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November 15, 2019

New Mexico Oil Conservation Division, District 1
1625 N. French Drive
Hobbs, NM 88240

Re: VGSAU 148
Soil Assessment Report
Case No. 1RP-3688
Lea County, New Mexico

Dear whom it concerns,

Please find enclosed for your files, a copy of the following report:

- Vacuum Grayburg-San Andres Unit (VGSAU) 148 – Soil Assessment Report (dated July 31, 2019), Unit S; Section 1; Township 18 South; Range 34 East; Lea County; New Mexico.

The submittal was prepared by GHD Services, Inc. (GHD) on behalf of Chevron Environmental Management Company (CEMC).

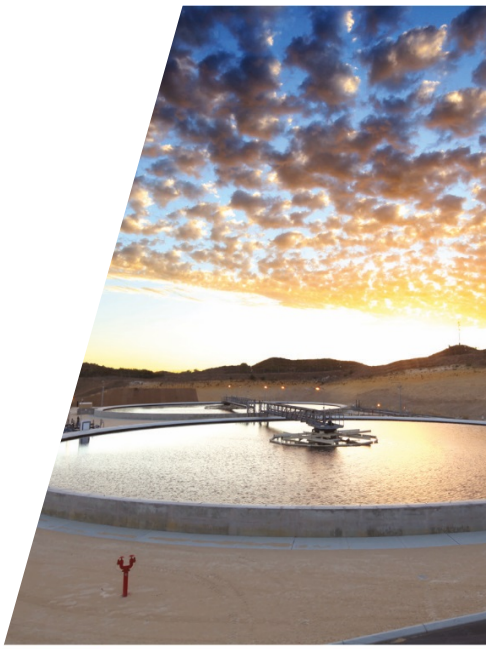
Please do not hesitate to call Scott Foord with Arcadis at 713-953-4853 or myself at 832-854-5601, should you have any questions.

Sincerely,

Jason Michelson

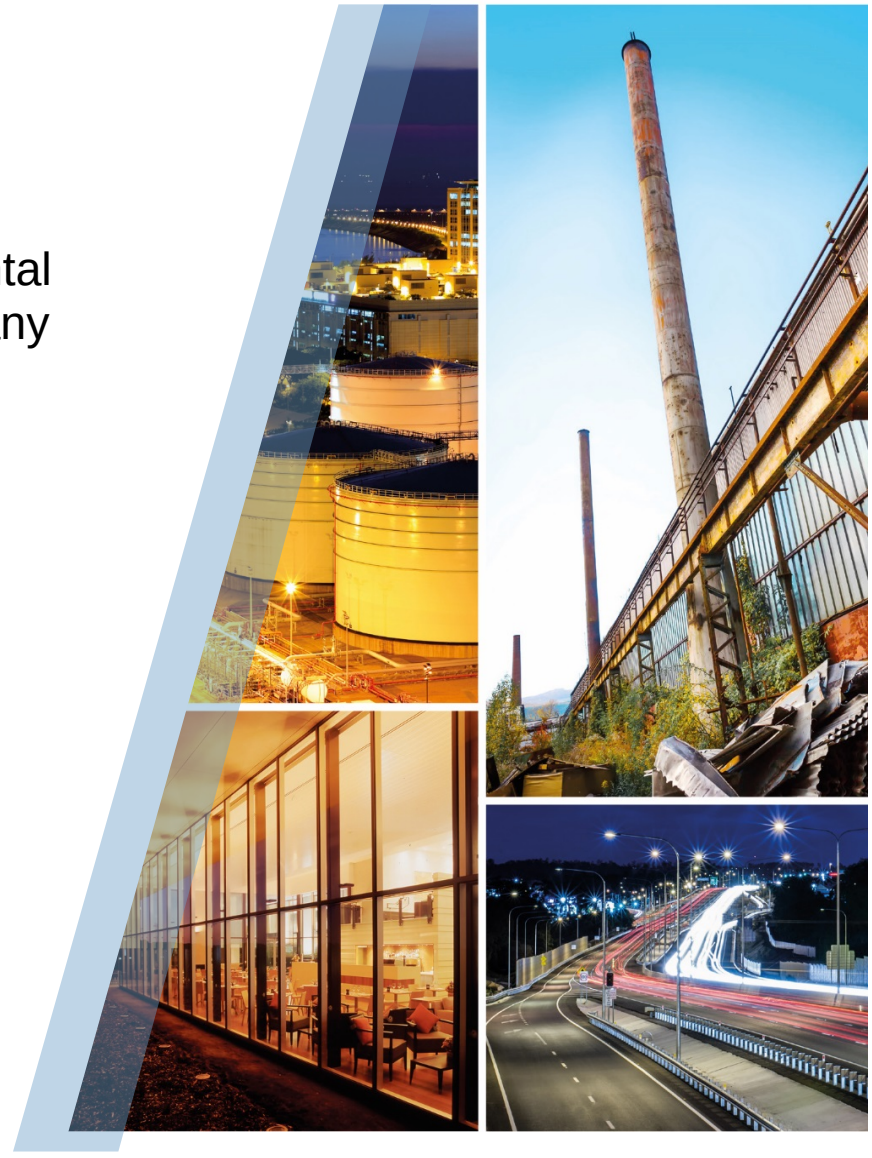
Encl. VGSAU 148 – Soil Assessment Report

C.C. Amy Barnhill, Chevron/MCBU



Soil Assessment Report

VGSAU 148 (1RP-3688)
Produced Water Release
Lea County, New Mexico



Chevron Environmental Management Company

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1. Introduction

GHD is pleased to present this Site Assessment Report to Chevron Environmental Management Company (CEMC) for the Vacuum Grayburg-San Andres Unit (VGSAU) 148 produced water release location (hereafter referred to as the "Site"). The Site is located in Unit S, Section 1, Township 18 South, Range 34 East, approximately one-half mile south of the Chevron Buckeye Field Management Team office in Lea County, New Mexico. The Site is located within the VGSAU oil field (Refer to Figures 1 and 2).

2. NMOCD Closure Requirement Criteria for Soils

Historical subsurface investigation activities were completed in accordance with the Guidelines for Remediation of Leaks, Spills, and Releases Rule 19.15.29 New Mexico Administrative Code (NMAC) from the New Mexico Oil Conservation Division (NMOCD) dated August 13, 1993. The former site-specific Recommended Remediation Action Levels (RRALs) previously applied to this location by the NMOCD were 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for total BTEX, 100 mg/kg for total TPH, and 600 mg/kg for chloride.

Rule 19.15.29 was revised and reissued on August 14, 2018. The following criteria from Table 1 (below) within NMAC 19.15.29.12 was utilized to determine site-specific screening limits.

Minimum depth below any point within the horizontal bou of the release to ground water less than	Constituent	Limit*
>100 feet	Chloride**	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

* Numerical limits or natural background level, whichever is greater.

** This applies to release of produced water or other fluids which may contain chloride.

Localized depth to groundwater was confirmed to be approximately 130 feet below ground surface (bgs) in 2018 based on the information from monitoring well MW-12 associated with the Buckeye Compressor Station facility and VGSAU 58 (AP-104) located approximately 0.80 miles northeast of VGSAU 148 (both sites monitored by GHD). The boring log for MW-12 is included in Appendix A. Additionally, SB-16 was advanced at the Site in September 2018 to 101 feet bgs and groundwater was not encountered, confirming Site groundwater extends deeper than 100 feet bgs. Information also available from various sources including the New Mexico Office of the State Engineer (NMOSE) Point of Diversion (POD) mapping portal, Petroleum Recovery Research Center (PRRC) Mapping Portal, FEMA Flood Map Service, New Mexico OSE POD Locator, currently managed groundwater site(s) data by GHD, and the United States Geological Survey (USGS) Current Water Database for the Nation, concludes:

a) the depth to groundwater at the Site is greater than 100-feet bgs;

b) the site is not within 300 feet of any continuously flowing watercourse;

c) the site is not within 200 feet of any lakebed, sinkhole or playa lake;

d) the site is not within 300 feet of an occupied permanent residence, school, etc.;

e) the site is not within 500 feet of a spring or private, domestic fresh water well;

f) the site is not within 1,000 feet of any fresh water well or spring;

g) the site is not within incorporated municipal boundaries or within a defined municipal fresh water well field;

h) the site is not within 300 feet of a wetland;

i) the site is not within an area overlying a subsurface mine;

j) the site is not within an unstable area; and

k) the site is not within a 100-year floodplain.

Consequently, the anticipated site-specific screening limits to be applied to this location by the NMOCD based on the revised Rule are 10 mg/kg for benzene, 50 mg/kg for total BTEX, 2,500 mg/kg for total TPH, and 20,000 mg/kg for chloride.

Per 19.15.29.13, Restoration, Reclamation, and Re-vegetation, the impacted area must be remediated a minimum of 4-feet bgs with non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. Soil cover must consist of topsoil at a thickness comparable to background topsoil thicknesses, or one foot of suitable earthen material capable of establishing and maintaining vegetation at the site. Reclamation is considered complete when all disturbed areas have established vegetative cover with a life-form ratio of plus or minus 50 percent of pre-remedial levels, and plant cover of a minimum of 70 percent of previous levels, excluding noxious weeds.

3. Project Information and Background

The release site is situated proximate to multiple produced water and oil gathering lines that converge at a surface manifold location. According to the NMOCD Release Notification and Corrective Action Form C-141 submitted to the agency by Chevron, the release occurred on June 22, 2015 and was immediately reported to Ms. Kellie Jones, Hobbs District 1 NMOCD office. The volume of the spill was reported as 153.55 barrels of produced water of which 30 barrels were recovered. A failure of a fiberglass water line was listed as the cause of the release.

In June 2016, Chevron contracted GHD to perform a soil assessment at the Site by implementing a soil boring installation and sampling program. On June 13 and 14, 2016, GHD subcontractor Harrison Cooper, Inc. (HCI) advanced five soil borings (SB-1 through SB-5) utilizing an air-rotary drilling rig to depths of approximately 50 feet bgs. A subsequent soil assessment was conducted on August 22 and 23, 2016. HCI advanced four additional soil borings (SB-6 through SB-9) to 50 feet bgs.

All soil samples collected during the June mobilization (SB-1 through SB-5) were below the historical NMOCD Site-specific RRALs for TPH (1,000 mg/kg) and total BTEX (50 mg/kg). Chloride concentrations in samples collected from SB-2, SB-3, SB-4, and SB-5 exceeded the historical NMOCD Site-specific RRAL of 250 mg/kg for vertical delineation of chloride. The chloride exceedances ranged from 285 mg/kg to 4,210 mg/kg at depths ranging from 5 to 10 feet bgs. The samples collected from the deeper intervals (up to 50 ft bgs) within SB-2, SB-3, SB-4, and SB-5 were below the historical RRAL for chloride.

Samples collected for chloride analysis during the August mobilization (SB-6 through SB-9) were below the historical NMOCD RRAL in all but three samples. Chloride exceeded the RRAL in SB-7 at 15 feet bgs (352 mg/kg) and 20 feet bgs (954 mg/kg), and in SB-9 at 5 feet bgs (6,540 mg/kg). Analytical results associated with assessment activities conducted in June and August 2016 indicated the horizontal extent of chloride impacts in soil had not been fully delineated.

