	48.3	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics		11600	74.7	3440	15.0	1200	15.0	177	15.0	<15.0	15.0	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)		206	74.7	33.4	15.0	24.7	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		13200	74.7	4900	15.0	1650	15.0	225	15.0	<15.0	15.0	<15.0	15.0

Certificate of Analysis Summary 605115

COG Operating LLC, Artesia, NM

Project Name: Unocal #PC Fed #1

Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy Co. NM

Date Received in Lab: Sat Nov-10-18 09:00 am

Report Date: 19-NOV-18

Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	605115-013		605115-014		605115-015		605115-016		605115-017		605115-018	
	Field Id:	AH-3 0'		AH-3 1'		AH-3 2'		AH-3 3'		AH-3 4'		AH-3 5'	
	Depth:	0-		1-		2-		3-		4-		5-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-18 12:00		Nov-09-18 12:05		Nov-09-18 12:10		Nov-09-18 12:15		Nov-09-18 12:20		Nov-09-18 12:25	
BTEX by EPA 8021B	***Extracted:***	Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30		Nov-17-18 09:30	
	Analyzed:	Nov-18-18 09:54		Nov-18-18 06:40		Nov-18-18 07:03		Nov-18-18 07:24		Nov-18-18 07:45		Nov-18-18 08:07	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00201	0.00201	<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	0.00307	0.00200	<0.00200	0.00200
Toluene		0.00601	0.00201	<0.00202	0.00202	0.00223	0.00200	0.0363	0.00199	0.00710	0.00200	0.00390	0.00200
Ethylbenzene		0.0209	0.00201	0.00299	0.00202	0.00453	0.00200	0.0392	0.00199	0.0118	0.00200	0.00576	0.00200
m,p-Xylenes		0.0472	0.00402	0.00890	0.00403	0.0144	0.00401	0.119	0.00398	0.0562	0.00399	0.0163	0.00401
o-Xylene		0.0274	0.00201	0.00587	0.00202	0.0108	0.00200	0.0638	0.00199	0.0524	0.00200	0.0205	0.00200
Total Xylenes		0.0746	0.00201	0.0148	0.00202	0.0252	0.00200	0.183	0.00199	0.109	0.00200	0.0368	0.00200
Total BTEX		0.102	0.00201	0.0178	0.00202	0.0320	0.00200	0.258	0.00199	0.131	0.00200	0.0465	0.00200
Chloride by EPA 300	***Extracted:***	Nov-13-18 12:00											
	Analyzed:	Nov-13-18 17:32											
	Units/RL:	mg/kg	RL										
Chloride		<4.99	4.99										
TPH By SW8015 Mod	***Extracted:***	Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00		Nov-12-18 15:00	
	Analyzed:	Nov-13-18 03:13		Nov-13-18 03:32		Nov-13-18 03:51		Nov-13-18 04:10		Nov-13-18 04:28		Nov-13-18 04:47	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons		171	74.8	<14.9	14.9	54.3	15.0	16.1	15.0	28.6	15.0	<14.9	14.9
Diesel Range Organics		6840	74.8	42.7	14.9	287	15.0	109	15.0	142	15.0	67.2	14.9
Motor Oil Range Hydrocarbons (MRO)		131	74.8	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9
Total TPH		7140	74.8	42.7	14.9	341	15.0	125	15.0	171	15.0	67.2	14.9

Jessica Kramer
Project Assistant

Analytical Report 605115

for

COG Operating LLC

Project Manager: Sheldon Hitchcock

Unocal #PC Fed #1

19-NOV-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

19-NOV-18

Project Manager: **Sheldon Hitchcock**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **605115**
Unocal #PC Fed #1
Project Address: Eddy Co. NM

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) 605115. 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. 605115 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,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 0'	S	11-09-18 10:50	0	605115-001
AH-1 1'	S	11-09-18 10:55	1	605115-002
AH-1 2'	S	11-09-18 11:00	1	605115-003
AH-1 3'	S	11-09-18 11:05	3	605115-004
AH-1 4'	S	11-09-18 11:10	4	605115-005
AH-1 5'	S	11-09-18 11:15	5	605115-006
AH-2 0'	S	11-09-18 11:20	0	605115-007
AH-2 1'	S	11-09-18 11:25	1	605115-008
AH-2 2'	S	11-09-18 11:30	2	605115-009
AH-2 3'	S	11-09-18 11:35	3	605115-010
AH-2 4'	S	11-09-18 11:40	4	605115-011
AH-2 5'	S	11-09-18 11:45	5	605115-012
AH-3 0'	S	11-09-18 12:00	0	605115-013
AH-3 1'	S	11-09-18 12:05	1	605115-014
AH-3 2'	S	11-09-18 12:10	2	605115-015
AH-3 3'	S	11-09-18 12:15	3	605115-016
AH-3 4'	S	11-09-18 12:20	4	605115-017
AH-3 5'	S	11-09-18 12:25	5	605115-018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3069474 TPH By SW8015 Mod
Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 605115-001,605115-013,605115-007.

