

Incident ID	nAPP2116941928
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: Amber Griffin Title: Rep Safety & Environmental Sr  
 Signature: Amber Griffin Date: 11/14/2022  
 email: Amber\_Griffin@eogresources.com Telephone: 575-748-1471

**OCD Only**

Received by: Jocelyn Harimon Date: 11/15/2022

- Approved     Approved with Attached Conditions of Approval     Denied     Deferral Approved

Signature: Jennifer Nobui Date: 12/12/2022

2135 S. Loop 250 W.  
Midland, Texas 79703  
United States  
www.ghd.com

Our ref: 11230055-LTR-1

November 14, 2022

New Mexico Oil Conservation Division  
District 2  
811 South First Street  
Artesia, New Mexico 88210

Updated Site Remediation Work Plan  
Roden GD Federal #3 Release Site  
EOG Resources Inc.  
Incident ID: nAPP2116941928  
F-24-19S-24E, Eddy County, New Mexico

To Whom It May Concern:

## 1. Introduction

GHD Services Inc. (GHD), on behalf of EOG Resources (EOG), submits this Updated Site Remediation Work Plan to the New Mexico Oil Conservation Division (NMOCD) District 2 Office. This Report provides documentation of remedial activities, sampling, and analyses in the affected area at the EOG Roden GD Federal #3 Release Site (Site). The Site is located in Unit Letter F Section 24 of Township 19 South and Range 24 East in Eddy County, New Mexico. The GPS coordinates for the release site are 32.64837 N latitude and 104.54375 W longitude. The release occurred on land managed by the Bureau of Land Management (BLM). Figure 1 depicts the Site location. The EOG production facility and other site details are depicted on Figure 2, Site Details Map.

## 2. Background Information

A C-141, Release Notification, for this release was submitted to the NMOCD on June 18, 2021. The C-141 stated that no known volume or date could be assigned to this historical release. The potential release area was discovered during EOG well plugging and site abandonment activities associated with this location. Soils within the former tank battery containment appeared to be discolored and after discussions between field personnel and environmental staff, EOG made the decision to go ahead and file a C-141 for this suspect release location.

The release falls under the jurisdiction of the NMOCD District 2 Office in Artesia, New Mexico. The NMOCD assigned the release with Incident Number NAPP2116941928. The Release Notification and Site Assessment/ Characterization portions of Form C-141 are attached to the front of this report. GHD characterized the Site according to Table 1, Closure Criteria for Soils Impacted by a Release, from New Mexico Administrative Code (NMAC) Title 19, Chapter 15, Part 29, Section 12 (NMAC 19.15.29.12).

### 3. Excavation Summary

In April 2022 GHD, on behalf of EOG, completed excavation and sampling activities at the Site. During the excavation activities composite excavation samples from the sidewalls and bottom of the excavation were collected and analyzed for BTEX by EPA Method 8021B, TPH by Method 8015B Modified, and chloride by EPA Method 300. BTEX and TPH exceedances were noted in bottom hole confirmation samples BH-19 through BH-21 at 23 feet background surface (bgs). At the completion of confirmation sampling and based on results the excavation was backfilled with non-impacted soil prior to the setting of treatment wells to begin bioremediation of the hydrocarbon impacts.

Analytical results are provided in Table 1. Details regarding the completed excavation activities will be documented in the site closure report.

### 4. Treatment Summary

As approved by NMOCD on January 31, 2022, drilling oversight and installation of treatment wells was conducted on May 26, 2022, and June 1, 2022. A total of six soil treatment wells SB-1 through SB-6 were installed within the affected area to assist with the bioremediation and venting of the hydrocarbon impacts below 25 feet bgs.

One treatment well was installed for every 100 square feet of impacted area to be remediated. The wells consisted of 2-inch pvc pipe with slotted well screen installed for the last 5-10 feet of the well, well depth was staggered to ensure that the microbial product used to increase bioremediation made contact with all areas that required treatment. The product utilized for treatment was Rigby Taylor (RT) Remediact, which is a concentrated solution of bacteria and microorganisms used to bioremediate hydrocarbons in soils. The RT Remediact was absorbed into the surrounding soils, allowing for the digestion of organics and the breakdown of the hydrocarbons. The RT Remediact was injected into the wells every 2 weeks for approximately 12 weeks, totaling six separate treatments. Each well was injected with 63 gallons of solution for each treatment event. A total of 2,268 gallons of solution and 22,680 gallons of water was injected for the entire treatment period. The first treatment was completed the week of August 22, 2022 and the final treatment was completed the week of October 24, 2022.

### 5. Confirmation Soil Sampling Summary and Findings

On November 7, 2022, GHD and EOG's contractor HCI Drilling advanced three soil borings for the purpose of collecting confirmation soil samples. This consisted of performing one sample boring per 200 square feet, with samples collected at 5-foot increments beginning at 30 feet bgs to a depth of 40 feet bgs. All soil samples were analyzed for BTEX by EPA Method 8021B, TPH by Method 8015B Modified, and chloride by EPA Method 300 by Cardinal Laboratories in Hobbs, New Mexico.

Two of the three borings had samples exceeding applicable NMAC Table 1 Closure Criteria for groundwater greater than 100 feet: CB-1 and CB-3. Figure 2, Site Details Map, depicts the locations of the confirmation boring samples. The CB-1, CB-2, and CB-3 soil boring logs are provided as Attachment A. Analytical results are provided in Table 1, on Figure 3, and in the Laboratory Analytical Reports provided in Attachment B.

## 6. nAPP2116941928 Proposed Work Plan

CB-1 exhibited TPH GRO and DRO above Table 1 closure criteria to a depth of 35 and 40 feet bgs. CB-3 exhibited exceedances above Table 1 closure criteria for BTEX and TPH from 30 feet bgs to 40 feet bgs. None of the other samples submitted for analysis exhibited exceedances above Table 1 closure criteria. Based on results from the confirmation soil borings further treatment injections are required to adequately breakdown the hydrocarbon within the impacted soils. Continued injections are proposed to the speed of bioremediation.

The RT Remediate microbial strain will continue to be injected into the wells every 3 weeks for approximately 18 weeks, totaling six separate treatments. The amount of treatment solution will be increased for the injection events. Approximately 30 days after the last treatment, a core rig will be brought in to perform sampling of the treated areas. This will consist of performing one sample boring per 200 square feet, with samples collected at 5-foot increments with anticipated sampling to begin at 30 feet bgs to a depth of 40 feet bgs.

