

Site Sampling Plan

**Central Vacuum Battery Produced Water Spill Site
Lea County, New Mexico
New Mexico Oil Conservation Division (NMOCD) ID
#NCH1903942116**

Prepared For:
Chevron Mid-Continent Business Unit (MCBU)

Prepared By:
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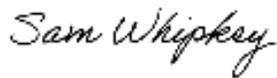
April 2019

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April 2019



Prepared by: Sam Whipkey
Environmental Geologist



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Senior Project Manager

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1. Introduction

On behalf of Chevron Mid-Continent Business Unit (MCBU), AECOM Technical Services, Inc. (AECOM) has prepared this Site Sampling Plan (SSP) to describe the assessment activities that will be conducted to characterize potential impacts to environmental media (soil and groundwater) resulting from a produced water spill that occurred at the Central Vacuum Battery ("the Site") on January 23, 2019. The primary objective of the SSP is to assess the vertical and horizontal extent of chloride-impacted soil resulting from the produced water spill and to evaluate the potential for chloride impact to groundwater.

2. Background

The Site is located at Latitude 32.794110 North, Longitude 103.504777 West, approximately 14 miles southwest of Lovington, Lea County, New Mexico (**Figure 1**).

On January 23, 2019, a release of approximately 11.35 barrels (bbls) of produced water, with a dissolved chloride concentration greater than 10,000 milligrams per liter (mg/L), occurred at the Site as the result of a pump seal leak on a water transfer pump. As required by the New Mexico Oil Conservation Division (NMOCD) under 19.15.29 New Mexico Administrative Code (NMAC), Chevron's initial response to the release included:

- Stopping the release at the source;
- Securing the impacted soil area to protect human health and the environment;
- Containing the released produced water; and
- Recovering 11 bbls of produced water.

A Release Notification, Form C-141 dated February 6, 2019, was submitted to the NMOCD. The Form C-141 documents the responsible party, location of the release source, nature, and volume of the release, and initial response to the release. NMOCD assigned the Site Incident ID #1903942116. It should be noted that the coordinates for the spill location were incorrectly reported on the initial Form C-141. The corrected coordinates are shown on the Form C-141 that is provided as **Appendix A**.

3. Initial Site Assessment/Characterization

The findings from an initial assessment/characterization of the Site are summarized below.

- Based on a Water Column/Average Depth to Water Report from the New Mexico Water Rights Reporting System (NMWRRS) for wells located within 500 meters (1,640 feet) of the Site, the shallowest potential depth to groundwater beneath the Site is 88 feet below ground surface (ft bgs) and the average depth to groundwater is 114 ft bgs. A copy of the Water Column/Average Depth to Water Report is attached as **Appendix B**.
- As reported on Form C-141, approximately 11.35 bbls of produced water were released and 11 bbls were recovered. The underlying soils at the facility are comprised of clayey sand and caliche and it currently seems unlikely that the release resulted in chloride impact to groundwater. Soil borings and soil sampling are proposed to characterize potential chloride impacts to the Site.
- There are no continuously flowing watercourses or other significant watercourses within 300 ft of the Site.
- The Site is not located within 200 ft of any lakebed, known sinkhole, or playa lake.

- The nearest occupied permanent residence, school, hospital, institution, or church is approximately 12 miles from the Site.
- There are no known springs or wells used for domestic or stock watering purposes within 500 ft of the Site.
- There are no known water wells within 1,000 ft of the Site.
- No incorporated municipal boundaries or defined municipal fresh water well fields are located within 12 miles of the Site.
- No wetlands are present within 300 ft of the Site.
- No subsurface mines are located beneath the Site.
- No karst geology features or other unstable areas are known to be located near the Site.
- A 100-year floodplain was not identified near the Site.
- Operations near the Site are for oil and gas exploration, development, production, or storage only, and no impact to areas that are not on an exploration, development, production, or storage site are expected.

Figure 1 shows the location of the Site and surrounding area on an aerial photograph. Based on information obtained during the initial desktop assessment/characterization and the volume of produced water released and recovered, no impact to groundwater, surface water, springs, or other sources of fresh water is currently suspected. However, sampling is required to characterize the extent of potential chloride impacts to soil at the Site.