Batch: LBA-3070109 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3070110 BTEX by EPA 8021B
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 605115-008.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Lab Sample ID 605115-011 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike. Toluene 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: 605115-001, -002, -003, -004, -005, -006, -007, -008, -010, -011, -012, -013, -014, -015, -016, -017, -018.
The Laboratory Control Sample for Toluene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Dilution due to poor internal resolution caused by matrix interference

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 0'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-001	Date Collected:	11.09.18 10.50	Sample Depth:	0

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.13.18 12.00	Basis:	Wet Weight
Seq Number:	3069553				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**35.0**	4.95	mg/kg	11.13.18 16.01		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**4870**	74.9	mg/kg	11.12.18 22.10		5
Diesel Range Organics	C10C28DRO	**12900**	74.9	mg/kg	11.12.18 22.10		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**168**	74.9	mg/kg	11.12.18 22.10		5
Total TPH	PHC635	**17900**	74.9	mg/kg	11.12.18 22.10		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	118	%	70-135	11.12.18 22.10	
o-Terphenyl	84-15-1	313	%	70-135	11.12.18 22.10	**

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 0'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-001	Date Collected:	11.09.18 10.50	Sample Depth:	0
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**2.75**	0.994	mg/kg	11.18.18 04.43		500
Toluene	108-88-3	**26.7**	0.994	mg/kg	11.18.18 04.43		500
Ethylbenzene	100-41-4	**20.5**	0.994	mg/kg	11.18.18 04.43		500
m,p-Xylenes	179601-23-1	**54.3**	1.99	mg/kg	11.18.18 04.43		500
o-Xylene	95-47-6	**28.2**	0.994	mg/kg	11.18.18 04.43		500
Total Xylenes	1330-20-7	**82.5**	0.994	mg/kg	11.18.18 04.43		500
Total BTEX		**132**	0.994	mg/kg	11.18.18 04.43		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95	%	70-130	11.18.18 04.43	
4-Bromofluorobenzene	460-00-4	106	%	70-130	11.18.18 04.43	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 1'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-002	Date Collected:	11.09.18 10.55	Sample Depth:	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**36.5**	15.0	mg/kg	11.12.18 22.29		1
Diesel Range Organics	C10C28DRO	**263**	15.0	mg/kg	11.12.18 22.29		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**18.0**	15.0	mg/kg	11.12.18 22.29		1
Total TPH	PHC635	**318**	15.0	mg/kg	11.12.18 22.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	73	%	70-135	11.12.18 22.29	
o-Terphenyl	84-15-1	78	%	70-135	11.12.18 22.29	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.18.18 01.23	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.18.18 01.23	U	1
Ethylbenzene	100-41-4	**0.00281**	0.00200	mg/kg	11.18.18 01.23		1
m,p-Xylenes	179601-23-1	**0.00614**	0.00399	mg/kg	11.18.18 01.23		1
o-Xylene	95-47-6	**0.0118**	0.00200	mg/kg	11.18.18 01.23		1
Total Xylenes	1330-20-7	**0.0179**	0.00200	mg/kg	11.18.18 01.23		1
Total BTEX		**0.0208**	0.00200	mg/kg	11.18.18 01.23		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	91	%	70-130	11.18.18 01.23	
1,4-Difluorobenzene	540-36-3	104	%	70-130	11.18.18 01.23	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 2'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-003	Date Collected:	11.09.18 11.00	Sample Depth:	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	11.12.18 22.48	U	1
Diesel Range Organics	C10C28DRO	**17.8**	15.0	mg/kg	11.12.18 22.48		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.12.18 22.48	U	1
Total TPH	PHC635	**17.8**	15.0	mg/kg	11.12.18 22.48		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	75	%	70-135	11.12.18 22.48	
o-Terphenyl	84-15-1	75	%	70-135	11.12.18 22.48	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.18.18 01.50	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.18.18 01.50	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.18.18 01.50	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	11.18.18 01.50	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.18.18 01.50	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	11.18.18 01.50	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.18.18 01.50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	72	%	70-130	11.18.18 01.50	
1,4-Difluorobenzene	540-36-3	122	%	70-130	11.18.18 01.50	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 3'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-004	Date Collected:	11.09.18 11.05	Sample Depth:	3