Once confirmation samples collected from the soil boring(s) post treatment are below Table 1 closure criteria, treatment wells will be plugged with non-impacted soil material and cut/capped at a depth of 3 feet bgs, or completely removed with the bore hole backfilled with non-impacted soil material. A closure report will be prepared to document remediation activities and submitted to the NMOCD. If the samples exhibit Total TPH concentrations above Table 1 closure criteria an update will be provided to NMOCD with the progress to date with the additional remediation steps that will occur for the site.

If you have any questions or comments concerning this Site Characterization and Remediation Work Plan, please do not hesitate to contact our Midland office at (432) 686-0086.

Regards,



J.T. Murray  
Project Director

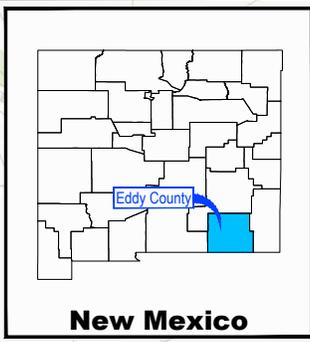
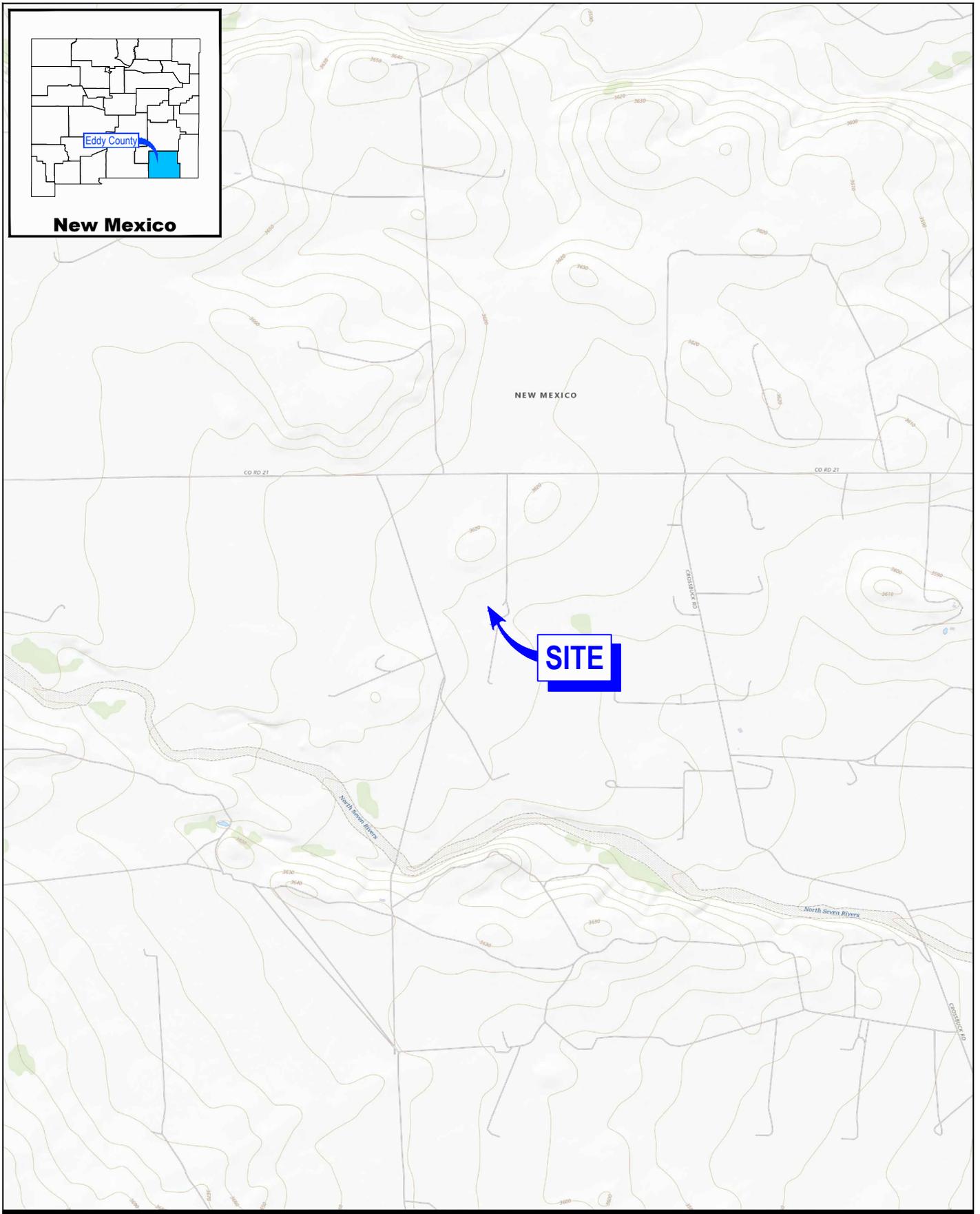


Moshghan Mansoori  
Senior Project Manager

JTM/MM/mk/LTR-1

Encl. Figure 1 – Site Location Map  
Figure 2 – Site Details Map  
Figure 3 – Confirmation Soil Analytical  
Table 1 – Summary of Soil Analytical Data  
Attachment A – CB-1, CB-2, and CB-3 Soil Boring Logs  
Attachment B – Laboratory Analytical Reports and Chain-of-Custody Documentation

cc: Chase Settle



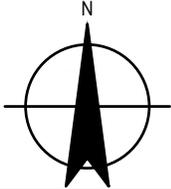
New Mexico

NEW MEXICO

SITE

0 1000 2000 ft

Coordinate System:  
NAD 1983 StatePlane-  
New Mexico East (US Feet)



EOG RESOURCES  
EDDY COUNTY, NEW MEXICO  
RODEN GD FEDERAL #3

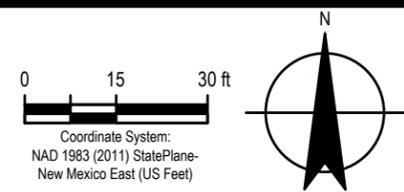
Project No. 11230055  
Date November 2022