In 2017, a two-phase geophysical investigation was completed at the Site and six additional soil borings were subsequently installed (SB-10 through SB-15) and sampled in an attempt to fully delineate the horizontal extents of the chloride impact. The electromagnetic (EM)-31 survey delineated two areas of suspected brine-impacted soils within the Site boundaries. In general, the electrical resistivity (ER) survey results indicate the zone of suspected brine impact is a surficial zone, affecting soils at surface down to approximately 30-40 feet bgs. Analytical results associated with assessment activities conducted in 2016 and 2017 indicated the horizontal extents of the chloride impact in soil had not been fully delineated. The vertical extent of chloride impact appeared delineated and confined to shallow soils less than 40 feet bgs, therefore the risk of impact to groundwater is believed minimal.

To further delineate the horizontal extent of chloride impact, additional soil borings were advanced and sampled at the Site in 2018. The results of the soil borings investigation is provided herein. Figure 3 depicts the soil boring locations installed between 2014 through 2018.

4. 2018 Drilling and Sampling

Sixteen soil borings (SB-16 through SB-31) were advanced at the Site to further assess and delineate the release area. Prior to mobilizing drilling equipment to the Site, the soil boring locations were pre marked and a New Mexico 811 One-Call utility locate was completed at least 48 hours prior to start of work. A confirmation utility check was completed that included Ground Penetrating Radar (GPR) services by High Mesa of Albuquerque, New Mexico.

On September 14, 2018, GHD and GHD subcontractor HCI, a New Mexico licensed drilling company, mobilized to the Site to begin soil boring installation activities for SB-16 through SB-31. The soil borings were pre-cleared with a hydro-vac to a depth of 8 feet bgs or until refusal. SB-16 was advanced to 101 feet bgs using an air rotary drilling methods. The remainder of the borings were advanced using an air rotary drill rig to 10 feet bgs. Soil cuttings were spread on-site and the borings were plugged with hydrated 3/8 inch bentonite hole plug. During drilling, a GHD geologist observed, visually inspected, and logged soil cuttings at 4 feet bgs and then 10-foot intervals. Subsurface lithology was recorded in accordance with the Unified Soil Classification System in field books. Boring logs prepared from the field information can be found in Appendix A.

The soil types observed in soil samples collected during the drilling program consisted of caliche followed by silty sand. Chloride screening was accomplished in the field by mixing soil samples with distilled water, then testing the rinsate using Hach chloride test strips. Total depths of the borings and collection of soil samples for laboratory analysis were determined based on chloride field test results.

Soils samples were collected from SB-16 at 4 feet bgs, 10 feet bgs, and then at 10-foot intervals down to 90 feet bgs. Soil samples were collected for laboratory analysis from SB-17 through SB-31 at 4 and 10 feet bgs. Soil samples were packed into laboratory prepared jars and stored in a cooler with ice. The soil samples were sent to Xenco Laboratories (Xenco) in Midland, Texas for chloride analysis by EPA Method 300.

4.1 Soil Sampling Analytical Results

A soil analytical summary of results from 2016 through 2018 is presented in Table 1. A Site Details and Analytical Results Map for Soils (2016 – 2018) is presented as Figure 4.

- Chloride concentrations above the revised Rule 19.15.29 screening limit of 20,000 mg/kg were not reported in any of the soil borings installed at the site, including the new soil borings installed in September 2018 (SB-16 through SB-31).
- Chloride concentrations above the revised Rule restoration limit of 600 mg/kg within the top 4 feet bgs of the soil column were reported in historical borings SB-2, SB-3, SB-5, SB-9, SB-15, and newly installed borings SB-21, SB-23, SB-24, SB-25, SB-26, SB-28, SB-29, and SB-30.

The 2018 soil laboratory analytical report is included in Appendix B.

5. Summary of Findings

Evaluation of the analytical data obtained from soil assessment and delineation activities performed from 2016 through 2018 indicate horizontal and vertical delineation of chloride impacts has been achieved at the Site to support remediation activities (excavation and lining of the area). The advancement of SB-16 to 101 feet bgs confirms that depth to groundwater at the Site is greater than 100 feet bgs.

5.1 2019 Remediation Activities

Lateral and horizontal delineation have been completed at the Site. Soil remediation activities (excavation) per NMAC 19.15.29.13 will be conducted at the Site following NMOCD approval of the 2019 Remediation Work Plan attached as Appendix C of this report.

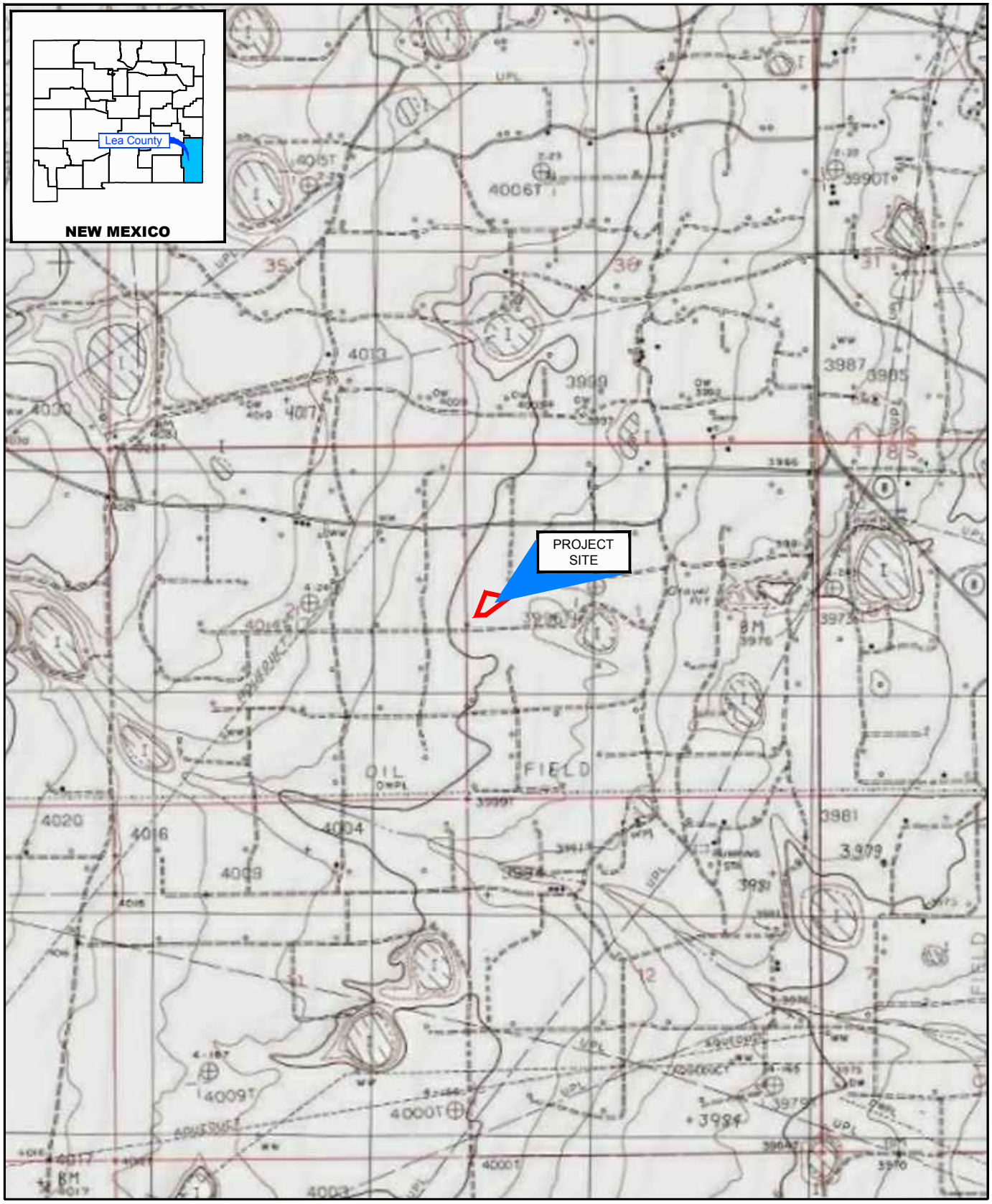
All of Which is Respectfully Submitted,

GHD

Paige Hall
Project Manager

Raaj Patel, P. G.
Senior Project Manager

Figures



Source: USGS 7.5 Minute Quad "Buckeye and Lovington SW, New Mexico"

Lat/Long: 32.777256° North, -103.521904° West

0 1000 2000ft

Coordinate System: NAD 1983 (2011) StatePlane-New Mexico East (US Feet)