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	11.12.18 23.45	U	1
Diesel Range Organics	C10C28DRO	**19.4**	15.0	mg/kg	11.12.18 23.45		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.12.18 23.45	U	1
Total TPH	PHC635	**19.4**	15.0	mg/kg	11.12.18 23.45		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	79	%	70-135	11.12.18 23.45	
o-Terphenyl	84-15-1	80	%	70-135	11.12.18 23.45	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.18.18 02.11	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.18.18 02.11	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.18.18 02.11	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	11.18.18 02.11	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.18.18 02.11	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	11.18.18 02.11	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.18.18 02.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	123	%	70-130	11.18.18 02.11	
4-Bromofluorobenzene	460-00-4	74	%	70-130	11.18.18 02.11	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 4'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-005	Date Collected:	11.09.18 11.10	Sample Depth:	4

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	11.13.18 00.04	U	1
Diesel Range Organics	C10C28DRO	<14.9	14.9	mg/kg	11.13.18 00.04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	11.13.18 00.04	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	11.13.18 00.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	11.13.18 00.04	
o-Terphenyl	84-15-1	81	%	70-135	11.13.18 00.04	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.18.18 02.33	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.18.18 02.33	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	11.18.18 02.33	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	11.18.18 02.33	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	11.18.18 02.33	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	11.18.18 02.33	U	1
Total BTEX		<0.00199	0.00199	mg/kg	11.18.18 02.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	121	%	70-130	11.18.18 02.33	
4-Bromofluorobenzene	460-00-4	77	%	70-130	11.18.18 02.33	

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-1 5'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-006	Date Collected:	11.09.18 11.15	Sample Depth:	5

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	11.13.18 00.23	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	11.13.18 00.23	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 00.23	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.13.18 00.23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	11.13.18 00.23	
o-Terphenyl	84-15-1	82	%	70-135	11.13.18 00.23	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	11.18.18 03.01	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	11.18.18 03.01	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	11.18.18 03.01	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	11.18.18 03.01	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	11.18.18 03.01	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	11.18.18 03.01	U	1
Total BTEX		<0.00201	0.00201	mg/kg	11.18.18 03.01	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	74	%	70-130	11.18.18 03.01	
1,4-Difluorobenzene	540-36-3	116	%	70-130	11.18.18 03.01	

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-2 0'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-007	Date Collected:	11.09.18 11.20	Sample Depth:	0

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.13.18 12.00	Basis:	Wet Weight
Seq Number:	3069553				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**199**	5.00	mg/kg	11.13.18 16.44		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**1380**	74.7	mg/kg	11.13.18 00.42		5
Diesel Range Organics	C10C28DRO	**11600**	74.7	mg/kg	11.13.18 00.42		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**206**	74.7	mg/kg	11.13.18 00.42		5
Total TPH	PHC635	**13200**	74.7	mg/kg	11.13.18 00.42		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	123	%	70-135	11.13.18 00.42	
o-Terphenyl	84-15-1	305	%	70-135	11.13.18 00.42	**

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-2 0'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-007	Date Collected:	11.09.18 11.20	Sample Depth:	0
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.888**	0.198	mg/kg	11.18.18 03.56		100
Toluene	108-88-3	**7.14**	0.198	mg/kg	11.18.18 03.56		100
Ethylbenzene	100-41-4	**3.54**	0.198	mg/kg	11.18.18 03.56		100
m,p-Xylenes	179601-23-1	**11.8**	0.397	mg/kg	11.18.18 03.56		100
o-Xylene	95-47-6	**4.49**	0.198	mg/kg	11.18.18 03.56		100
Total Xylenes	1330-20-7	**16.3**	0.198	mg/kg	11.18.18 03.56		100
Total BTEX		**27.9**	0.198	mg/kg	11.18.18 03.56		100

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	81	%	70-130	11.18.18 03.56	
4-Bromofluorobenzene	460-00-4	119	%	70-130	11.18.18 03.56	

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-2 1'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-008	Date Collected:	11.09.18 11.25	Sample Depth:	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**1430**	15.0	mg/kg	11.13.18 01.01		1
Diesel Range Organics	C10C28DRO	**3440**	15.0	mg/kg	11.13.18 01.01		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**33.4**	15.0	mg/kg	11.13.18 01.01		1
Total TPH	PHC635	**4900**	15.0	mg/kg	11.13.18 01.01		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	11.13.18 01.01	
o-Terphenyl	84-15-1	128	%	70-135	11.13.18 01.01	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.200	0.200	mg/kg	11.18.18 04.20	U	100
Toluene	108-88-3	**3.90**	0.200	mg/kg	11.18.18 04.20		100
Ethylbenzene	100-41-4	**3.32**	0.200	mg/kg	11.18.18 04.20		100
m,p-Xylenes	179601-23-1	**9.81**	0.399	mg/kg	11.18.18 04.20		100
o-Xylene	95-47-6	**4.12**	0.200	mg/kg	11.18.18 04.20		100
Total Xylenes	1330-20-7	**13.9**	0.200	mg/kg	11.18.18 04.20		100
Total BTEX		**21.2**	0.200	mg/kg	11.18.18 04.20		100