4. Proposed Soil Assessment

To define the vertical and horizontal extent of potential chloride-impacted soil resulting from the produced water release, five soil borings will be drilled to a depth of 50 ft bgs. One soil boring will be placed within the center of the spill area and four additional borings will be placed around the boundary of the spill area. **Figure 2** shows the initial proposed soil boring locations. A portable electrical conductivity (EC) meter will be used to field screen surface soils in the area of the release to identify potential elevated chloride concentrations. Final soil boring locations may be adjusted in the field based on the EC screening results and visual observations of topographically low areas where surface water may tend to collect into shallow pools. Each soil boring location will be cleared for subsurface utility avoidance with an air knife or hand auger before the start of air rotary drilling. Soil drill cuttings will be collected and logged by an AECOM geologist to identify any visual signs of chloride impacts to soil and the depth to water saturation if encountered. An EC meter will be used to field screen the soil drill cuttings to identify the presence of chloride impacts to soil. Four soil cuttings samples will be collected for laboratory analysis from each borehole; one at ground surface, two at depth intervals identified as most likely to contain soil affected by produced water based on visual observation and EC field screening results, and one from the borehole terminus to confirm vertical delineation.

The selected soil samples from each boring will be transferred into clean, laboratory-provided sample containers, which will be labeled and placed on ice in laboratory-provided coolers. Chain of Custody forms will be completed and the samples will be transported to Xenco Laboratories (Xenco) in Midland, TX, a National Environmental Laboratory Accreditation Program (NELAP) certified laboratory. Xenco will analyze the samples for chloride by U.S. Environmental Protection Agency (EPA) Method 300.

At the conclusion of drilling and soil sampling activities, the soil borings will be backfilled with bentonite chips. Investigation derived waste (IDW); including soil cuttings, disposable sampling equipment and disposable personal protective equipment (PPE) such as nitrile gloves, will be placed in 55 gallon drum(s). One composite IDW sample will be collected from the drum(s) for waste characterization. The IDW characterization sample will be analyzed for:

- Inorganic Anions by EPA Method 300/300.1;
- Toxicity Characteristic Leaching Procedure (TCLP) Resource Conservation and Recovery Act (RCRA) Metals by SW-846 1311/6010C;
- Benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8021;
- Total petroleum hydrocarbons (TPH) by Method TX 1005; and
- Chloride: EPA Method 300.

The IDW characterization results will be used to prepare a waste characterization profile. AECOM will coordinate with MCBU to obtain the appropriate signatures on the waste profile and waste manifest. AECOM will then coordinate the pick-up of the drum(s) from the Site for transportation and disposal at a Chevron approved waste disposal facility that accepts oil and gas exploration and production (E&P) exempt wastes. It is currently anticipated that the IDW will be transported to the MCBU-approved Sundance disposal facility near Eunice, New Mexico.

5. Reporting

Upon receipt of the laboratory results, AECOM will prepare a report describing field sampling activities and analytical results for submittal to the NMOCD. The report will include:

- Executive Summary;
- Background information;
- Topographic map and aerial photograph of the Site and surrounding area;
- Scaled map showing the impacted area, surface features, and soil boring locations;
- Summary of the field and laboratory analytical data;
- Verification of water sources and significant watercourses within ½ mile of the extent of affected soil;
- Depth to groundwater (if observed during soil sampling activities);
- Soil boring logs;
- Data interpretation relative to the extent of chloride-impacted soil; and
- Recommendations for remedial actions to address impacted soil, or identification of any data gaps that will need to be filled before determining the extent of impacts and remediation options.