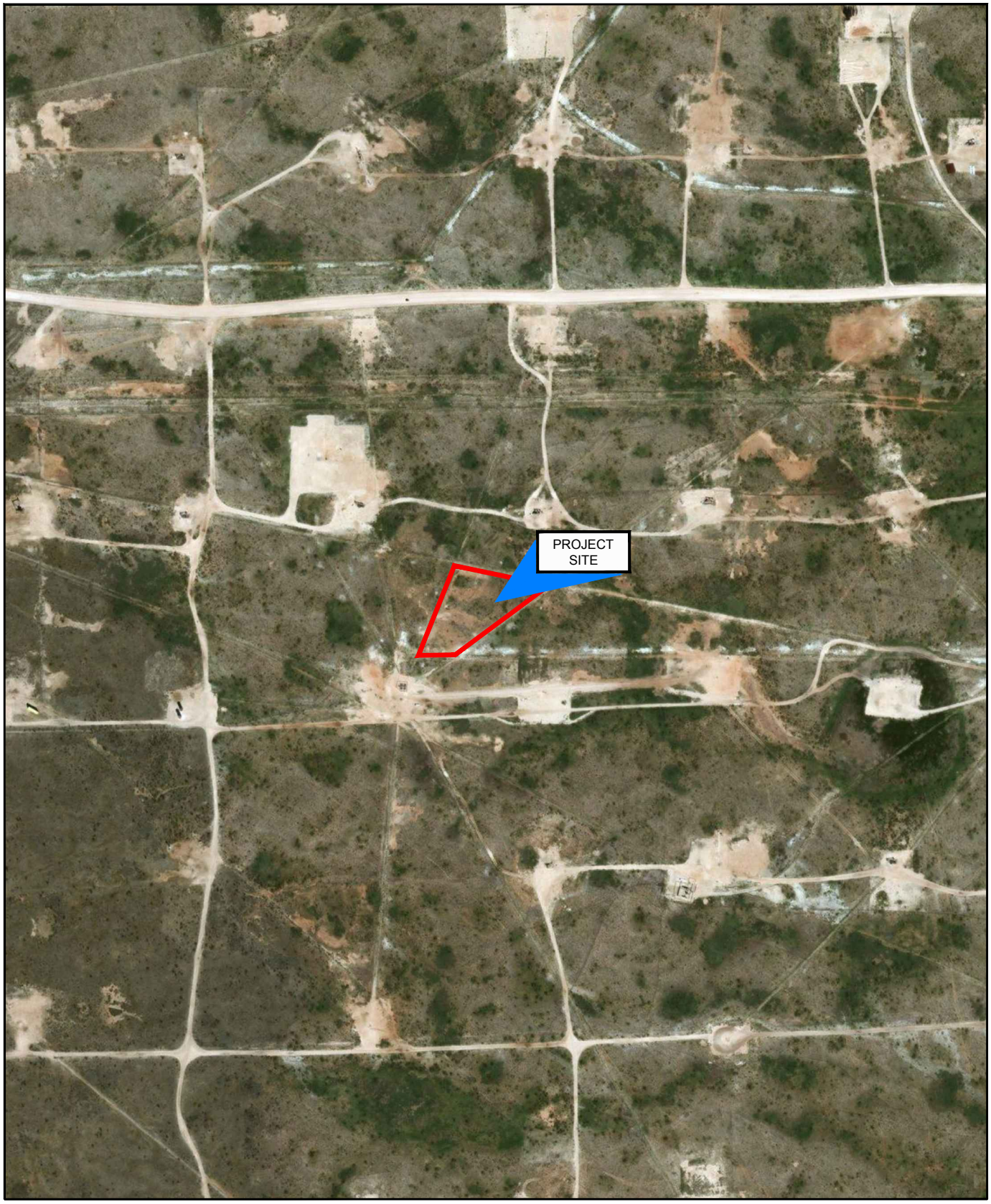
CEMC
LEA COUNTY, NEW MEXICO
VGSAU 148 PRODUCED WATER RELEASE ASSESSMENT

11121241-00
Dec 14, 2018

SITE LOCATION MAP

FIGURE 1

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1112----\11121241-CEMC-Buckeye_VGSAU 148\11121241-00(003)\11121241-00(003)GN-DL001.dwg



Source: Microsoft Product Screen shot(s) Reprinted with permission from Microsoft Corporation

Lat/Long: 32.777256° North, -103.521904° West

0 200 500ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

CEMC
LEA COUNTY, NEW MEXICO
VGSAU 148 PRODUCED WATER RELEASE ASSESSMENT

11121241-00
Dec 14, 2018

SITE AERIAL MAP

FIGURE 2

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1112----\11121241-CEMC-Buckeye_VGSAU 148\11121241-00(003)\11121241-00(003)GN-DL001.dwg

Source: Microsoft Product Screen shot(s) Reprinted with permission from Microsoft Corporation

Lat/Long: 32.777256° North, -103.521904° West

0 40 80ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

CEMC
LEA COUNTY, NEW MEXICO
VGSAU 148 PRODUCED WATER RELEASE ASSESSMENT

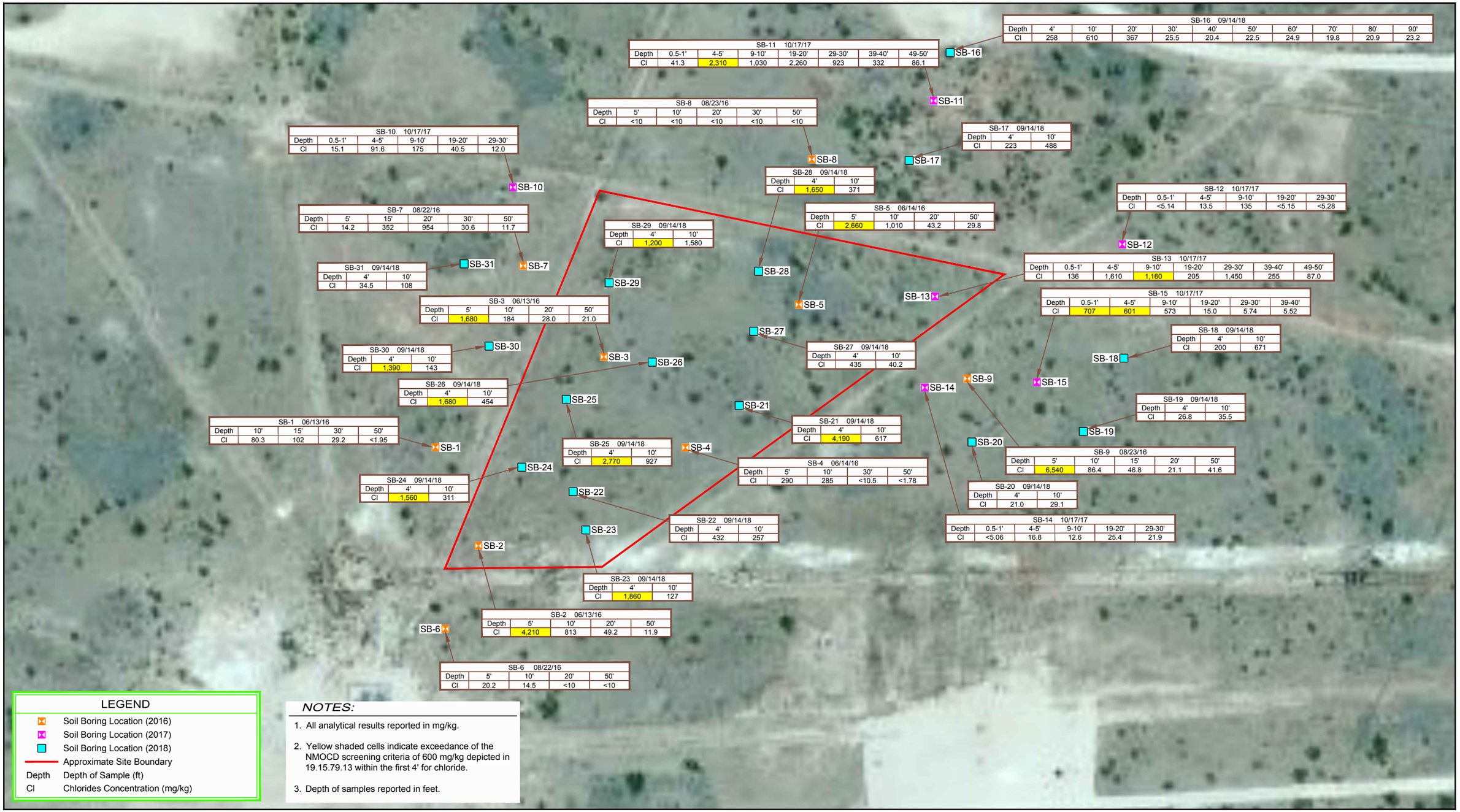
11121241-00

Mar 19, 2019

SITE DETAILS MAP

FIGURE 3

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1112----\11121241-CEMC-Buckeye_VGSAU 148\11121241-00(003)\11121241-00(003)GN-DL001.dwg



Source: Microsoft Product Screen shot(s) Reprinted with permission from Microsoft Corporation

Lat/Long: 32.777256° North, -103.521904° West

0 40 80ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

Sample ID — SB-10 10/17/17 — Sample Date
Depth 0.5-1' — Sample Depth (ft)
Chloride 707 — Sample Result (mg/kg)

GHD

CEMC
LEA COUNTY, NEW MEXICO
VGSAU 148 PRODUCED WATER RELEASE ASSESSMENT

11121241-00
Mar 19, 2019

SITE DETAILS AND ANALYTICAL RESULTS MAP

FIGURE 4

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1112----\11121241-CEMC-Buckeye_VGSAU 148\11121241-00(003)\11121241-00(003)GN-DL001.dwg

Tables

Table 1

Soil Analytical Results Summary
Chevron Environmental Management Company
VGSAU 148
Lea County, New Mexico

Sample ID	Full Sample Name	Depth (feet)	Date	Chlorides mg/kg
NMOCD Screening Standard				**20,000**
Restoration Requirements within the Top 4 feet bgs				**600***
SB-1	SB-1-10-161306	10 ft BGS	6/13/2016	80.3
SB-1	SB-1-15-161306	15 ft BGS	6/13/2016	102
SB-1	SB-1-30-161306	30 ft BGS	6/13/2016	29.2
SB-1	SB-1-50-161306	50 ft BGS	6/13/2016	<11.5
SB-2	SB-2-5-161306	5 ft BGS	6/13/2016	4210
SB-2	SB-2-10-161306	10 ft BGS	6/13/2016	813
SB-2	SB-2-20-161306	20 ft BGS	6/13/2016	49.2
SB-2	SB-2-50-161306	50 ft BGS	6/13/2016	11.9
SB-3	SB-3-5-161306	5 ft BGS	6/13/2016	1680
SB-3	SB-3-10-161306	10 ft BGS	6/13/2016	184
SB-3	SB-3-20-161306	20 ft BGS	6/13/2016	28
SB-3	SB-3-50-161306	50 ft BGS	6/13/2016	21
SB-4	SB-4-5-161306	5 ft BGS	6/14/2016	290
SB-4	SB-4-10-161306	10 ft BGS	6/14/2016	285
SB-4	SB-4-30-161306	30 ft BGS	6/14/2016	<10.5
SB-4	SB-4-50-161306	50 ft BGS	6/14/2016	<10.4
SB-5	SB-5-5-161306	5 ft BGS	6/14/2016	2660
SB-5	SB-5-10-161306	10 ft BGS	6/14/2016	1010
SB-5	SB-5-20-161306	20 ft BGS	6/14/2016	43.2
SB-5	SB-5-50-161306	50 ft BGS	6/14/2016	29.8
SB-6	SB-6-082216-5	5 ft BGS	8/22/2016	20.2
SB-6	SB-6-082216-10	10 ft BGS	8/22/2016	14.5
SB-6	SB-6-082216-20	20 ft BGS	8/22/2016	<10.0
SB-6	SB-6-082216-50	50 ft BGS	8/22/2016	<10.0
SB-7	SB-7-082216-5	5 ft BGS	8/22/2016	14.2
SB-7	SB-7-082216-15	15 ft BGS	8/22/2016	352
SB-7	SB-7-082216-20	20 ft BGS	8/22/2016	954
SB-7	SB-7-082216-30	30 ft BGS	8/22/2016	30.6
SB-7	SB-7-082216-50	50 ft BGS	8/22/2016	11.7
SB-8	SB-8-082316-5	5 ft BGS	8/23/2016	<10.0
SB-8	SB-8-082316-10	10 ft BGS	8/23/2016	<10.0
SB-8	SB-8-082316-20	20 ft BGS	8/23/2016	<10.0
SB-8	SB-8-082316-30	30 ft BGS	8/23/2016	<10.0
SB-8	SB-8-082316-50	50 ft BGS	8/23/2016	<10.0

Soil Analytical Results Summary
Chevron Environmental Management Company
VGSAU 148
Lea County, New Mexico