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	122	%	70-130	11.18.18 04.20	
4-Bromofluorobenzene	460-00-4	132	%	70-130	11.18.18 04.20	**

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-2 2'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-009	Date Collected:	11.09.18 11.30	Sample Depth:	2

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**422**	15.0	mg/kg	11.13.18 01.20		1
Diesel Range Organics	C10C28DRO	**1200**	15.0	mg/kg	11.13.18 01.20		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**24.7**	15.0	mg/kg	11.13.18 01.20		1
Total TPH	PHC635	**1650**	15.0	mg/kg	11.13.18 01.20		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	11.13.18 01.20	
o-Terphenyl	84-15-1	93	%	70-135	11.13.18 01.20	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070109				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.18.18 11.52	U	1
Toluene	108-88-3	**0.00404**	0.00200	mg/kg	11.18.18 11.52		1
Ethylbenzene	100-41-4	**0.0293**	0.00200	mg/kg	11.18.18 11.52		1
m,p-Xylenes	179601-23-1	**0.0896**	0.00399	mg/kg	11.18.18 11.52		1
o-Xylene	95-47-6	**0.0405**	0.00200	mg/kg	11.18.18 11.52		1
Total Xylenes	1330-20-7	**0.130**	0.00200	mg/kg	11.18.18 11.52		1
Total BTEX		**0.163**	0.00200	mg/kg	11.18.18 11.52		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	93	%	70-130	11.18.18 11.52	
1,4-Difluorobenzene	540-36-3	87	%	70-130	11.18.18 11.52	

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-2 3'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-010	Date Collected:	11.09.18 11.35	Sample Depth:	3

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**48.3**	15.0	mg/kg	11.13.18 01.39		1
Diesel Range Organics	C10C28DRO	**177**	15.0	mg/kg	11.13.18 01.39		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 01.39	U	1
Total TPH	PHC635	**225**	15.0	mg/kg	11.13.18 01.39		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	11.13.18 01.39	
o-Terphenyl	84-15-1	93	%	70-135	11.13.18 01.39	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	11.18.18 03.31	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	11.18.18 03.31	U	1
Ethylbenzene	100-41-4	**0.00287**	0.00201	mg/kg	11.18.18 03.31		1
m,p-Xylenes	179601-23-1	**0.00896**	0.00402	mg/kg	11.18.18 03.31		1
o-Xylene	95-47-6	**0.00553**	0.00201	mg/kg	11.18.18 03.31		1
Total Xylenes	1330-20-7	**0.0145**	0.00201	mg/kg	11.18.18 03.31		1
Total BTEX		**0.0174**	0.00201	mg/kg	11.18.18 03.31		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	91	%	70-130	11.18.18 03.31	
1,4-Difluorobenzene	540-36-3	124	%	70-130	11.18.18 03.31	

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COG Operating LLC, Artesia, NM

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Sample Id:	**AH-2 4'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-011	Date Collected:	11.09.18 11.40	Sample Depth:	4

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	11.13.18 02.36	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	11.13.18 02.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 02.36	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.13.18 02.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	11.13.18 02.36	
o-Terphenyl	84-15-1	87	%	70-135	11.13.18 02.36	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.18.18 01.01	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.18.18 01.01	U	1
Ethylbenzene	100-41-4	**0.00674**	0.00199	mg/kg	11.18.18 01.01		1
m,p-Xylenes	179601-23-1	**0.0193**	0.00398	mg/kg	11.18.18 01.01		1
o-Xylene	95-47-6	**0.00681**	0.00199	mg/kg	11.18.18 01.01		1
Total Xylenes	1330-20-7	**0.0261**	0.00199	mg/kg	11.18.18 01.01		1
Total BTEX		**0.0329**	0.00199	mg/kg	11.18.18 01.01		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	90	%	70-130	11.18.18 01.01	
1,4-Difluorobenzene	540-36-3	129	%	70-130	11.18.18 01.01	

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Sample Id:	**AH-2 5'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-012	Date Collected:	11.09.18 11.45	Sample Depth:	5