SITE LOCATION MAP

FIGURE 1



- LEGEND**
- CONFIRMATION SAMPLE LOCATION
  - ✕ SOIL BORING LOCATION
  - INJECTION WELL LOCATION



EOG RESOURCES  
 EDDY COUNTY, NEW MEXICO  
 RODEN GD FEDERAL #3

Project No. 11230055  
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**SITE DETAILS MAP**

**FIGURE 2**



CB-2 11/07/2022			
DEPTH	30'	35'	40'
BENZENE	<0.050	<0.050	<0.050
BTEX	<0.300	<0.300	<0.300
TPH	<10	35.9	29.3
CHLORIDE	96	128	432

CB-1 11/07/2022			
DEPTH	30'	35'	40'
BENZENE	<0.050	<0.050	<0.050
BTEX	0.309	5.35	9.36
TPH	177	1,257	2,433
CHLORIDE	368	384	320

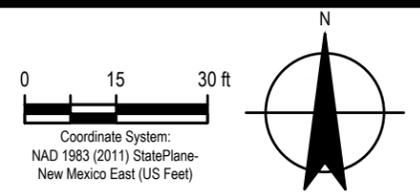
CB-3 11/07/2022			
DEPTH	30'	35'	40'
BENZENE	0.066	0.333	0.262
BTEX	20.9	53.8	38.2
TPH	2,814	3,446	5,402
CHLORIDE	192	256	240



**LEGEND**

- CONFIRMATION SAMPLE LOCATION
- x SOIL BORING LOCATION
- INJECTION WELL LOCATION
- DEPTH DEPTH OF SAMPLE (FT)
- BTEX BENZENE, TOLUENE, ETHYLBENZENE & XYLENES CONCENTRATION (MG/KG)
- TPH TOTAL PETROLEUM HYDROCARBONS CONCENTRATION (MG/KG)

- NOTES:**
- RESULTS IN MILLIGRAMS PER KILOGRAM (MG/KG).
  - SEE TABLE 1 FOR FULL ANALYTICAL RESULTS/DETAILS.
  - YELLOW SHADED CELLS INDICATE EXCEEDANCE.



EOG RESOURCES  
 EDDY COUNTY, NEW MEXICO  
 RODEN GD FEDERAL #3

**CONFIRMATION SOIL ANALYTICAL**

Project No. 11230055  
 Date November 2022

**FIGURE 3**

**Table 1**  
**Summary of Soil Analytical Data**  
**Roden GD Federal #3**  
**EOG Resources**  
**New Mexico**

Sample ID	SampleDate	Depth (ft) bgs)	Total Petroleum Hydrocarbons (TPH)										Chloride (mg/kg)
			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	BTEX (mg/kg)	GRO (C6-C10) (mg/kg)	DRO (C10-C28) (mg/kg)	GRO + DRO (mg/kg)	MRO (C28-C35) (mg/kg)	Total GRO/DRO/MRO (mg/kg)	
			Table I Closure Criteria for Soils >100 ft Depth to Groundwater 19.15.29 NMAC										
			10 mg/kg	---	---	---	50 mg/kg	---	---	1,000 mg/kg	---	2,500 mg/kg	20,000 mg/kg
<b>Initial Assessment Samples</b>													
TP1-2	7/19/21	2	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.4	<9.4	<47	<47	<60
TP1-4	7/19/21	4	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	< 10	< 10	<50	<50	<60
TP1-6	7/19/21	6	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.9	<9.9	<50	<50	150
TP2-S	7/19/21	Surface	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.8	<9.8	<49	<49	<60
TP2-2	7/19/21	2	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.8	<9.8	<49	<49	<60
TP3-S	7/19/21	Surface	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.7	<9.7	<49	<49	<60
TP3-2	7/19/21	2	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.7	<9.7	<48	<48	<60
TP4-S	7/19/21	Surface	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	14	14	<49	28	<60
TP4-2	7/19/21	2	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.5	<9.5	<48	<48	<60
TP5-15	7/19/21	15	4.1	20	73	100	197.1	2,000	9,900	11,900	3,900	27,700	110
TP5-20	7/19/21	20	10	19	82	110	221	2,300	8,800	11,100	3,500	25,700	140
TP6-S	7/19/21	Surface	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.8	<9.8	<49	<49	<60
TP6-2	7/19/21	2	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<8.7	<8.7	<43	<43	<60
TP7-S	7/19/21	Surface	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.7	<9.7	<48	<48	150
TP7-2	7/19/21	2	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.7	<9.7	<49	<49	<60
<b>Initial Assessment Samples</b>													
SB-1-5'	12/20/21	5	0.6	7.2	25	53	86	1,100	11,000	12,100	2,300	14,400	260
SB-1-10'	12/20/21	10	<0.24	0.56	21	29	51	870	6,400	7,270	1,800	16,340	<60
SB-1-15'	12/20/21	15	0.3	0.48	21	28	50	740	5,900	6,640	2,100	8,740	<60
SB-1-20'	12/20/21	20	0.31	<0.50	22	31	54	830	7,800	8,630	2,500	11,130	130
SB-1-25'	12/20/21	25	<0.25	8.4	17	33	58	840	2,300	3,140	590	3,730	960
SB-1-30'	12/20/21	30	0.23	4.5	8.1	20	33	470	920	1,390	410	1,800	2,000
SB-1-35'	12/20/21	35	2.9	45	34	95	180	2,700	5,500	8,200	730	8,930	700
SB-1-40'	12/20/21	40	4.6	46	38	100	190	2,600	6,400	9,000	1,500	10,500	330
SB-1-45'	12/20/21	45	<0.024	<0.049	0.069	0.12	0.19	9.4	380	389	110	499.4	120
SB-1-50'	12/20/21	50	<0.024	0.061	0.17	0.42	0.65	24	700	724	180	904	120
SB-1-55'	12/20/21	55	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.1	<9.1	<45	<45	<60