Sample ID	Full Sample Name	Depth (feet)	Date	Chlorides mg/kg
NMOCD Screening Standard				**20,000**
Restoration Requirements within the Top 4 feet bgs				**600***
SB-9	SB-9-082316-5	5 ft BGS	8/23/2016	6540
SB-9	SB-9-082316-10	10 ft BGS	8/23/2016	86.4
SB-9	SB-9-082316-15	15 ft BGS	8/23/2016	46.8
SB-9	SB-9-082316-20	20 ft BGS	8/23/2016	21.1
SB-9	SB-9-082316-50	50 ft BGS	8/23/2016	41.6
SB-10	SB-10-S-0.5-1-171017	0.5-1 ft BGS	10/17/2017	15.1
SB-10	SB-10-S-4-5-171017	4-5 ft BGS	10/17/2017	91.6
SB-10	SB-10-S-9-10-171017	9-10 ft BGS	10/17/2017	175
SB-10	SB-10-S-19-20-171017	19-20 ft BGS	10/17/2017	40.5
SB-10	SB-10-S-29-30-171017	29-30 ft BGS	10/17/2017	12
SB-11	SB-11-S-0.5-1-171017	0.5-1 ft BGS	10/17/2017	41.3
SB-11	SB-11-S-4-5-171017	4-5 ft BGS	10/17/2017	2310
SB-11	SB-11-S-9-10-171017	9-10 ft BGS	10/17/2017	1030
SB-11	SB-11-S-19-20-171017	19-20 ft BGS	10/17/2017	2260
SB-11	SB-11-S-29-30-171017	29-30 ft BGS	10/17/2017	923
SB-11	SB-11-S-39-40-171017	39-40 ft BGS	10/17/2017	332
SB-11	SB-11-S-49-50-171017	49-50 ft BGS	10/17/2017	86.1
SB-12	SB-12-S-0.5-1-171017	0.5-1 ft BGS	10/17/2017	<5.14
SB-12	SB-12-S-4-5-171017	4-5 ft BGS	10/17/2017	13.5
SB-12	SB-12-S-9-10-171017	9-10 ft BGS	10/17/2017	135
SB-12	SB-12-S-19-20-171017	19-20 ft BGS	10/17/2017	<5.15
SB-12	SB-12-S-29-30-171017	29-30 ft BGS	10/17/2017	<5.28
SB-13	SB-13-S-0.5-1-171017	0.5-1 ft BGS	10/17/2017	136
SB-13	SB-13-S-4-5-171017	4-5 ft BGS	10/17/2017	1610
SB-13	SB-13-S-9-10-171017	9-10 ft BGS	10/17/2017	1160
SB-13	SB-13-S-19-20-171017	19-20 ft BGS	10/17/2017	205
SB-13	SB-13-S-29-30-171017	29-30 ft BGS	10/17/2017	1450
SB-13	SB-13-S-39-40-171017	39-40 ft BGS	10/17/2017	255
SB-13	SB-13-S-49-50-171017	49-50 ft BGS	10/17/2017	87
SB-14	SB-14-S-0.5-1-171017	0.5-1 ft BGS	10/17/2017	<5.06
SB-14	SB-14-S-4-5-171017	4-5 ft BGS	10/17/2017	16.8
SB-14	SB-14-S-9-10-171017	9-10 ft BGS	10/17/2017	12.6
SB-14	SB-14-S-19-20-171017	19-20 ft BGS	10/17/2017	25.4
SB-14	SB-14-S-29-30-171017	29-30 ft BGS	10/17/2017	21.9

Soil Analytical Results Summary
Chevron Environmental Management Company
VGSAU 148
Lea County, New Mexico

Sample ID	Full Sample Name	Depth (feet)	Date	Chlorides mg/kg
NMOCD Screening Standard				**20,000**
Restoration Requirements within the Top 4 feet bgs				**600***
SB-15	SB-15-S-0.5-1-171017	0.5-1 ft BGS	10/17/2017	707
SB-15	SB-15-S-4-5-171017	4-5 ft BGS	10/17/2017	601
SB-15	SB-15-S-9-10-171017	9-10 ft BGS	10/17/2017	573
SB-15	SB-15-S-19-20-171017	19-20 ft BGS	10/17/2017	15
SB-15	SB-15-S-29-30-171017	29-30 ft BGS	10/17/2017	5.74
SB-15	SB-15-S-39-40-171017	39-40 ft BGS	10/17/2017	5.52
SB-16	SB-16-4-140918	4 ft BGS	9/14/18	258
SB-16	SB-16-10-140918	10 ft BGS	9/14/18	610
SB-16	SB-16-20-140918	20 ft BGS	9/14/18	367
SB-16	SB-16-30-140918	30 ft BGS	9/14/18	25.5
SB-16	SB-16-40-140918	40 ft BGS	9/14/18	20.4
SB-16	SB-16-50-140918	50 ft BGS	9/14/18	22.5
SB-16	SB-16-60-140918	60 ft BGS	9/14/18	24.9
SB-16	SB-16-70-140918	70 ft BGS	9/14/18	19.8
SB-16	SB-16-80-140918	80 ft BGS	9/14/18	20.9
SB-16	SB-16-90-140918	90 ft BGS	9/14/18	23.2
SB-17	SB-17-4-140918	4 ft BGS	9/14/18	223
SB-17	SB-17-10-140918	10 ft BGS	9/14/18	488
SB-18	SB-18-4-140918	4 ft BGS	9/14/18	200
SB-18	SB-18-10-140918	10 ft BGS	9/14/18	671
SB-19	SB-19-4-140918	4 ft BGS	9/14/18	26.8
SB-19	SB-19-10-140918	10 ft BGS	9/14/18	35.5
SB-20	SB-20-4-140918	4 ft BGS	9/14/18	21.0
SB-20	SB-20-10-140918	10 ft BGS	9/14/18	29.1
SB-21	SB-21-4-140918	4 ft BGS	9/14/18	4,190
SB-21	SB-21-10-140918	10 ft BGS	9/14/18	617
SB-22	SB-22-4-140918	4 ft BGS	9/14/18	432
SB-22	SB-22-10-140918	10 ft BGS	9/14/18	257
SB-23	SB-23-4-140918	4 ft BGS	9/14/18	1,860
SB-23	SB-23-10-140918	10 ft BGS	9/14/18	127
SB-24	SB-24-4-140918	4 ft BGS	9/14/18	1,560
SB-24	SB-24-10-140918	10 ft BGS	9/14/18	311

Table 1

Soil Analytical Results Summary
Chevron Environmental Management Company
VGSAU 148
Lea County, New Mexico

Sample ID	Full Sample Name	Depth (feet)	Date	Chlorides mg/kg
NMOCD Screening Standard				**20,000**
Restoration Requirements within the Top 4 feet bgs				**600***
SB-25	SB-25-4-140918	4 ft BGS	9/14/18	2,770
SB-25	SB-25-10-140918	10 ft BGS	9/14/18	927
SB-26	SB-26-4-140918	4 ft BGS	9/14/18	1,680
SB-26	SB-26-10-140918	10 ft BGS	9/14/18	454
SB-27	SB-27-4-140918	4 ft BGS	9/14/18	435
SB-27	SB-27-10-140918	10 ft BGS	9/14/18	40.2
SB-28	SB-28-4-140918	4 ft BGS	9/14/18	1,650
SB-28	SB-28-10-140918	10 ft BGS	9/14/18	371
SB-29	SB-29-4-140918	4 ft BGS	9/14/18	1,200
SB-29	SB-29-10-140918	10 ft BGS	9/14/18	1,580
SB-30	SB-30-4-140918	4 ft BGS	9/14/18	1,390
SB-30	SB-30-10-140918	10 ft BGS	9/14/18	143
SB-31	SB-31-4-140918	4 ft BGS	9/14/18	34.5
SB-31	SB-31-10-140918	10 ft BGS	9/14/18	108

Notes:

1. "--" indicates not analyzed or not applicable.
2. Chloride analyzed by EPA Method 300.
3. Highlighted values indicate exceedance of NMOCD guidance limits.
4. * Revised screening limit and restoration criteria per Rule 19.15.29 effective August 14, 2018.

Appendices

Appendix A
Soil Boring Logs

Client: Texaco

Project: Buckeye Plant

Project No: 2-0102

Location: SW/4, SE/4, Sec. 36, T17S, R34E, Lea Co., NM

Log: MW-12

Geologist: Cindy K. Crain

Page: 1 of 1

SUBSURFACE PROFILE

Depth	Symbol	Description	Elev.
0–25		***Caliche*** 7.5 YR 7/3, pink quartz sand and quartzite, very fine grained, very poorly sorted, very indurated.	3961
25–55		***Silty Sand*** 7.5 YR 7/4, pink quartz sand, very fine grained, well sorted, loose.	3933
55–145		***Sand*** 7.5 YR 5/6, strong brown quartz sand, very fine grained, well sorted, loose.	3845
145		***TD: 145'***	

SAMPLE

Number	Type	Recovery

PID Measurement (PPM)

0.25 0.75 1

0.4
0.2
0.0
0.0
0.1
0.0
0.0
0.0

Well Detail

Notes

Well Secured with Locking Above-Grade Cover

Casing Stickup: 3.01'

1.0 to 121.0': Cement-Bentonite Grout

0.0 to 124.87': 2" Sch. 40 PVC Riser (Threaded)

121.0 to 123.0': Bentonite Pellets

W. L. 129.77' (10/8/02)

124.87 to 144.49': 2" Sch. 40 Screen, 0.02" Slot (Threaded)

123.0 to 145.0': 8-16 Graded Silica Sand

Sch. 40 PVC Cap (Threaded)

Drilling Method: Rotary (water at 60')

Date Drilled: 8/29/02

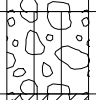
Well Size: 2"

Larson and Associates, Inc.
507 North Marienfeld St., Ste. 202
Midland, Texas 79701
(915) 687-0901

TOC Elevation: 3989.62

Checked by: CKC

Drilled by: Scarborough Drilling

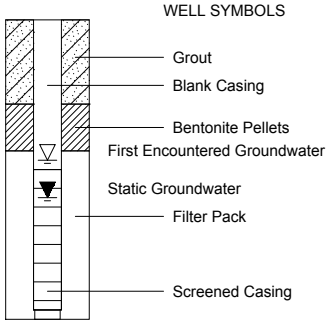
MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

SYMBOLS KEY

SAMPLE TYPES

- AK Air Knife
- Auger Cuttings
- Composite
- Rock Core
- HV Hydro-Vac
- HA Hand Auger
- Large Bore
- PS Macro-Core
- Modified Split Spoon
- No Recovery
- Post Hole Digger
- Shelby Tube
- Sonic Core
- Split Spoon
- Undisturbed Core
- Vane Shear

WELL SYMBOLS



ABBREVIATION KEY

CA	-	CHEMICAL ANALYSIS (CORROSIVITY)	(200)	-	(WITH % PASSING NO. 200 SIEVE
CD	-	CONSOLIDATED DRAINED TRIAXIAL			
CN	-	CONSOLIDATION	SW	-	SWELL TEST
CU	-	CONSOLIDATED UNDRAINED TRIAXIAL	TC	-	CYCLIC TRIAXIAL
DS	-	DIRECT SHEAR	TV	-	TORVANE SHEAR
PP	-	POCKET PENETROMETER (TSF)	UC	-	UNCONFINED COMPRESSION
(3.0)	-	(WITH SHEAR STRENGTH IN KSF)	(1.5)	-	(WITH SHEAR STRENGTH IN KSF)
RV	-	R-VALUE			
SA	-	SIEVE ANALYSIS: % PASSING #200 SIEVE	UU	-	UNCONSOLIDATED UNDRAINED TRIAXIAL
			WA	-	WASH ANALYSIS
			(200%)		(WITH % PASSING NO. 200 SIEVE)