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	11.13.18 02.55	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	11.13.18 02.55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 02.55	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.13.18 02.55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	83	%	70-135	11.13.18 02.55	
o-Terphenyl	84-15-1	83	%	70-135	11.13.18 02.55	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.18.18 06.19	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.18.18 06.19	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	11.18.18 06.19	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	11.18.18 06.19	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	11.18.18 06.19	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	11.18.18 06.19	U	1
Total BTEX		<0.00199	0.00199	mg/kg	11.18.18 06.19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	110	%	70-130	11.18.18 06.19	
4-Bromofluorobenzene	460-00-4	80	%	70-130	11.18.18 06.19	

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COG Operating LLC, Artesia, NM

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Sample Id:	**AH-3 0'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-013	Date Collected:	11.09.18 12.00	Sample Depth:	0

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.13.18 12.00	Basis:	Wet Weight
Seq Number:	3069553				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	11.13.18 17.32	U	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**171**	74.8	mg/kg	11.13.18 03.13		5
Diesel Range Organics	C10C28DRO	**6840**	74.8	mg/kg	11.13.18 03.13		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**131**	74.8	mg/kg	11.13.18 03.13		5
Total TPH	PHC635	**7140**	74.8	mg/kg	11.13.18 03.13		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	11.13.18 03.13	
o-Terphenyl	84-15-1	246	%	70-135	11.13.18 03.13	**

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COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-3 0'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-013	Date Collected:	11.09.18 12.00	Sample Depth:	0
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	11.18.18 09.54	U	1
Toluene	108-88-3	**0.00601**	0.00201	mg/kg	11.18.18 09.54		1
Ethylbenzene	100-41-4	**0.0209**	0.00201	mg/kg	11.18.18 09.54		1
m,p-Xylenes	179601-23-1	**0.0472**	0.00402	mg/kg	11.18.18 09.54		1
o-Xylene	95-47-6	**0.0274**	0.00201	mg/kg	11.18.18 09.54		1
Total Xylenes	1330-20-7	**0.0746**	0.00201	mg/kg	11.18.18 09.54		1
Total BTEX		**0.102**	0.00201	mg/kg	11.18.18 09.54		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	93	%	70-130	11.18.18 09.54	
1,4-Difluorobenzene	540-36-3	121	%	70-130	11.18.18 09.54	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-3 1'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-014	Date Collected:	11.09.18 12.05	Sample Depth:	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	11.13.18 03.32	U	1
Diesel Range Organics	C10C28DRO	**42.7**	14.9	mg/kg	11.13.18 03.32		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	11.13.18 03.32	U	1
Total TPH	PHC635	**42.7**	14.9	mg/kg	11.13.18 03.32		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	11.13.18 03.32	
o-Terphenyl	84-15-1	91	%	70-135	11.13.18 03.32	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.18.18 06.40	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.18.18 06.40	U	1
Ethylbenzene	100-41-4	**0.00299**	0.00202	mg/kg	11.18.18 06.40		1
m,p-Xylenes	179601-23-1	**0.00890**	0.00403	mg/kg	11.18.18 06.40		1
o-Xylene	95-47-6	**0.00587**	0.00202	mg/kg	11.18.18 06.40		1
Total Xylenes	1330-20-7	**0.0148**	0.00202	mg/kg	11.18.18 06.40		1
Total BTEX		**0.0178**	0.00202	mg/kg	11.18.18 06.40		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	81	%	70-130	11.18.18 06.40	
1,4-Difluorobenzene	540-36-3	113	%	70-130	11.18.18 06.40	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-3 2'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-015	Date Collected:	11.09.18 12.10	Sample Depth:	2

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**54.3**	15.0	mg/kg	11.13.18 03.51		1
Diesel Range Organics	C10C28DRO	**287**	15.0	mg/kg	11.13.18 03.51		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 03.51	U	1
Total TPH	PHC635	**341**	15.0	mg/kg	11.13.18 03.51		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	11.13.18 03.51	
o-Terphenyl	84-15-1	94	%	70-135	11.13.18 03.51	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.18.18 07.03	U	1
Toluene	108-88-3	**0.00223**	0.00200	mg/kg	11.18.18 07.03		1
Ethylbenzene	100-41-4	**0.00453**	0.00200	mg/kg	11.18.18 07.03		1
m,p-Xylenes	179601-23-1	**0.0144**	0.00401	mg/kg	11.18.18 07.03		1
o-Xylene	95-47-6	**0.0108**	0.00200	mg/kg	11.18.18 07.03		1
Total Xylenes	1330-20-7	**0.0252**	0.00200	mg/kg	11.18.18 07.03		1
Total BTEX		**0.0320**	0.00200	mg/kg	11.18.18 07.03		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	129	%	70-130	11.18.18 07.03	
4-Bromofluorobenzene	460-00-4	90	%	70-130	11.18.18 07.03	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-3 3'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-016	Date Collected:	11.09.18 12.15	Sample Depth:	3