**Table 1**  
**Summary of Soil Analytical Data**  
**Roden GD Federal #3**  
**EOG Resources**  
**New Mexico**

Sample ID	Sample Date	Depth (ft bgs)	Total Petroleum Hydrocarbons (TPH)										Chloride (mg/kg)
			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	BTEX (mg/kg)	GRO (C6-C10) (mg/kg)	DRO (C10-C28) (mg/kg)	GRO + DRO (mg/kg)	MRO (C28-C35) (mg/kg)	Total GRO/DRO/MRO (mg/kg)	
			Table I Closure Criteria for Soils >100 ft Depth to Groundwater 19.15.29 NMAC										
			10 mg/kg	---	---	---	50 mg/kg	---	---	1,000 mg/kg	---	2,500 mg/kg	20,000 mg/kg
<b>Sidewall Confirmation Samples</b>													
SW-1	4/26/22	Sidewall	<0.019	<0.039	<0.039	<0.077	<0.077	<3.9	<9.8	<9.8	<49	<49	<60
SW-2	4/26/22	Sidewall	<0.018	<0.036	<0.036	<0.073	<0.073	<3.6	<9.8	<9.8	<49	<49	<61
SW-3	4/26/22	Sidewall	<0.017	<0.034	<0.034	<0.068	<0.068	<3.4	<10	<10	<50	<50	<60
SW-4	4/26/22	Sidewall	<0.073	<0.15	<0.15	<0.29	<0.29	<15	<b>120</b>	<b>120</b>	<48	<48	<60
SW-5	4/26/22	Sidewall	<0.078	<0.16	<0.16	<0.31	<0.31	<16	<b>120</b>	<b>120</b>	<48	<48	<60
SW-6	4/26/22	Sidewall	<0.016	<0.032	<0.032	<0.063	<0.063	<3.2	<b>27</b>	<b>27</b>	<47	<47	<59
SW-7	4/26/22	Sidewall	<0.017	<0.034	<0.034	<0.068	<0.068	<3.4	<b>170</b>	<b>170</b>	<50	<50	<60
SW-8	4/26/22	Sidewall	<0.015	<0.030	<0.030	<0.059	<0.059	<3.0	<9.1	<9.1	<45	<45	<60
SW-9	4/26/22	Sidewall	<0.015	<0.030	<0.030	<0.060	<0.060	<3.0	<9.7	<9.7	<49	<49	<60
SW-10	4/27/22	Sidewall	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	<9.9	<9.9	<49	<49	<b>190</b>
SW-11	4/27/22	Sidewall	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<10	<10	<50	<50	<b>250</b>
SW-12	4/27/22	Sidewall	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.5	<9.5	<47	<47	<60
SW-13	4/27/22	Sidewall	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.5	<9.5	<47	<47	<60
SW-14	4/27/22	Sidewall	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<10	<10	<50	<50	<b>480</b>
SW-15	4/27/22	Sidewall	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<10	<10	<50	<50	<b>170</b>
SW-16	4/27/22	Sidewall	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.6	<9.6	<48	<48	<60
SW-17	4/27/22	Sidewall	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.9	<9.9	<50	<50	<30
SW-18	4/27/22	Sidewall	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.9	<9.9	<50	<50	<60
SW-19	4/27/22	Sidewall	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.4	<9.4	<47	<47	<b>62</b>
SW-20	4/27/22	Sidewall	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.2	<9.2	<46	<46	<60
SW-21	4/27/22	Sidewall	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.5	<9.5	<48	<48	<b>1,000</b>
SW-22	4/27/22	Sidewall	<b>0.032</b>	<b>0.057</b>	<0.049	<0.099	<b>0.089</b>	<4.9	<9.9	<9.9	<50	<50	<60
SW-23	4/27/22	Sidewall	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.2	<9.2	<46	<46	<60
SW-24	4/27/22	Sidewall	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.5	<9.5	<47	<47	<60
SW-25	4/27/22	Sidewall	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.4	<9.4	<47	<47	<60

**Table 1**  
**Summary of Soil Analytical Data**  
**Roden GD Federal #3**  
**EOG Resources**  
**New Mexico**

Sample ID	SampleDate	Depth (ft bgs)	Total Petroleum Hydrocarbons (TPH)										Chloride (mg/kg)
			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	BTEX (mg/kg)	GRO (C6-C10) (mg/kg)	DRO (C10-C28) (mg/kg)	GRO + DRO (mg/kg)	MRO (C28-C35) (mg/kg)	Total GRO/DRO/MRO (mg/kg)	
			Table I Closure Criteria for Soils >100 ft Depth to Groundwater 19.15.29 NMAC										
			10 mg/kg	---	---	---	50 mg/kg	---	---	1,000 mg/kg	---	2,500 mg/kg	20,000 mg/kg
<b>Bottom Hole Confirmation Samples</b>													
BH-1	4/27/22	4	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<10	<10	<50	<50	280
BH-2	4/27/22	4	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.8	<9.8	<49	<49	<61
BH-3	4/27/22	4	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.9	<9.9	<49	<49	<60
BH-4	4/27/22	8-9	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.6	<9.6	<48	<48	720
BH-5	4/27/22	8-9	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.6	<9.6	<48	<48	<61
BH-6	4/27/22	8-9	<0.023	<0.047	<0.047	<0.093	<0.093	<4.7	<9.9	<9.9	<49	<49	<61
BH-7	4/27/22	0-4	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.8	<9.8	<49	<49	250
BH-8	4/27/22	0-4	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.5	<9.5	<48	<48	<60
BH-9	4/27/22	0-4	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.9	<9.9	<49	<49	90
BH-10	4/27/22	0-4	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.6	<9.6	<48	<48	170
BH-11	4/27/22	4-12	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.9	<9.9	<50	<50	110
BH-12	4/27/22	4-12	<0.12	<0.25	<0.25	<0.49	<0.49	<25	24	24	<49	24	79
BH-13	4/27/22	4-12	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	18	18	<48	18	480
BH-14	4/27/22	4-12	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<10	<10	<50	<50	180
BH-15	4/27/22	12-18	<0.024	<0.047	<0.047	<0.094	<0.094	<4.7	17	17	<50	17	550
BH-16	4/27/22	12-18	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	55	55	<49	55	680
BH-17	4/27/22	12-18	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.8	<9.8	<49	<49	<60
BH-18	4/27/22	12-18	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.8	<9.8	<49	<49	<60
BH-19	4/27/22	23	<0.12	<0.25	0.84	2.7	3.54	200	830	1,030	140	1,170	61
BH-20	4/27/22	23	35	130	97	170	432	5,100	8,000	13,100	2,100	15,200	1,600
BH-21	4/27/22	23	19	110	82	130	341	4,000	6,300	10,300	1,900	12,200	180
BH-22	4/27/22	18	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.4	<9.4	<47	<47	<60
BH-23	4/27/22	18	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.5	<9.5	<47	<47	<60
<b>Soil Pile Samples</b>													
SP-1	4/6/22	Stockpile	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	69	69	48	117	220
SP-2	4/6/22	Stockpile	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	84	84	65	149	210
SP-3	4/6/22	Stockpile	<0.023	<0.047	<0.047	<0.093	<0.093	<4.7	88	88	<48	88	380
SP-4	4/6/22	Stockpile	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	57	57	73	130	340
SP-5	4/6/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	48	48	51	99	330
SP-6	4/6/22	Stockpile	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	230	230	160	390	230
SP-7	4/6/22	Stockpile	<0.025	0.069	0.34	0.66	1.07	9.9	130	139.9	130	270	290