Key to Boring Log

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-16
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	INTERVAL	REC (ft)	Chloride (mg/kg)
	CALICHE: light grey-brown, dry		4	G	1.0	258
10	SILTY SAND (SM): yellow orange, dry	10.00	10	G	1.0	610
20	CALICHE: light grey, dry	20.00	20	G	1.0	367
30	SILTY SAND (SM): yellow orange, dry, contains larger clasts/pebbles	30.00	30	G	1.0	25.5
40	- light brown, dry		40	G	1.0	20.4
50			50	G	1.0	22.5
60	- yellowish orange, dry, contains larger clasts/pebbles		60	G	1.0	24.9
70	- light brown, moist		70	G	1.0	19.8
80			80	G	1.0	20.9
90			90	G	1.0	23.2
100	END OF BOREHOLE @ 101.0ft BGS	101.00				

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-17
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	CALICHE: very light grey, dry		4	G	1.0	223
10	SILTY SAND: light yellowish orange	9.50	10	G	1.0	488
	END OF BOREHOLE @ 10.0ft BGS	10.00				

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40
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60
70
80
90
100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-18
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SILTY SAND (SM): light grey, dry, contains caliche		4	G	1.0	200
10	END OF BOREHOLE @ 10.0ft BGS	10.00	10	G	1.0	671

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-19
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	CALICHE: light grey, dry		4	G	1.0	26.8
10	SILTY SAND (SM): light yellowish orange, dry	9.50	10	G	1.0	35.5
	END OF BOREHOLE @ 10.0ft BGS	10.00				

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60
70
80
90
100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-20
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	CALICHE: very light grey, dry		4	G	1.0	21.0
10	SILT (ML): very light grey, dry	9.50	10	G	1.0	29.1
	END OF BOREHOLE @ 10.0ft BGS	10.00				

20 30 40 50 60 70 80 90 100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-21
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SANDY SILT (MLS): yellowish orange, dry		4	G	1.0	4190
10	- light grey, dry, contains larger clasts/pebbles	10.00	10	G	1.0	617
	END OF BOREHOLE @ 10.0ft BGS					

20
30
40
50
60
70
80
90
100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-22
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
0	SANDY SILTY (MLS): light grey, dry, contains caliche		4	G	1.0	432
10	- light grey, dry	10.00	10	G	1.0	257
	END OF BOREHOLE @ 10.0ft BGS					

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-23
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SILT (ML): light brownish grey, dry, contains caliche		4	G	1.0	1860
10	END OF BOREHOLE @ 10.0ft BGS	10.00	10	G	1.0	127

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-24
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SILTY SAND (SM): yellowish orange, dry, contains larger clasts/pebbles		4	G	1.0	1560
10	SANDY SILT (MLS): yellowish orange, dry	9.50	10	G	1.0	311
	END OF BOREHOLE @ 10.0ft BGS	10.00				

20 30 40 50 60 70 80 90 100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS (oval)

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-25
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	LIMESTONE: light grey, dry		4	G	1.0	2770
	SANDY SILT (MLS): light brownish grey, dry	5.00				
10	END OF BOREHOLE @ 10.0ft BGS	10.00	10	G	1.0	927
20						
30						
40						
50						
60						
70						
80						
90						
100						

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-26
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SILTY SAND (SM): light grey, dry, contains larger clasts/pebbles		4	G	1.0	1680
10	CALICHE: light grey, dry, contains chert pebbles	9.50	10	G	1.0	454
	END OF BOREHOLE @ 10.0ft BGS	10.00				
20						
30						
40						
50						
60						
70						
80						
90						
100						

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS (4, 10)

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-27
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SANDY SILT (MLS): very light grey, dry		4	G	1.0	435
10	END OF BOREHOLE @ 10.0ft BGS	10.00	10	G	1.0	40.2
20						
30						
40						
50						
60						
70						
80						
90						
100						

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-28
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	SILTY SAND (SM): yellowish orange, dry		4	G	1.0	1650
10	SANDY SILT (MLS): very light grey, dry	9.50	10	G	1.0	371
	END OF BOREHOLE @ 10.0ft BGS	10.00				

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30
40
50
60
70
80
90
100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-29
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
	CALICHE: very light grey, dry		4	G	1.0	1200
10	SANDY SILT (MLS): very light yellow orange, dry	9.50	10	G	1.0	1580
	END OF BOREHOLE @ 10.0ft BGS	10.00				

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30
40
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60
70
80
90
100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS (oval)

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-30
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
10	SILTY SAND (SM): yellow orange, dry, contains larger clasts/pebbles		4	G	1.0	1390
	- yellow orange, dry	10.00	10	G	1.0	143
	END OF BOREHOLE @ 10.0ft BGS					

20 30 40 50 60 70 80 90 100

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS ( )

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: VGSAU #148
PROJECT NUMBER: 11121241
CLIENT: Chevron Environmental Management Company
LOCATION: Lea County, New Mexico
DRILLING COMPANY: HCI

HOLE DESIGNATION: SB-31
DATE COMPLETED: 14 September 2018
DRILLING METHOD: Hydro Excavation, Air Rotary
FIELD PERSONNEL: Sean Parry

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	SAMPLE DEPTH (ft)	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE Chloride (mg/kg)
0	CALICHE: very light grey, dry		4	G	1.0	34.5
10	END OF BOREHOLE @ 10.0ft BGS	10.00	10	G	1.0	108

NOTES: Stratigraphic descriptions are based on drill cuttings.

LABORATORY ANALYSIS

OVERBURDEN LOG 11121241 CVX VGSAU 148.GPJ CRA_CORP.GDT 12/10/18

This log should not be used separately from the original report.

Appendix B
Soil Laboratory Analytical Report

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-001		599287-002		599287-003		599287-004		599287-005		599287-006	
	Field Id:	SB16-4-140918		SB16-10-140918		SB16-20-140918		SB16-30-140918		SB16-40-140918		SB16-50-140918	
	Depth:	4-		10-		20-		30-		40-		50-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-18 08:25		Sep-14-18 08:30		Sep-14-18 08:35		Sep-14-18 08:40		Sep-14-18 08:45		Sep-14-18 08:50	
Chloride by EPA 300	***Extracted:***	Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30	
	Analyzed:	Sep-21-18 12:16		Sep-21-18 12:26		Sep-21-18 12:37		Sep-21-18 13:08		Sep-21-18 13:18		Sep-21-18 13:29	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		258	5.21	610	5.44	367	5.30	25.5	5.25	20.4	5.26	22.5	5.44
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.07		8.45		5.66		5.09		5.08		8.09	

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Debbie Simmons
Project Manager

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-007		599287-008		599287-009		599287-010		599287-011		599287-012	
	Field Id:	SB16-60-140918		SB16-70-140918		SB16-80-140918		SB16-90-140918		SB17-4-140918		SB17-10-140918	
	Depth:	60-		70-		80-		90-		4-		10-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-18 08:55		Sep-14-18 09:00		Sep-14-18 09:05		Sep-14-18 09:10		Sep-14-18 09:48		Sep-14-18 09:50	
Chloride by EPA 300	***Extracted:***	Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30	
	Analyzed:	Sep-21-18 13:39		Sep-21-18 13:49		Sep-21-18 14:00		Sep-21-18 14:31		Sep-21-18 14:41		Sep-21-18 15:12	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		24.9	5.32	19.8	5.18	20.9	5.23	23.2	5.44	223	5.07	488	5.33
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.83		4.08		4.28		7.71		2.11		5.43	

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Debbie Simmons
Project Manager

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-013		599287-014		599287-015		599287-016		599287-017		599287-018	
	Field Id:	SB18-4-140918		SB18-10-140918		SB19-4-140918		SB19-10-140918		SB20-4-140918		SB20-10-140918	
	Depth:	4-		10-		4-		10-		4-		10-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-18 09:55		Sep-14-18 09:57		Sep-14-18 10:03		Sep-14-18 10:05		Sep-14-18 10:10		Sep-14-18 10:12	
Chloride by EPA 300	***Extracted:***	Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30		Sep-21-18 10:30	
	Analyzed:	Sep-21-18 15:22		Sep-21-18 15:33		Sep-21-18 15:43		Sep-21-18 15:53		Sep-21-18 16:04		Sep-21-18 16:14	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		200	5.22	671	5.45	26.8	5.05	35.5	5.17	21.0	5.22	29.1	5.19
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		3.35		7.87		1.99		3.53		4.18		3.51	

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Debbie Simmons
Project Manager

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-019		599287-020		599287-021		599287-022		599287-023		599287-024	
	Field Id:	SB21-4-140918		SB21-10-140918		SB22-4-140918		SB22-10-140918		SB23-4-140918		SB23-10-140918	
	Depth:	4-		10-		4-		10-		4-		10-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-18 10:22		Sep-14-18 10:24		Sep-14-18 10:30		Sep-14-18 10:32		Sep-14-18 10:35		Sep-14-18 10:37	
Chloride by EPA 300	***Extracted:***	Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15	
	Analyzed:	Sep-21-18 17:47		Sep-21-18 17:16		Sep-21-18 17:58		Sep-21-18 18:08		Sep-21-18 18:18		Sep-21-18 18:49	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4190	28.1	617	5.61	432	26.4	257	5.36	1860	26.2	127	5.14
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		11.1		11.1		6.13		6.33		5.52		2.66	

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Debbie Simmons
Project Manager

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-025		599287-026		599287-027		599287-028		599287-029		599287-030	
	Field Id:	SB24-4-140918		SB24-10-140918		SB25-4-140918		SB25-10-140918		SB26-4-140918		SB26-10-140918	
	Depth:	4-		10-		4-		10-		4-		10-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-18 10:42		Sep-14-18 10:44		Sep-14-18 10:47		Sep-14-18 10:49		Sep-14-18 10:52		Sep-14-18 10:54	
Chloride by EPA 300	***Extracted:***	Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15	
	Analyzed:	Sep-21-18 19:00		Sep-21-18 19:10		Sep-21-18 19:20		Sep-21-18 19:31		Sep-21-18 20:12		Sep-21-18 19:41	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1560	26.8	311	5.27	2770	26.2	927	5.14	1680	26.4	454	5.18
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		6.29		5.99		5.49		3.52		5.08		2.82	

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Debbie Simmons
Project Manager

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-031		599287-032		599287-033		599287-034		599287-035		599287-036	
	Field Id:	SB27-4-140918		SB27-10-140918		SB28-4-140918		SB28-10-140918		SB29-4-140918		SB29-10-140918	
	Depth:	4-		10-		4-		10-		4-		10-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-18 11:00		Sep-14-18 11:02		Sep-14-18 11:07		Sep-14-18 11:09		Sep-14-18 11:19		Sep-14-18 11:23	
Chloride by EPA 300	***Extracted:***	Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 11:15	
	Analyzed:	Sep-21-18 20:22		Sep-21-18 20:53		Sep-21-18 21:04		Sep-21-18 21:14		Sep-21-18 21:24		Sep-21-18 21:35	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		435	5.31	40.2	5.08	1650	26.6	371	5.40	1200	26.0	1580	27.3
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.67		2.61		5.53		6.90		4.76		9.21	