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**16.1**	15.0	mg/kg	11.13.18 04.10		1
Diesel Range Organics	C10C28DRO	**109**	15.0	mg/kg	11.13.18 04.10		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 04.10	U	1
Total TPH	PHC635	**125**	15.0	mg/kg	11.13.18 04.10		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	11.13.18 04.10	
o-Terphenyl	84-15-1	106	%	70-135	11.13.18 04.10	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.18.18 07.24	U	1
Toluene	108-88-3	**0.0363**	0.00199	mg/kg	11.18.18 07.24		1
Ethylbenzene	100-41-4	**0.0392**	0.00199	mg/kg	11.18.18 07.24		1
m,p-Xylenes	179601-23-1	**0.119**	0.00398	mg/kg	11.18.18 07.24		1
o-Xylene	95-47-6	**0.0638**	0.00199	mg/kg	11.18.18 07.24		1
Total Xylenes	1330-20-7	**0.183**	0.00199	mg/kg	11.18.18 07.24		1
Total BTEX		**0.258**	0.00199	mg/kg	11.18.18 07.24		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	70-130	11.18.18 07.24	
1,4-Difluorobenzene	540-36-3	85	%	70-130	11.18.18 07.24	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-3 4'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-017	Date Collected:	11.09.18 12.20	Sample Depth:	4

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	**28.6**	15.0	mg/kg	11.13.18 04.28		1
Diesel Range Organics	C10C28DRO	**142**	15.0	mg/kg	11.13.18 04.28		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.13.18 04.28	U	1
Total TPH	PHC635	**171**	15.0	mg/kg	11.13.18 04.28		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	11.13.18 04.28	
o-Terphenyl	84-15-1	97	%	70-135	11.13.18 04.28	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00307**	0.00200	mg/kg	11.18.18 07.45		1
Toluene	108-88-3	**0.00710**	0.00200	mg/kg	11.18.18 07.45		1
Ethylbenzene	100-41-4	**0.0118**	0.00200	mg/kg	11.18.18 07.45		1
m,p-Xylenes	179601-23-1	**0.0562**	0.00399	mg/kg	11.18.18 07.45		1
o-Xylene	95-47-6	**0.0524**	0.00200	mg/kg	11.18.18 07.45		1
Total Xylenes	1330-20-7	**0.109**	0.00200	mg/kg	11.18.18 07.45		1
Total BTEX		**0.131**	0.00200	mg/kg	11.18.18 07.45		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	70-130	11.18.18 07.45	
1,4-Difluorobenzene	540-36-3	124	%	70-130	11.18.18 07.45	

Certificate of Analytical Results 605115

COG Operating LLC, Artesia, NM

Unocal #PC Fed #1

Sample Id:	**AH-3 5'**	Matrix:	Soil	Date Received:	11.10.18 09.00
Lab Sample Id:	605115-018	Date Collected:	11.09.18 12.25	Sample Depth:	5

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.12.18 15.00	Basis:	Wet Weight
Seq Number:	3069474				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	11.13.18 04.47	U	1
Diesel Range Organics	C10C28DRO	**67.2**	14.9	mg/kg	11.13.18 04.47		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	11.13.18 04.47	U	1
Total TPH	PHC635	**67.2**	14.9	mg/kg	11.13.18 04.47		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	11.13.18 04.47	
o-Terphenyl	84-15-1	85	%	70-135	11.13.18 04.47	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	11.17.18 09.30	Basis:	Wet Weight
Seq Number:	3070110				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.18.18 08.07	U	1
Toluene	108-88-3	**0.00390**	0.00200	mg/kg	11.18.18 08.07		1
Ethylbenzene	100-41-4	**0.00576**	0.00200	mg/kg	11.18.18 08.07		1
m,p-Xylenes	179601-23-1	**0.0163**	0.00401	mg/kg	11.18.18 08.07		1
o-Xylene	95-47-6	**0.0205**	0.00200	mg/kg	11.18.18 08.07		1
Total Xylenes	1330-20-7	**0.0368**	0.00200	mg/kg	11.18.18 08.07		1
Total BTEX		**0.0465**	0.00200	mg/kg	11.18.18 08.07		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	109	%	70-130	11.18.18 08.07	
1,4-Difluorobenzene	540-36-3	129	%	70-130	11.18.18 08.07	

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

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

QC Summary 605115

COG Operating LLC

Unocal #PC Fed #1

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3069553 Matrix: Solid Date Prep: 11.13.18
MB Sample Id: 7666044-1-BLK LCS Sample Id: 7666044-1-BKS LCSD Sample Id: 7666044-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	256	102	255	102	90-110	0	20	mg/kg	11.13.18 14:58	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3069553 Matrix: Soil Date Prep: 11.13.18
Parent Sample Id: 604823-002 MS Sample Id: 604823-002 S MSD Sample Id: 604823-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	63.8	250	328	106	327	105	90-110	0	20	mg/kg	11.13.18 15:14	