6. Schedule

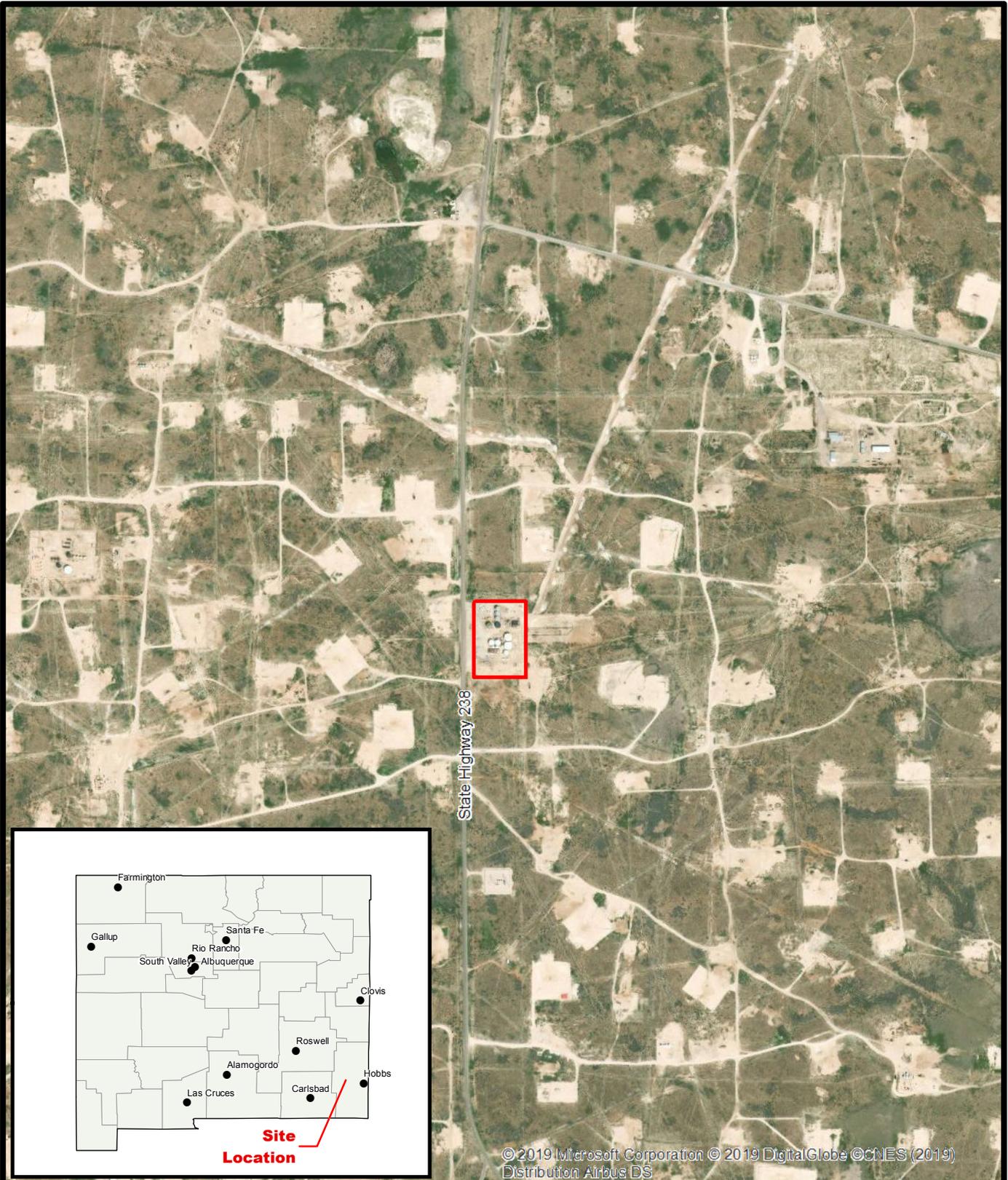
Drilling and soil sampling activities at the Site will be scheduled in May to early June.