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Debbie Simmons
Project Manager

Certificate of Analysis Summary 599287

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC VGSAU 148

Project Id: 11121241
Contact: Scott Foord
Project Location:

Date Received in Lab: Mon Sep-17-18 01:19 pm
Report Date: 25-SEP-18
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	599287-037		599287-038		599287-039		599287-040					
	Field Id:	SB30-4-140918		SB30-10-140918		SB31-4-140918		SB31-10-140918					
	Depth:	4-		10-		4-		10-					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Sep-14-18 11:23		Sep-14-18 11:25		Sep-14-18 11:29		Sep-14-18 11:31					
Chloride by EPA 300	***Extracted:***	Sep-21-18 11:15		Sep-21-18 11:15		Sep-21-18 12:45		Sep-21-18 12:45					
	Analyzed:	Sep-21-18 21:45		Sep-21-18 21:55		Sep-21-18 19:27		Sep-21-18 19:44					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		1390	27.3	143	5.48	34.5	5.11	108	5.05				
Percent Moisture	***Extracted:***												
	Analyzed:	Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45		Sep-18-18 13:45					
	Units/RL:	%	RL	%	RL	%	RL	%	RL				
Percent Moisture		7.67		8.57		1.89		1.78					

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Debbie Simmons
Project Manager

Analytical Report 599287

for

GHD Services, INC- Midland

Project Manager: Scott Foord

CEMC VGSAU 148

11121241

25-SEP-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-27), 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 (T104704221-18-13)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-17)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-16)
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)

25-SEP-18

Project Manager: **Scott Foord**
GHD Services, INC- Midland
2135 S Loop 250 W
Midland, TX 79703

Reference: XENCO Report No(s): **599287**
CEMC VGSAU 148
Project Address:

Scott Foord:

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) 599287. 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. 599287 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,

Debbie Simmons

Debbie Simmons
Project Manager

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Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

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

Sample Cross Reference 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB16-4-140918	S	09-14-18 08:25	4	599287-001
SB16-10-140918	S	09-14-18 08:30	10	599287-002
SB16-20-140918	S	09-14-18 08:35	20	599287-003
SB16-30-140918	S	09-14-18 08:40	30	599287-004
SB16-40-140918	S	09-14-18 08:45	40	599287-005
SB16-50-140918	S	09-14-18 08:50	50	599287-006
SB16-60-140918	S	09-14-18 08:55	60	599287-007
SB16-70-140918	S	09-14-18 09:00	70	599287-008
SB16-80-140918	S	09-14-18 09:05	80	599287-009
SB16-90-140918	S	09-14-18 09:10	90	599287-010
SB17-4-140918	S	09-14-18 09:48	4	599287-011
SB17-10-140918	S	09-14-18 09:50	10	599287-012
SB18-4-140918	S	09-14-18 09:55	4	599287-013
SB18-10-140918	S	09-14-18 09:57	10	599287-014
SB19-4-140918	S	09-14-18 10:03	4	599287-015
SB19-10-140918	S	09-14-18 10:05	10	599287-016
SB20-4-140918	S	09-14-18 10:10	4	599287-017
SB20-10-140918	S	09-14-18 10:12	10	599287-018
SB21-4-140918	S	09-14-18 10:22	4	599287-019
SB21-10-140918	S	09-14-18 10:24	10	599287-020
SB22-4-140918	S	09-14-18 10:30	4	599287-021
SB22-10-140918	S	09-14-18 10:32	10	599287-022
SB23-4-140918	S	09-14-18 10:35	4	599287-023
SB23-10-140918	S	09-14-18 10:37	10	599287-024
SB24-4-140918	S	09-14-18 10:42	4	599287-025
SB24-10-140918	S	09-14-18 10:44	10	599287-026
SB25-4-140918	S	09-14-18 10:47	4	599287-027
SB25-10-140918	S	09-14-18 10:49	10	599287-028
SB26-4-140918	S	09-14-18 10:52	4	599287-029
SB26-10-140918	S	09-14-18 10:54	10	599287-030
SB27-4-140918	S	09-14-18 11:00	4	599287-031
SB27-10-140918	S	09-14-18 11:02	10	599287-032
SB28-4-140918	S	09-14-18 11:07	4	599287-033
SB28-10-140918	S	09-14-18 11:09	10	599287-034
SB29-4-140918	S	09-14-18 11:19	4	599287-035
SB29-10-140918	S	09-14-18 11:23	10	599287-036
SB30-4-140918	S	09-14-18 11:23	4	599287-037
SB30-10-140918	S	09-14-18 11:25	10	599287-038
SB31-4-140918	S	09-14-18 11:29	4	599287-039
SB31-10-140918	S	09-14-18 11:31	10	599287-040

CASE NARRATIVE

Client Name: GHD Services, INC- Midland

Project Name: CEMC VGSAU 148

Project ID: *11121241*
Work Order Number(s): *599287*

Report Date: *25-SEP-18*
Date Received: *09/17/2018*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-001	Date Collected:	09.14.18 08.25	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.07
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**258**	5.21	mg/kg	09.21.18 12.16		1

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-002	Date Collected:	09.14.18 08.30	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	8.45
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**610**	5.44	mg/kg	09.21.18 12.26		1

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-20-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-003	Date Collected:	09.14.18 08.35	Sample Depth:	20
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.66
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**367**	5.30	mg/kg	09.21.18 12.37		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-30-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-004	Date Collected:	09.14.18 08.40	Sample Depth:	30
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.09
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**25.5**	5.25	mg/kg	09.21.18 13.08		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-40-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-005	Date Collected:	09.14.18 08.45	Sample Depth:	40
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.08
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**20.4**	5.26	mg/kg	09.21.18 13.18		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-50-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-006	Date Collected:	09.14.18 08.50	Sample Depth:	50
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	8.09
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**22.5**	5.44	mg/kg	09.21.18 13.29		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-60-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-007	Date Collected:	09.14.18 08.55	Sample Depth:	60
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.83
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**24.9**	5.32	mg/kg	09.21.18 13.39		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-70-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-008	Date Collected:	09.14.18 09.00	Sample Depth:	70
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	4.08
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**19.8**	5.18	mg/kg	09.21.18 13.49		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-80-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-009	Date Collected:	09.14.18 09.05	Sample Depth:	80
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	4.28
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**20.9**	5.23	mg/kg	09.21.18 14.00		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB16-90-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-010	Date Collected:	09.14.18 09.10	Sample Depth:	90
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	7.71
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**23.2**	5.44	mg/kg	09.21.18 14.31		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB17-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-011	Date Collected:	09.14.18 09.48	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	2.11
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**223**	5.07	mg/kg	09.21.18 14.41		1

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB17-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-012	Date Collected:	09.14.18 09.50	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.43
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**488**	5.33	mg/kg	09.21.18 15.12		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB18-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-013	Date Collected:	09.14.18 09.55	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	3.35
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**200**	5.22	mg/kg	09.21.18 15.22		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB18-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-014	Date Collected:	09.14.18 09.57	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	7.87
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**671**	5.45	mg/kg	09.21.18 15.33		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB19-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-015	Date Collected:	09.14.18 10.03	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	1.99
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**26.8**	5.05	mg/kg	09.21.18 15.43		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB19-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-016	Date Collected:	09.14.18 10.05	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	3.53
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**35.5**	5.17	mg/kg	09.21.18 15.53		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB20-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-017	Date Collected:	09.14.18 10.10	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	4.18
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**21.0**	5.22	mg/kg	09.21.18 16.04		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB20-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-018	Date Collected:	09.14.18 10.12	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	3.51
Analyst:	SCM	Date Prep:	09.21.18 10.30	Basis:	Dry Weight
Seq Number:	3064136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**29.1**	5.19	mg/kg	09.21.18 16.14		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB21-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-019	Date Collected:	09.14.18 10.22	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	11.08
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**4190**	28.1	mg/kg	09.21.18 17.47		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB21-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-020	Date Collected:	09.14.18 10.24	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	11.1
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**617**	5.61	mg/kg	09.21.18 17.16		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB22-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-021	Date Collected:	09.14.18 10.30	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	6.13
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**432**	26.4	mg/kg	09.21.18 17.58		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB22-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-022	Date Collected:	09.14.18 10.32	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	6.33
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**257**	5.36	mg/kg	09.21.18 18.08		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB23-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-023	Date Collected:	09.14.18 10.35	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.52
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1860**	26.2	mg/kg	09.21.18 18.18		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB23-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-024	Date Collected:	09.14.18 10.37	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	2.66
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**127**	5.14	mg/kg	09.21.18 18.49		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB24-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-025	Date Collected:	09.14.18 10.42	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	6.29
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1560**	26.8	mg/kg	09.21.18 19.00		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB24-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-026	Date Collected:	09.14.18 10.44	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.99
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**311**	5.27	mg/kg	09.21.18 19.10		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB25-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-027	Date Collected:	09.14.18 10.47	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.49
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2770**	26.2	mg/kg	09.21.18 19.20		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB25-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-028	Date Collected:	09.14.18 10.49	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	3.52
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**927**	5.14	mg/kg	09.21.18 19.31		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB26-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-029	Date Collected:	09.14.18 10.52	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.08
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1680**	26.4	mg/kg	09.21.18 20.12		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB26-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-030	Date Collected:	09.14.18 10.54	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	2.82
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**454**	5.18	mg/kg	09.21.18 19.41		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB27-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-031	Date Collected:	09.14.18 11.00	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.67
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**435**	5.31	mg/kg	09.21.18 20.22		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB27-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-032	Date Collected:	09.14.18 11.02	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	2.61
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**40.2**	5.08	mg/kg	09.21.18 20.53		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB28-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-033	Date Collected:	09.14.18 11.07	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	5.53
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1650**	26.6	mg/kg	09.21.18 21.04		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB28-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-034	Date Collected:	09.14.18 11.09	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	6.9
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**371**	5.40	mg/kg	09.21.18 21.14		1

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB29-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-035	Date Collected:	09.14.18 11.19	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	4.76
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1200**	26.0	mg/kg	09.21.18 21.24		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB29-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-036	Date Collected:	09.14.18 11.23	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	9.21
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1580**	27.3	mg/kg	09.21.18 21.35		5

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GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB30-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-037	Date Collected:	09.14.18 11.23	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	7.67
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1390**	27.3	mg/kg	09.21.18 21.45		5

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB30-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-038	Date Collected:	09.14.18 11.25	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	8.57
Analyst:	SCM	Date Prep:	09.21.18 11.15	Basis:	Dry Weight
Seq Number:	3064139				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**143**	5.48	mg/kg	09.21.18 21.55		1

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB31-4-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-039	Date Collected:	09.14.18 11.29	Sample Depth:	4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	1.89
Analyst:	SCM	Date Prep:	09.21.18 12.45	Basis:	Dry Weight
Seq Number:	3064141				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**34.5**	5.11	mg/kg	09.21.18 19.27		1