**Table 1**  
**Summary of Soil Analytical Data**  
**Roden GD Federal #3**  
**EOG Resources**  
**New Mexico**

Sample ID	SampleDate	Depth (ft bgs)	Total Petroleum Hydrocarbons (TPH)										Chloride (mg/kg)
			Benzene	Toluene	Ethylbenzene	Xylenes	BTEX	GRO (C6-C10)	DRO (C10-C28)	GRO + DRO	MRO (C28-C35)	Total GRO/DRO/MRO	
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Table I Closure Criteria for Soils >100 ft Depth to Groundwater 19.15.29 NMAC													
			10 mg/kg	---	---	---	50 mg/kg	---	---	1,000 mg/kg	---	2,500 mg/kg	20,000 mg/kg
SP1-1	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	19	19	<48	19	230
SP1-2	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	130	130	57	187	460
SP1-3	4/26/22	Stockpile	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.4	<9.4	<47	<47	200
SP1-4	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.3	<9.3	<47	<47	79
SP1-5	4/26/22	Stockpile	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	12	12	<50	12	77
SP1-6	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	11	11	<48	11	<60
SP1-7	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.7	<9.7	<49	<49	<60
SP1-8	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<10	<10	<50	<50	<59
SP1-9	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.9	<9.9	<50	<50	<61
SP1-10	4/26/22	Stockpile	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	<9.2	<9.2	<46	<46	<60
SP1-11	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.2	<9.2	<46	<46	<60
SP1-12	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	25	25	<48	25	<60
SP1-13	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.5	<9.5	<48	<48	63
SP1-14	4/26/22	Stockpile	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.8	<9.8	<49	<49	60
SP1-15	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.7	<9.7	<48	<48	71
SP1-16	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<9.8	<9.8	<49	<49	62
SP1-17	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.5	<9.5	<48	<48	<60
SP1-18	4/26/22	Stockpile	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.9	<9.9	<49	<49	<59
SP1-19	4/26/22	Stockpile	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	38	38	<50	38	<60
SP1-20	4/26/22	Stockpile	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	12	12	<47	12	85
SP1-21	4/26/22	Stockpile	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	24	24	<47	24	270
SP1-22	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	240	240	68	308	520
SP1-23	4/26/22	Stockpile	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	180	180	47	227	500
SP1-24	4/26/22	Stockpile	<0.023	<0.046	<0.046	<0.092	<0.092	6.9	350	357	87	444	360
SP1-25	4/26/22	Stockpile	<0.024	<0.047	<0.047	<0.094	<0.094	<4.7	100	100	<48	100	270
SP1-26	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	95	95	<50	95	140
SP1-27	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<8.7	<8.7	<44	<44	480
SP1-28	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	290	290	71	361	270
SP1-29	4/26/22	Stockpile	<0.024	<0.047	<0.047	<0.094	<0.094	<4.7	<9.0	<9.0	<45	<45	380
SP1-30	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	120	120	<46	120	210
SP1-31	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	100	100	<47	100	170
SP1-32	4/26/22	Stockpile	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	110	110	49	159	200
SP1-33	4/26/22	Stockpile	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	540	540	200	740	180
SP1-34	4/26/22	Stockpile	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	550	550	190	740	140
SP1-35	4/26/22	Stockpile	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	370	370	140	510	90

**Table 1**  
**Summary of Soil Analytical Data**  
 Roden GD Federal #3  
 EOG Resources  
 New Mexico

Sample ID	Sample Date	Depth (ft) bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX	Total Petroleum Hydrocarbons (TPH)					Chloride
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	GRO (C6-C10)	DRO (C10-C28)	GRO + DRO	MRO (C28-C35)	Total GRO/DRO/MRO	(mg/kg)
			Table I Closure Criteria for Soils >100 ft Depth to Groundwater 19.15.29 NMAC										
			10 mg/kg	---	---	---	50 mg/kg	---	---	1,000 mg/kg	---	2,500 mg/kg	20,000 mg/kg
Confirmation Soil Samples													
CB-1	11/7/22	30'	<0.050	<b>0.073</b>	<b>1.127</b>	<0.150	<b>0.309</b>	<b>10.4</b>	<b>145</b>	<b>155</b>	<b>22</b>	<b>177</b>	<b>368</b>
CB-1	11/7/22	35'	<0.050	<b>0.412</b>	<b>1.07</b>	<b>3.87</b>	<b>5.35</b>	<b>114</b>	<b>1,030</b>	<b>1,144</b>	<b>113</b>	<b>1,257</b>	<b>384</b>
CB-1	11/7/22	40'	<0.050	<b>0.68</b>	<b>1.64</b>	<b>7.04</b>	<b>9.36</b>	<b>245</b>	<b>1,980</b>	<b>2,225</b>	<b>208</b>	<b>2,433</b>	<b>320</b>
CB-2	11/7/22	30'	<0.050	<0.050	<b>0.068</b>	<0.150	<0.300	<10	<10	<10	<10	<10	<b>96</b>
CB-2	11/7/22	35'	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<b>35.9</b>	<b>35.9</b>	<10	<b>35.9</b>	<b>128</b>
CB-2	11/7/22	40'	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<b>29.3</b>	<b>29.3</b>	<10	<b>29.3</b>	<b>432</b>
CB-3	11/7/22	30'	<b>0.066</b>	<b>1.82</b>	<b>5.7</b>	<b>13.3</b>	<b>20.9</b>	<b>250</b>	<b>2,260</b>	<b>2,510</b>	<b>304</b>	<b>2,814</b>	<b>192</b>
CB-3	11/7/22	35'	<b>0.333</b>	<b>7.07</b>	<b>13.5</b>	<b>32.9</b>	<b>53.8</b>	<b>487</b>	<b>2,620</b>	<b>3,107</b>	<b>339</b>	<b>3,446</b>	<b>256</b>
CB-3	11/7/22	40'	<b>0.262</b>	<b>4.39</b>	<b>9.99</b>	<b>23.6</b>	<b>38.2</b>	<b>594</b>	<b>4,160</b>	<b>4,754</b>	<b>648</b>	<b>5,402</b>	<b>240</b>