7. References

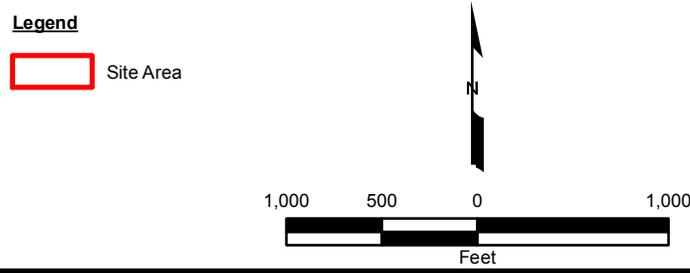
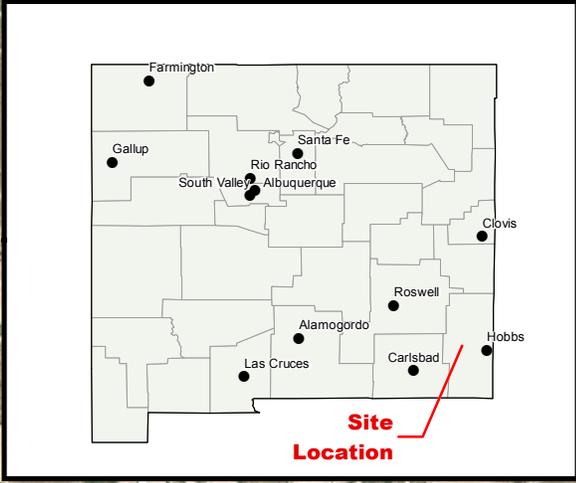
New Mexico Water Rights Reporting System (NMWRRS), Water Column/Average Depth To Water Report. <http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html> .

Figures

Path: L:\AGE\GIS\AUS_GIS\GIS_Projects\Chevron\IMXD\Fig 1 Site Loc Map_CVBatteryLocation.mxd Date: 4/4/2019



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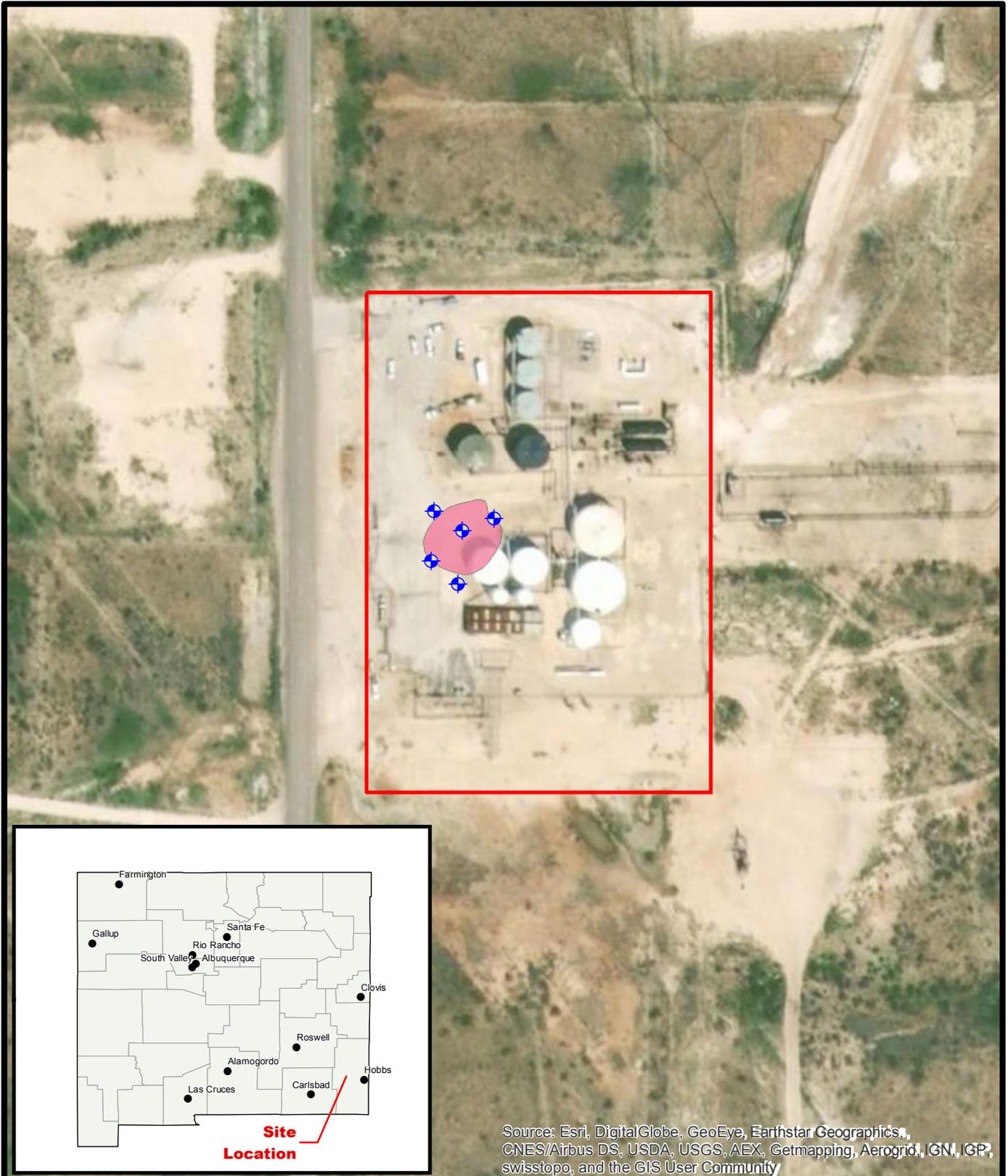
AECOM