Analytical Method: **TPH By SW8015 Mod** Prep Method: TX1005P
Seq Number: 3069474 Matrix: Solid Date Prep: 11.12.18
MB Sample Id: 7666036-1-BLK LCS Sample Id: 7666036-1-BKS LCSD Sample Id: 7666036-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<8.00	1000	940	94	912	91	70-135	3	20	mg/kg	11.12.18 21:32	
Diesel Range Organics	<8.13	1000	960	96	928	93	70-135	3	20	mg/kg	11.12.18 21:32	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		120		116		70-135	%	11.12.18 21:32
o-Terphenyl	103		92		91		70-135	%	11.12.18 21:32

Analytical Method: **TPH By SW8015 Mod** Prep Method: TX1005P
Seq Number: 3069474 Matrix: Soil Date Prep: 11.12.18
Parent Sample Id: 605115-003 MS Sample Id: 605115-003 S MSD Sample Id: 605115-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<7.99	999	856	86	849	85	70-135	1	20	mg/kg	11.12.18 23:07	
Diesel Range Organics	17.8	999	877	86	867	85	70-135	1	20	mg/kg	11.12.18 23:07	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	111		110		70-135	%	11.12.18 23:07
o-Terphenyl	86		86		70-135	%	11.12.18 23:07

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

QC Summary 605115

COG Operating LLC

Unocal #PC Fed #1

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3070109 Matrix: Solid Date Prep: 11.17.18
MB Sample Id: 7666430-1-BLK LCS Sample Id: 7666430-1-BKS LCSD Sample Id: 7666430-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.101	101	0.0995	100	70-130	1	35	mg/kg	11.17.18 10:16	
Toluene	<0.00200	0.0998	0.0864	87	0.0835	84	70-130	3	35	mg/kg	11.17.18 10:16	
Ethylbenzene	<0.00200	0.0998	0.109	109	0.102	102	70-130	7	35	mg/kg	11.17.18 10:16	
m,p-Xylenes	<0.00399	0.200	0.221	111	0.201	101	70-130	9	35	mg/kg	11.17.18 10:16	
o-Xylene	<0.00200	0.0998	0.120	120	0.106	106	70-130	12	35	mg/kg	11.17.18 10:16	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	117		101		104		70-130	%	11.17.18 10:16
4-Bromofluorobenzene	71		77		73		70-130	%	11.17.18 10:16

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3070110 Matrix: Solid Date Prep: 11.17.18
MB Sample Id: 7666431-1-BLK LCS Sample Id: 7666431-1-BKS LCSD Sample Id: 7666431-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0926	93	0.0980	98	70-130	6	35	mg/kg	11.17.18 22:27	
Toluene	0.000677	0.100	0.0805	81	0.0844	84	70-130	5	35	mg/kg	11.17.18 22:27	
Ethylbenzene	<0.00200	0.100	0.0910	91	0.0954	95	70-130	5	35	mg/kg	11.17.18 22:27	
m,p-Xylenes	0.00110	0.200	0.179	90	0.185	93	70-130	3	35	mg/kg	11.17.18 22:27	
o-Xylene	<0.00200	0.100	0.0955	96	0.0993	99	70-130	4	35	mg/kg	11.17.18 22:27	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	119		113		123		70-130	%	11.17.18 22:27
4-Bromofluorobenzene	74		71		73		70-130	%	11.17.18 22:27

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3070109 Matrix: Soil Date Prep: 11.17.18
Parent Sample Id: 604804-001 MS Sample Id: 604804-001 S MSD Sample Id: 604804-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.000814	0.100	0.0108	10	0.0594	58	70-130	138	35	mg/kg	11.17.18 10:58	XF
Toluene	0.00276	0.100	0.00792	5	0.0455	42	70-130	141	35	mg/kg	11.17.18 10:58	XF
Ethylbenzene	0.000804	0.100	0.00649	6	0.0448	44	70-130	149	35	mg/kg	11.17.18 10:58	XF
m,p-Xylenes	0.00242	0.201	0.0115	5	0.0803	39	70-130	150	35	mg/kg	11.17.18 10:58	XF
o-Xylene	0.000982	0.100	0.00640	5	0.0438	42	70-130	149	35	mg/kg	11.17.18 10:58	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	116		110		70-130	%	11.17.18 10:58
4-Bromofluorobenzene	73		75		70-130	%	11.17.18 10:58

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

QC Summary 605115

COG Operating LLC

Unocal #PC Fed #1

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3070110 Matrix: Soil Date Prep: 11.17.18