Certificate of Analytical Results 599287

GHD Services, INC- Midland, Midland, TX

CEMC VGSAU 148

Sample Id:	**SB31-10-140918**	Matrix:	Soil	Date Received:	09.17.18 13.19
Lab Sample Id:	599287-040	Date Collected:	09.14.18 11.31	Sample Depth:	10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SCM			% Moisture:	1.78
Analyst:	SCM	Date Prep:	09.21.18 12.45	Basis:	Dry Weight
Seq Number:	3064141				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**108**	5.05	mg/kg	09.21.18 19.44		1

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 599287

GHD Services, INC- Midland

CEMC VGSAU 148

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3064136 — Matrix: Solid — Date Prep: 09.21.18
MB Sample Id: 7662772-1-BLK — LCS Sample Id: 7662772-1-BKS — LCSD Sample Id: 7662772-1-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	254	102	254	102	90-110	0	20	mg/kg	09.21.18 11:14	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3064139 — Matrix: Solid — Date Prep: 09.21.18
MB Sample Id: 7662793-1-BLK — LCS Sample Id: 7662793-1-BKS — LCSD Sample Id: 7662793-1-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	254	102	255	102	90-110	0	20	mg/kg	09.21.18 16:55	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3064141 — Matrix: Solid — Date Prep: 09.21.18
MB Sample Id: 7662796-1-BLK — LCS Sample Id: 7662796-1-BKS — LCSD Sample Id: 7662796-1-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	255	102	256	102	90-110	0	20	mg/kg	09.21.18 19:16	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3064136 — Matrix: Soil — Date Prep: 09.21.18
Parent Sample Id: 599287-009 — MS Sample Id: 599287-009 S — MSD Sample Id: 599287-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	20.9	262	262	92	264	93	90-110	1	20	mg/kg	09.21.18 14:10	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3064136 — Matrix: Soil — Date Prep: 09.21.18
Parent Sample Id: 599738-003 — MS Sample Id: 599738-003 S — MSD Sample Id: 599738-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	30.0	252	271	96	271	96	90-110	0	20	mg/kg	09.21.18 11:45	

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 599287

GHD Services, INC- Midland

CEMC VGSAU 148

Analytical Method: Chloride by EPA 300 Prep Method: E300P
Seq Number: 3064139 Matrix: Soil Date Prep: 09.21.18
Parent Sample Id: 599287-020 MS Sample Id: 599287-020 S MSD Sample Id: 599287-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	617	281	910	104	908	104	90-110	0	20	mg/kg	09.21.18 17:26	

Analytical Method: Chloride by EPA 300 Prep Method: E300P
Seq Number: 3064139 Matrix: Soil Date Prep: 09.21.18
Parent Sample Id: 599287-030 MS Sample Id: 599287-030 S MSD Sample Id: 599287-030 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	454	259	724	104	726	105	90-110	0	20	mg/kg	09.21.18 19:51	

Analytical Method: Chloride by EPA 300 Prep Method: E300P
Seq Number: 3064141 Matrix: Soil Date Prep: 09.21.18
Parent Sample Id: 599287-039 MS Sample Id: 599287-039 S MSD Sample Id: 599287-039 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	34.5	255	308	107	307	107	90-110	0	20	mg/kg	09.21.18 19:33	

Analytical Method: Chloride by EPA 300 Prep Method: E300P
Seq Number: 3064141 Matrix: Soil Date Prep: 09.21.18
Parent Sample Id: 599293-009 MS Sample Id: 599293-009 S MSD Sample Id: 599293-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	345	270	616	100	618	101	90-110	0	20	mg/kg	09.21.18 20:52	

Analytical Method: Percent Moisture
Seq Number: 3063618 Matrix: Solid
MB Sample Id: 3063618-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Percent Moisture	<	%	09.18.18 13:45	

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 599287

GHD Services, INC- Midland

CEMC VGSAU 148

Analytical Method: **Percent Moisture**
Seq Number: 3063619 Matrix: Solid
MB Sample Id: 3063619-1-BLK

Parameter	MB Result		Units	Analysis Date	Flag
Percent Moisture	<		%	09.18.18 13:45	

Analytical Method: **Percent Moisture**
Seq Number: 3063618 Matrix: Soil
Parent Sample Id: 599287-001 MD Sample Id: 599287-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	5.07	5.22	3	20	%	09.18.18 13:45	

Analytical Method: **Percent Moisture**
Seq Number: 3063618 Matrix: Soil
Parent Sample Id: 599287-011 MD Sample Id: 599287-011 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	2.11	2.32	9	20	%	09.18.18 13:45	

Analytical Method: **Percent Moisture**
Seq Number: 3063619 Matrix: Soil
Parent Sample Id: 599287-021 MD Sample Id: 599287-021 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	6.13	6.23	2	20	%	09.18.18 13:45	

Analytical Method: **Percent Moisture**
Seq Number: 3063619 Matrix: Soil
Parent Sample Id: 599287-031 MD Sample Id: 599287-031 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	5.67	5.41	5	20	%	09.18.18 13:45	

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

Work Order No: 599287

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)

www.xenco.com

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	Chevron Enviromental Management Company
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:		Christopher.Knight@ghd.com & William.Foord@ghd.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐

State of Project:

Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	VGSAV148 CEMC ~~Lovington Water Plant~~	Turn Around	
Project Number:	~~073016-2018-002~~ 1112141	Routine	☒
P.O. Number:		Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	2.1	Thermometer ID	IR6	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	0.0	
Sample Custody Seals:	Yes No (N/A)	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Chloride	% Moisture
SB16-4-140918	S	9/14/18	0825	4	1		
SB16-10-140918			0830	10	1		
SB16-20-140918			0835	20	1		
SB16-30-140918			0840	30	1		
SB16-40-140918			0845	40	1		
SB16-50-140918			0850	50	1		
SB16-60-140918			0855	60	1		
SB16-70-140918			0900	70	1		
SB16-80-140918			0905	80	1		
SB16-90-140918			0910	90	1		

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U 1631 / 245.1 / 7470 / 7471 : Hg

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 $75.00 will be applied to each project and a charge of $5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		9-17-18 13:15	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Chain of Custody

Work Order No: 594907

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)
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Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	Chevron Enviromental Management Company
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:	Email:	Christopher.Knight@ghd.com & William.Foord@ghd.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐

State of Project:

Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC ~~Lovington Water Plant~~ VGSAU 148	Turn Around	
Project Number:	~~073016-2018-002~~ 1112141	Routine	☒
P.O. Number:		Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	2.1	Thermometer ID:	IR6	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	0.0	
Sample Custody Seals:	Yes (No) N/A	Total Containers:		

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Chloride	% Moisture	Sample Comments
SB17-4-140918	S	9/14/18	0948	4	1	✓	✓	
SB17-10-140918			0950	10	1	✓	✓	
SB18-4-140918			0955	4	1	✓	✓	
SB18-10-140918			0957	10	1	✓	✓	
SB19-4-140918			1003	4	1	✓	✓	
SB19-10-140918			1005	10	1	✓	✓	
SB20-4-140918			1010	4	1	✓	✓	
SB20-10-140918			1012	10	1	✓	✓	
SB21-4-140918			1022	4	1	✓	✓	
SB21-10-140918	↓	↓	1024	10	1	✓	✓	

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010:** 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471 : Hg**

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Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		9-17-18 13:19	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

Chain of Custody

Work Order No: 599287

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)
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Page 3 of 4

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	Chevron Enviromental Management Company
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:		Christopher.Knight@ghd.com & William.Foord@ghd.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐

State of Project:

Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC ~~Lovington Water Plant~~ VGSAU 148	Turn Around	
Project Number:	~~073018-2018-002~~ 1112124	Routine	☒
P.O. Number:		Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	2.1	Thermometer ID	IR8	
Received Intact:	Yes No			
Cooler Custody Seals:	Yes No N/A	Correction Factor:	0.0	
Sample Custody Seals:	Yes (No) N/A	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Chloride	% Moisture
SB22-4-140918	S	9/14/18	1030	4	1	✓	✓
SB22-10-140918			1032	10	1	✓	✓
SB23-4-140918			1035	4	1	✓	✓
SB23-10-140918			1037	10	1	✓	✓
SB24-4-140918			1042	4	1	✓	✓
SB24-10-140918			1044	10	1	✓	✓
SB25-4-140918			1047	4	1	✓	✓
SB25-10-140918			1049	10	1	✓	✓
SB26-4-140918			1052	4	1	✓	✓
SB26-10-140918	↓	↓	1054	10	1	✓	✓

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010:** 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

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Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		9-17-18 13:19	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

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Chain of Custody

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)
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Work Order No: 594287

Page 4 of 4

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	Chevron Enviromental Management Company
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:		Christopher.Knight@ghd.com & William.Foord@ghd.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐

State of Project:

Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC ~~Levington Water Plant~~ VGSAU 148	Turn Around	
Project Number:	073016-2018-002	Routine	☒
P.O. Number:		Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	2.1	Thermometer ID	IR8
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No N/A	Correction Factor:	0.0
Sample Custody Seals:	Yes (No) N/A	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Chloride	% Moisture
SB27-4-140918	S	9/14/18	1100	4	1		
SB27-10-140918			1102	10	1		
SB28-4-140918			1107	4	1		
SB28-10-140918			1109	10	1		
SB29-4-140918			1119	4	1		
SB29-10-140918			1123	10	1		
SB30-4-140918			1123	4	1		
SB30-10-140918			1125	10	1		
SB31-4-140918			1129	4	1		
SB31-10-140918			1131	10	1		

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010:** 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

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 $75.00 will be applied to each project and a charge of $5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		9-17-18 13:17	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: GHD Services, INC- Midland

Date/ Time Received: 09/17/2018 01:19:00 PM

Work Order #: 599287

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.1
#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: Katie Lowe Date: 09/17/2018

Checklist reviewed by: Debbie Simmons Date: 09/19/2018

Appendix C
2019 Remediation Work Plan

March 20, 2019 Reference No. 11121241

New Mexico Oil Conservation Division – District 1
1625 N. French Drive
Hobbs, New Mexico 88240

Dear NMOCD:

Re: 2019 Remediation Work Plan
VGSAU Produced Water Release (RP-3688)
Lea County, New Mexico

1. Project Information

The Site is located in Unit S, Section 1, Township 18 South, Range 34 East, approximately one-half mile south of the Chevron Buckeye Field Management Team office in Lea County, New Mexico. Chevron submitted an initial C-141 Form to the New Mexico Oil Conservation Division (NMOCD) dated June 22, 2015 describing a release of 153.55 barrels (bbls) of produced water with 30 bbls being recovered. A failure of a fiberglass water line was listed as the cause of the release.

2. NMOCD Closure Requirement Criteria for Soils

Historical subsurface investigation activities were completed in accordance with the Guidelines for Remediation of Leaks, Spills, and Releases Rule 19.15.29 New Mexico Administrative Code (NMAC) from the NMOCD dated August 13, 1993. The former site-specific Recommended Remediation Action Levels (RRALs) previously applied to this location by the NMOCD were 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for total BTEX, 100 mg/kg for total TPH, and 600 mg/kg for chloride.

Rule 19.15.29 was revised and reissued on August 14, 2018. The following criteria from Table 1 (below) within NMAC 19.15.29.12 was utilized to determine site-specific screening limits.

Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l TDS	Constituent	Limit*
>100 feet	Chloride**	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

* Numerical limits or natural background level, whichever is greater.