Notes:

1. Values reported in mg/kg
2. < = Value Less than Reporting Limit (RL)
3. Bold Indicates Analyte Detected
4. BTEX analyses by EPA Method SW 8021B.
5. TPH analyses by EPA Method SW 8015 Mod.
6. GRO/DRO/MRO = Gasoline/Diesel/Motor Oil
7. Yellow shaded cells indicate analytical samples that exceed the NMAC 19.15.29.12 Table I Closure Criteria for the site.
8. J - the target analytes was positively identified below the quantitation limit and above the detection limit.
9. Peach shaded cells indicate analytical samples that exceed the NMAC 19.15.29.12 Table I Closure Criteria for the depth to Groundwater <50' (used for the top 4 feet)

 Sample Point Excavated

# Attachments

# Attachment A

**CB-1, CB-2, and CB-3 Soil Boring Logs**



# STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: Roden GD Federal #3  
 PROJECT NUMBER: 11230055  
 CLIENT: EOG Resources  
 LOCATION: Eddy County, New Mexico  
 DRILLING CONTRACTOR: HCI Drilling

HOLE DESIGNATION: CB-1  
 DATE COMPLETED: 7 November 2022  
 DRILLING METHOD: Air Rotary  
 FIELD PERSONNEL: L. Mullins  
 DRILLER: K. Cooper

File: \\GHDNET\GHD\US\MIDLAND\PROJECTS\16211230055\TECH\GINT LOGS\11230055 LOGS-V01.GPJ Library File: GHD\_ENV\RO\_V06.GLB Report: OVERBURDEN LOG Date: 11/11/22

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SAMPLE					
			NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)	
2	BACKFILL: caliche rock with sand, brown, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20								
21		21.00						
22	CL-SILTY CLAY, light brown, slightly moist							
23		23.00						
24	SP-SAND, fine to medium grained, light brown, slightly moist							
26								
28								
30			28-30'					67.6
32								
34			33-35'					609.2
36								
37		37.00						
38	SANDSTONE, partially consolidated, reddish brown, slightly moist							
40			38-40'					497.6
40	END OF BOREHOLE @ 40.00ft BGS	40.00						
42								
44								
46								

**NOTES:** MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



# STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: Roden GD Federal #3  
 PROJECT NUMBER: 11230055  
 CLIENT: EOG Resources  
 LOCATION: Eddy County, New Mexico  
 DRILLING CONTRACTOR: HCI Drilling

HOLE DESIGNATION: CB-2  
 DATE COMPLETED: 7 November 2022  
 DRILLING METHOD: Air Rotary  
 FIELD PERSONNEL: L. Mullins  
 DRILLER: K. Cooper

File: \\GHDNET\GHD\US\MIDLAND\PROJECTS\16211230055\TECH\GINT LOGS\11230055 LOGS-V01.GPJ Library File: GHD\_ENV\RO\_V06.GLB Report: OVERBURDEN LOG Date: 11/11/22

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SAMPLE					
			NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)	
2	BACKFILL: caliche rock with sand, brown, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20	CL-SILTY CLAY, light brown, slightly moist	20.00						
22								
24	SP-SAND, fine to medium grained, light brown, slightly moist	24.00						
26								
28								
30								43
32								
34								34.7
36								
38	SANDSTONE, partially consolidated, reddish brown, slightly moist	37.00						
40	END OF BOREHOLE @ 40.00ft BGS	40.00						60.8
42								
44								
46								

**NOTES:** MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



# STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: Roden GD Federal #3  
 PROJECT NUMBER: 11230055  
 CLIENT: EOG Resources  
 LOCATION: Eddy County, New Mexico  
 DRILLING CONTRACTOR: HCI Drilling

HOLE DESIGNATION: CB-3  
 DATE COMPLETED: 7 November 2022  
 DRILLING METHOD: Air Rotary  
 FIELD PERSONNEL: L. Mullins  
 DRILLER: K. Cooper

File: \\GHDNET\GHD\US\MIDLAND\PROJECTS\11230055\TECH\GINT LOGS\11230055 LOGS-V01.GPJ Library File: GHD\_ENV\RO\_V06.GLB Report: OVERBURDEN LOG Date: 11/11/22

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SAMPLE					
			NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)	
2	BACKFILL: caliche rock with sand, brown, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20	CL-SILTY CLAY, reddish brown to light brown, slightly moist	20.00						
22								
24								
26	SP-SAND, fine to medium grained, light brown, slightly moist	25.00						
28			28-30'					801
30								
32								
34			33-35'					734
36								
38	SANDSTONE, partially consolidated, reddish brown, slightly moist	38.00						
40	END OF BOREHOLE @ 40.00ft BGS	40.00	38-40'					892
42								
44								
46								

**NOTES:** MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

# **Attachment B**

**Laboratory Analytical Reports and  
Chain-of-Custody Documentation**



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

---

November 09, 2022

JT MURREY

GHD SERVICES, INC.

6121 INDIAN SCHOOL RD, NE STE. 200

ALBUQUERQUE, NM 87110

RE: RODEN GD FEDERAL #3

Enclosed are the results of analyses for samples received by the laboratory on 11/08/22 12:03.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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.