Parent Sample Id: 605115-011 MS Sample Id: 605115-011 S MSD Sample Id: 605115-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0728	72	0.0810	81	70-130	11	35	mg/kg	11.17.18 23:13	
Toluene	0.00140	0.101	0.0562	54	0.0628	61	70-130	11	35	mg/kg	11.17.18 23:13	X
Ethylbenzene	0.00674	0.101	0.0723	65	0.0797	73	70-130	10	35	mg/kg	11.17.18 23:13	X
m,p-Xylenes	0.0193	0.202	0.149	64	0.160	70	70-130	7	35	mg/kg	11.17.18 23:13	X
o-Xylene	0.00681	0.101	0.0745	67	0.0858	79	70-130	14	35	mg/kg	11.17.18 23:13	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	84		105		70-130	%	11.17.18 23:13
4-Bromofluorobenzene	72		73		70-130	%	11.17.18 23:13

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike

Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added

LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

CHAIN OF CUSTODY

Revision 2016.1

XENCO LABORATORIES

Setting the Standard since 1990

Page 1 Of 2

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Dallas, TX (214) 902-0300 | Lubbock, TX (806) 794-1296 | San Antonio, TX (210) 509-3334 | Service Center - Baton Rouge, LA (832) 712-8143 | Service Center- Hobbs, NM (575) 392-7550

www.xenco.com

Xenco Quote # | Xenco Job # 605115

Client / Reporting Information

Company Name / Branch: COG Artesia
Company Address:
Email: Phone No:
Project Contact: Sheldon Hitchcock
Samplers's Name: Sheldon Hitchcock

Project Information

Project Name/Number: Unocal HPC Fed#1
Project Location: Eddy co. NM
Invoice To:
PO Number:

Matrix Codes

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

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	None	Analytical Information: TPH	BTEX	Chlorides	Field Comments
1	AH-1 0'	0	11/9/18	10:50	S	1								X	/	/	/	
2	AH-1 1'	1		10:55	S	1								X	/	/	/	
3	AH-1 2'	2		11:00	S	1								X	/	/	/	
4	AH-1 3'	3		11:05	S	1								X	/	/	/	
5	AH-1 4'	4		11:10	S	1								X	/	/	/	
6	AH-1 5'	5		11:15	S	1								X	/	/	/	
7	AH-2 0'	0		11:20	S	1								X	/	/	/	
8	AH-2 1'	1		11:25	S	1								X	/	/	/	
9	AH-2 2'	2		11:30	S	1								X	/	/	/	
10	AH-2 3'	3		11:35	S	1								X	/	/	/	

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [x] Contract TAT
- [ ] 3 Day EMERGENCY

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

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] Level II Report with TRRP checklist

Notes: Stop Cl⁻ if ≥ 600 mg/kg

FED-EX / UPS: Tracking # 778958823911

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Sheldon Hitchcock	11/9/18 12:45				
2					11/9/18 15:2	
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
						11/10/18 0900
4	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp. / Thermo. Corr. Factor
5						☒ 0.3 / 0.0

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at $5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

CHAIN OF CUSTODY

Revision 2016.1

XENCO LABORATORIES

Setting the Standard since 1990

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www.xenco.com

Xenco Quote # | Xenco Job # 605115

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Company Address:
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Project Contact: Sheldon Hitchcock
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Project Name/Number: Unocal HPC Fed #1
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1	AH-2 4'	4	11/9/18	11:40	S	1								X	✓	✓	✓	
2	AH-2 5'	5		11:45	S	1								X	✓	✓	✓	
3	AH-3 0'	0		12:00	S	1								X	✓	✓	✓	
4	AH-3 1'	1		12:05	S	1								X	✓	✓	✓	
5	AH-3 2'	2		12:10	S	1								X	✓	✓	✓	
6	AH-3 3'	3		12:15	S	1								X	✓	✓	✓	
7	AH-3 4'	4		12:20	S	1								X	✓	✓	✓	
8	AH-3 5'	5		12:25	S	1								X	✓	✓	✓	
9																		
10																		

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- [ ] Level 3 (CLP Forms)
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- [ ] Level II Report with TRRP checklist

Notes: Stop Cl⁻ if ≤ 600 mg/kg

FED-EX / UPS: Tracking # 773695922911

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Sheldon Hitchcock	11/9/18 1213			11/9/18 1552	
2						11/10/18
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
4						0900
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice: ☒ Cooler Temp. 0.3 Thermo. Corr. Factor 0.0

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at $5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 11/10/2018 09:00:00 AM

Work Order #: 605115

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

Temperature Measuring device used : R8

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

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

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 11/12/2018
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 11/12/2018
Jessica Kramer