** This applies to release of produced water or other fluids which may contain chloride.

Localized depth to groundwater was confirmed to be approximately 130 feet below ground surface (bgs) in 2018 based on the information from monitoring well MW-12 associated with the Buckeye Compressor Station facility and VGSAU 58 (AP-104) located approximately 0.80 miles northeast of VGSAU 148 (both sites monitored by GHD). Additionally, SB-16 was advanced at the Site in September 2018 to 101 feet bgs and groundwater was not encountered, confirming Site groundwater extends deeper than 100 feet bgs. Information also available from various sources including the New Mexico Office of the State Engineer (NMOSE) Point of Diversion (POD) mapping portal, Petroleum Recovery Research Center (PRRC) Mapping Portal, FEMA Flood Map Service, New Mexico OSE POD Locator, currently managed groundwater site(s) data by GHD, and the United States Geological Survey (USGS) Current Water Database for the Nation, concludes:

a) the depth to groundwater at the Site is greater than 100-feet bgs;

b) the site is not within 300 feet of any continuously flowing watercourse;

c) the site is not within 200 feet of any lakebed, sinkhole or playa lake;

d) the site is not within 300 feet of an occupied permanent residence, school, etc.;

e) the site is not within 500 feet of a spring or private, domestic fresh water well;

f) the site is not within 1,000 feet of any fresh water well or spring;

g) the site is not within incorporated municipal boundaries or within a defined municipal fresh water well field;

h) the site is not within 300 feet of a wetland;

i) the site is not within an area overlying a subsurface mine;

j) the site is not within an unstable area; and

k) the site is not within a 100-year floodplain.

Consequently, the anticipated site-specific screening limits to be applied to this location by the NMOCD based on the revised Rule are 10 mg/kg for benzene, 50 mg/kg for total BTEX, 2,500 mg/kg for total TPH, and 20,000 mg/kg for chloride.

Per 19.15.29.13, Restoration, Reclamation, and Re-vegetation, the impacted area must be remediated a minimum of 4-feet bgs with non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. Soil cover must consist of topsoil at a thickness comparable to background topsoil thicknesses, or one foot of suitable earthen material capable of establishing and maintaining vegetation at the site. Reclamation is considered complete when all disturbed areas have established vegetative cover with a life-form ratio of plus or minus 50 percent of pre-remedial levels, and plant cover of a minimum of 70 percent of previous levels, excluding noxious weeds.

Evaluation of the analytical data obtained from soil assessment and delineation activities performed from 2016 through 2018 indicate horizontal and vertical delineation of chloride impacts has been achieved at the Site to support remediation activities (excavation and lining of the area).

3. 2019 Scope of Work

The scope of work for this project in 2019 will involve soil remediation activities inclusive of excavation, sampling, lining the excavation, backfilling, and restoration (re-seeding of off-pad areas) of the impacted area (see Figure 1).

Chloride impacted soil will be excavated accompanied by confirmation soil sample analysis. Field screening of soils for chloride will be performed in order to guide excavation activities. Subsequently, the excavation will be lined, backfilled with clean caliche material and soil, graded and contoured to ensure proper surface area drainage, and the soil (off-pad areas) fertilized and re-seeded. The following outlines basic project details that will be completed by GHD and GHD subcontractors.

Field Program

- Prior to mobilizing excavation equipment to the Site, a New Mexico 811 utility notification will be made at least 48-hours prior to mobilization.
- In addition to the utility locate, data from the geophysical survey conducted prior to 2018 drilling activities will be re-evaluated for the proposed excavation area.
- Following all utility clearance activities, a Chevron Dig Plan will be prepared and approved by Chevron prior to performing any excavation activities.
- Underground utilities in proximity to the proposed excavation area will be day-lighted via hydroexcavation prior to remedial excavation activities.
- GHD anticipates that pipeline operators will not allow excavation within 10 feet of any pipelines, therefore remediation within these areas will be deferred until operations of the pipelines cease.
- Approximately 8,200 cubic yards (cy) of shallow sub-surface soil areas will be excavated (Figure 1). Impacted soil in the affected area will be excavated until field screening indicates that the soil is below the limit for chloride (600 mg/kg) specified in NMMAC 19.15.29.13 D (1), or until a depth of 4 feet bgs is reached.
- Soils will be field screened for chloride during excavation activities utilizing Hach chloride test strips. Soils with field test results greater than 3,000 mg/kg chloride with be transported to an approved disposal facility. If field screening indicates that soils are below 3,000 mg/kg chloride, it will be segregated into 50-100 cy stockpiles and a 5-point composite sample will be collected and analyzed for chloride by EPA Method 300. Soils with analytical results above 600 mg/kg will be transported to the R360 facility located in Hobbs, New Mexico for disposal. Stockpiled soils with analytical results below 600 mg/kg will be further consolidated on-site for use as backfill.

- Five-point composite confirmation soil samples will be collected from the excavation floor and sidewalls at 200 square feet intervals for analysis of chloride by EPA Method 300. Lateral limits of the excavation will halt once confirmation sample analytical results are 600 mg/kg chloride or less.
- If impacts appear to extend past four feet bgs, the sides of the excavation will be sloped and a 20-mil polyethylene liner will be placed in the bottom of the excavation. Liner seams will be overlapped a minimum of 24 inches. Each liner will be placed without rips or tears.
- The excavation will be backfilled with caliche and soil to grade.
- The disturbed areas will be fertilized and re-seeded with a Bureau of Land Management-approved seed mix.

Quality Assurance/ Quality Control

Confirmation soil sampling will be completed in accordance with our standard Quality Assurance/ Quality Control procedures designed to minimize cross-contamination between samples and to provide reliable laboratory results.

Reporting

A report summarizing remediation activities will be submitted. The report will include a Site description, project history, description of field events, a discussion of results, and recommendations (if any).

The report will include:

- A scaled Site plan showing the locations of the excavation and other Site features;
- Tabulation of field screening and laboratory analytical results; and
- Geotagged photographic documentation of field activities.

Vegetation Monitoring

Following completion of soil remediation activities at the Site, and as required by the New Mexico State Land Office (NMSLO), GHD will conduct vegetation monitoring visits to the Site. The status of vegetative growth within the remediated area will be documented with photographs and in field notes during each visit. A closure request report will be completed following one year of monitoring for submittal to NMSLO.

4. Work Plan Approval Request

GHD is prepared to initiate the scope of work following NMOCD approval of this work plan. If you have any questions or comments with regards to this work plan, please do not hesitate to contact our Houston office at (713) 734-3090. Your timely response to this correspondence is appreciated.

Sincerely,

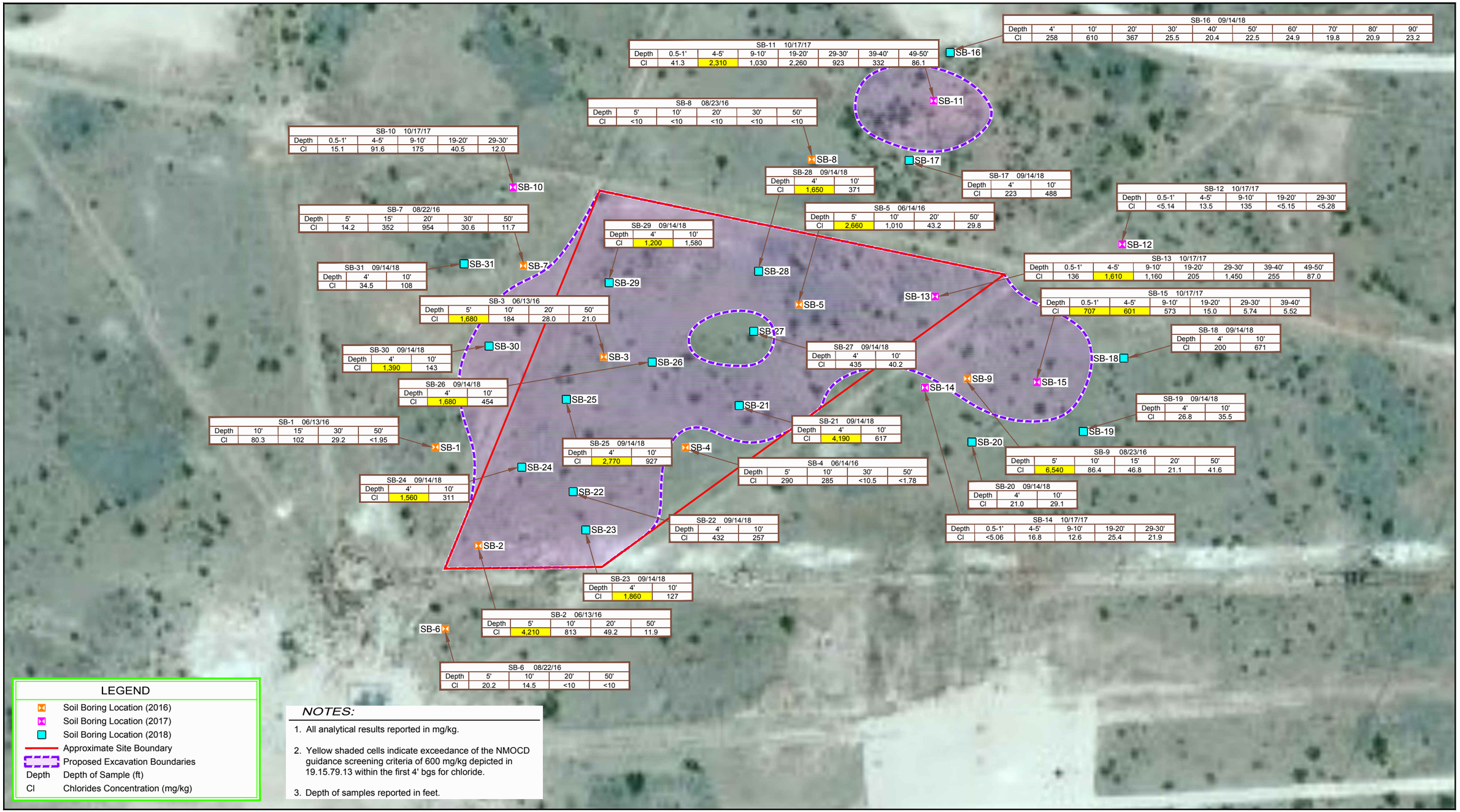
GHD

Project Manager

PH/mss/1

Encl.

Attachment: Figure 1 – Proposed Excavation Boundary Map



Source: Microsoft Product Screen shot(s) Reprinted with permission from Microsoft Corporation

Lat/Long: 32.777256° North, -103.521904° West

0 40 80ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

Sample ID — SB-10 10/17/17 — Sample Date
Depth 0.5-1' — Sample Depth (ft)
Chloride 707 — Sample Result (mg/kg)

GHD

CEMC
LEA COUNTY, NEW MEXICO
VGSAU 148 PRODUCED WATER RELEASE ASSESSMENT

11121241-00
Dec 17, 2018

PROPOSED EXCAVATION BOUNDARIES

FIGURE 1

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1112----\11121241-CEMC-Buckeye_VGSAU 148\Proposed\11121241-00(Proposed-02)GN-DL001.dwg

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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