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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 1 ( 30' ) (H225265-01)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/08/2022	ND	1.90	94.9	2.00	2.91	
<b>Toluene*</b>	<b>0.073</b>	0.050	11/08/2022	ND	2.10	105	2.00	2.75	
<b>Ethylbenzene*</b>	<b>0.127</b>	0.050	11/08/2022	ND	1.95	97.3	2.00	3.33	
Total Xylenes*	<0.150	0.150	11/08/2022	ND	5.87	97.8	6.00	3.07	
<b>Total BTEX</b>	<b>0.309</b>	0.300	11/08/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>368</b>	16.0	11/09/2022	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>10.4</b>	10.0	11/09/2022	ND	181	90.4	200	7.48	
<b>DRO &gt;C10-C28*</b>	<b>145</b>	10.0	11/09/2022	ND	210	105	200	6.11	
<b>EXT DRO &gt;C28-C36</b>	<b>22.0</b>	10.0	11/09/2022	ND					

Surrogate: 1-Chlorooctane 78.2 % 45.3-161

Surrogate: 1-Chlorooctadecane 84.1 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 1 ( 35' ) (H225265-02)**

BTEX 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/08/2022	ND	1.90	94.9	2.00	2.91	
<b>Toluene*</b>	<b>0.412</b>	0.050	11/08/2022	ND	2.10	105	2.00	2.75	
<b>Ethylbenzene*</b>	<b>1.07</b>	0.050	11/08/2022	ND	1.95	97.3	2.00	3.33	
<b>Total Xylenes*</b>	<b>3.87</b>	0.150	11/08/2022	ND	5.87	97.8	6.00	3.07	
<b>Total BTEX</b>	<b>5.35</b>	0.300	11/08/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 207 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>384</b>	16.0	11/09/2022	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>114</b>	10.0	11/09/2022	ND	181	90.4	200	7.48	
<b>DRO &gt;C10-C28*</b>	<b>1030</b>	10.0	11/09/2022	ND	210	105	200	6.11	
<b>EXT DRO &gt;C28-C36</b>	<b>113</b>	10.0	11/09/2022	ND					

Surrogate: 1-Chlorooctane 97.6 % 45.3-161

Surrogate: 1-Chlorooctadecane 111 % 46.3-178

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 1 ( 40' ) (H225265-03)**

BTEX 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/08/2022	ND	1.90	94.9	2.00	2.91	
<b>Toluene*</b>	<b>0.680</b>	0.050	11/08/2022	ND	2.10	105	2.00	2.75	
<b>Ethylbenzene*</b>	<b>1.64</b>	0.050	11/08/2022	ND	1.95	97.3	2.00	3.33	
<b>Total Xylenes*</b>	<b>7.04</b>	0.150	11/08/2022	ND	5.87	97.8	6.00	3.07	
<b>Total BTEX</b>	<b>9.36</b>	0.300	11/08/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 221 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>320</b>	16.0	11/09/2022	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>245</b>	10.0	11/09/2022	ND	181	90.4	200	7.48	
<b>DRO &gt;C10-C28*</b>	<b>1980</b>	10.0	11/09/2022	ND	210	105	200	6.11	
<b>EXT DRO &gt;C28-C36</b>	<b>208</b>	10.0	11/09/2022	ND					

Surrogate: 1-Chlorooctane 121 % 45.3-161

Surrogate: 1-Chlorooctadecane 143 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 2 ( 30' ) (H225265-04)**

BTEX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/08/2022	ND	1.90	94.9	2.00	2.91		
Toluene*	<0.050	0.050	11/08/2022	ND	2.10	105	2.00	2.75		
<b>Ethylbenzene*</b>	<b>0.068</b>	0.050	11/08/2022	ND	1.95	97.3	2.00	3.33		
Total Xylenes*	<0.150	0.150	11/08/2022	ND	5.87	97.8	6.00	3.07		
Total BTEX	<0.300	0.300	11/08/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>96.0</b>	16.0	11/09/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	11/09/2022	ND	181	90.4	200	7.48		
DRO >C10-C28*	<10.0	10.0	11/09/2022	ND	210	105	200	6.11		
EXT DRO >C28-C36	<10.0	10.0	11/09/2022	ND						

Surrogate: 1-Chlorooctane 91.7 % 45.3-161

Surrogate: 1-Chlorooctadecane 96.0 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 2 ( 35' ) (H225265-05)**

BTEX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/08/2022	ND	1.90	94.9	2.00	2.91		
Toluene*	<0.050	0.050	11/08/2022	ND	2.10	105	2.00	2.75		
Ethylbenzene*	<0.050	0.050	11/08/2022	ND	1.95	97.3	2.00	3.33		
Total Xylenes*	<0.150	0.150	11/08/2022	ND	5.87	97.8	6.00	3.07		
Total BTEX	<0.300	0.300	11/08/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>128</b>	16.0	11/09/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	11/09/2022	ND	181	90.4	200	7.48		
<b>DRO &gt;C10-C28*</b>	<b>35.9</b>	10.0	11/09/2022	ND	210	105	200	6.11		
EXT DRO >C28-C36	<10.0	10.0	11/09/2022	ND						

Surrogate: 1-Chlorooctane 91.4 % 45.3-161

Surrogate: 1-Chlorooctadecane 98.5 % 46.3-178

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**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 2 ( 40' ) (H225265-06)**

BTEX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/08/2022	ND	1.94	96.9	2.00	5.61		
Toluene*	<0.050	0.050	11/08/2022	ND	2.09	105	2.00	6.43		
Ethylbenzene*	<0.050	0.050	11/08/2022	ND	2.05	102	2.00	7.40		
Total Xylenes*	<0.150	0.150	11/08/2022	ND	6.23	104	6.00	7.42		
Total BTEX	<0.300	0.300	11/08/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 89.6 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>432</b>	16.0	11/09/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	11/09/2022	ND	181	90.4	200	7.48		
<b>DRO &gt;C10-C28*</b>	<b>29.3</b>	10.0	11/09/2022	ND	210	105	200	6.11		
EXT DRO >C28-C36	<10.0	10.0	11/09/2022	ND						

Surrogate: 1-Chlorooctane 91.7 % 45.3-161

Surrogate: 1-Chlorooctadecane 98.5 % 46.3-178

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**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 3 ( 30' ) (H225265-07)**

BTEX 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.066</b>	0.050	11/08/2022	ND	1.94	96.9	2.00	5.61	
<b>Toluene*</b>	<b>1.82</b>	0.050	11/08/2022	ND	2.09	105	2.00	6.43	
<b>Ethylbenzene*</b>	<b>5.70</b>	0.050	11/08/2022	ND	2.05	102	2.00	7.40	
<b>Total Xylenes*</b>	<b>13.3</b>	0.150	11/08/2022	ND	6.23	104	6.00	7.42	
<b>Total BTEX</b>	<b>20.9</b>	0.300	11/08/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 219 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>192</b>	16.0	11/09/2022	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>250</b>	50.0	11/09/2022	ND	181	90.4	200	7.48	
<b>DRO &gt;C10-C28*</b>	<b>2260</b>	50.0	11/09/2022	ND	210	105	200	6.11	
<b>EXT DRO &gt;C28-C36</b>	<b>304</b>	50.0	11/09/2022	ND					

Surrogate: 1-Chlorooctane 118 % 45.3-161

Surrogate: 1-Chlorooctadecane 161 % 46.3-178

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**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 3 ( 35' ) (H225265-08)**

BTEX 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.333</b>	0.100	11/09/2022	ND	1.94	96.9	2.00	5.61	
<b>Toluene*</b>	<b>7.07</b>	0.100	11/09/2022	ND	2.09	105	2.00	6.43	
<b>Ethylbenzene*</b>	<b>13.5</b>	0.100	11/09/2022	ND	2.05	102	2.00	7.40	
<b>Total Xylenes*</b>	<b>32.9</b>	0.300	11/09/2022	ND	6.23	104	6.00	7.42	
<b>Total BTEX</b>	<b>53.8</b>	0.600	11/09/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 185 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>256</b>	16.0	11/09/2022	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>487</b>	50.0	11/09/2022	ND	181	90.4	200	7.48	
<b>DRO &gt;C10-C28*</b>	<b>2620</b>	50.0	11/09/2022	ND	210	105	200	6.11	
<b>EXT DRO &gt;C28-C36</b>	<b>339</b>	50.0	11/09/2022	ND					

Surrogate: 1-Chlorooctane 132 % 45.3-161

Surrogate: 1-Chlorooctadecane 172 % 46.3-178

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**Analytical Results For:**

GHD SERVICES, INC.  
 JT MURREY  
 6121 INDIAN SCHOOL RD, NE STE. 200  
 ALBUQUERQUE NM, 87110  
 Fax To:

Received:	11/08/2022	Sampling Date:	11/07/2022
Reported:	11/09/2022	Sampling Type:	Soil
Project Name:	RODEN GD FEDERAL #3	Sampling Condition:	Cool & Intact
Project Number:	11230055	Sample Received By:	Tamara Oldaker
Project Location:	EOG Y - ARTESIA NM		

**Sample ID: CB- 3 ( 40' ) (H225265-09)**

BTEX 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.262</b>	0.100	11/09/2022	ND	1.94	96.9	2.00	5.61	
<b>Toluene*</b>	<b>4.39</b>	0.100	11/09/2022	ND	2.09	105	2.00	6.43	
<b>Ethylbenzene*</b>	<b>9.99</b>	0.100	11/09/2022	ND	2.05	102	2.00	7.40	
<b>Total Xylenes*</b>	<b>23.6</b>	0.300	11/09/2022	ND	6.23	104	6.00	7.42	
<b>Total BTEX</b>	<b>38.2</b>	0.600	11/09/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 174 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>240</b>	16.0	11/09/2022	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>594</b>	50.0	11/09/2022	ND	181	90.4	200	7.48	
<b>DRO &gt;C10-C28*</b>	<b>4160</b>	50.0	11/09/2022	ND	210	105	200	6.11	
<b>EXT DRO &gt;C28-C36</b>	<b>648</b>	50.0	11/09/2022	ND					

Surrogate: 1-Chlorooctane 156 % 45.3-161

Surrogate: 1-Chlorooctadecane 223 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- 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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\*=Accredited Analyte

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*Celey D. Keene*

Celey D. Keene, Lab Director/Quality Manager



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**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

**BILL TO**

**ANALYSIS REQUEST**

Company Name: GHD & EDG  
 Project Manager: ST. Murray@ghd.com  
 Address: Amber Griffin on file - email  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone #: \_\_\_\_\_ Fax #: \_\_\_\_\_  
 Project #: 11230055 Project Owner: Chase Settle  
 Project Name: Roden @ EDGresources.com  
 Project Location: GAD Federal #3  
 Sampler Name: Lee M  
 FOR LAB USE ONLY

P.O. #: \_\_\_\_\_  
 Company: EDG  
 Attn: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 Fax #: \_\_\_\_\_

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.			DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :			
<u>H225265</u>	<u>CB-1(30')</u>	<u>G</u>	<u>1</u>			<u>X</u>							<u>11/7/22</u>	<u>0845</u>	<u>BTEX-8021b</u>
	<u>CB-1(35')</u>													<u>0850</u>	<u>TPH-Modified 8015 GRO/DRO/MRO</u>
	<u>CB-1(40')</u>													<u>0855</u>	<u>Chloride</u>
	<u>CB-2(30')</u>													<u>0945</u>	
	<u>CB-2(35')</u>													<u>0950</u>	
	<u>CB-2(40')</u>													<u>1000</u>	
	<u>CB-3(30')</u>													<u>1100</u>	
	<u>CB-3(35')</u>													<u>1110</u>	
	<u>CB-3(40')</u>													<u>1300</u>	

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Relinquished By: [Signature] Date: 11/8/22 Received By: [Signature]  
 Relinquished By: \_\_\_\_\_ Date: 12/03 Received By: [Signature]  
 Turnaround Time: \_\_\_\_\_ Standard  Rush   
 Verbal Result:  Yes  No Add'l Phone #: \_\_\_\_\_  
 All Results are emailed. Please provide Email address: \_\_\_\_\_  
 REMARKS: \_\_\_\_\_

Delivered By: (Circle One) Observed Temp. °C 36 Sample Condition  Cool  Intact  Yes  No  Yes  No  
 Corrected Temp. °C 30 CHECKED BY: [Signature]  
 Sampler - UPS - Bus - Other: \_\_\_\_\_  
 FOR MW-0007-K-3-3-07110222  
 † Cardinal cannot accept verbal changes. Please email changes to [celey.keene@cardinallabsnm.com](mailto:celey.keene@cardinallabsnm.com)

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
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**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  
**District IV**  
 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 158718

**CONDITIONS**

Operator: EOG RESOURCES INC P.O. Box 2267 Midland, TX 79702	OGRID: 7377
	Action Number: 158718
	Action Type: [C-141] Release Corrective Action (C-141)

**CONDITIONS**

Created By	Condition	Condition Date
jnobui	Remediation Plan Approved. Please track and report volumes of microbial strain injected into the subsurface. OCD recommends confirmation sampling occur 60 days after last injection event. Please advance confirmation soil borings adequately between injection points.	12/12/2022