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Drawn by:
GWC/AUS

Client: Chevron MCBU Lea County, New Mexico	
Report: Central Vacuum Battery Site Sampling Plan	
Site Location Map	
Date: 4/4/2019	Figure: 1
GIS File: Fig 1 Site Loc Map_ CVBatteryLocation.mxd	

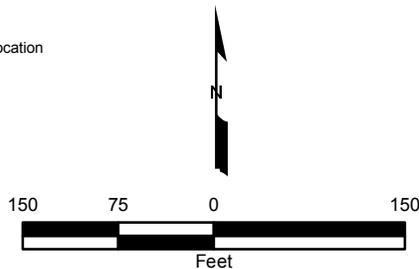
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

-  Proposed Soil Boring Location
-  Site Area
-  Spill Area



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Austin, TX 78729
Phone: (512) 454-4797
Fax: (512) 419-5474

Drawn by:
GWC/AUS

Client:
Chevron MCBU
Lea County, New Mexico

Report:
Central Vacuum Battery
Site Sampling Plan

**Proposed Soil
Boring Locations**

Date:
4/4/2019

GIS File:
Fig2ProposedSoilSampling
Locations_CVB.mxd

Figure:
2

Appendix A

Form C-141 – Central Vacuum Battery

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

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

Incident ID	NCH1903942116
District RP	1RP-5356
Facility ID	
Application ID	pCH1903951167

Release Notification

Responsible Party

Responsible Party: Chevron USA Inc.	OGRID: 4323
Contact Name: Josepha DeLeon	Contact Telephone: 575-263-0424
Contact email: jdx@chevron.com	Incident # NCH1903942116 CENTRAL VACUUM BATTERY @ 30-025-02952
Contact mailing address: 1616 W. Bender Blvd., Hobbs, NM 88240	

Location of Release Source

Latitude: ~~32.8124733~~ ^{32.794110} Longitude: ~~-103.5001678~~ ^{- 103.504777}
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Central Vacuum Battery	Site Type: Battery
Date Release Discovered: 01/232019	API# (if applicable): 30-025-02952

Unit Letter	Section	Township	Range	County
E	31	17S	35E	Lea

Surface Owner: State Federal Tribal Private (Name: _____)

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls): 11.35 barrels	Volume Recovered (bbls): 11 barrels
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:
Pump seal leak on transfer pump.

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Signature: 	Date: February 6, 2019
Printed Name: Josepha DeLeon	Title: Environmental Compliance Specialist
email: <u>jdxd@chevron.com</u>	Telephone: <u>575-263-0424</u>

<p>OCD Only</p> Received by: RECEIVED Date: _____ By CHernandez at 2:13 pm, Feb 08, 2019
--

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>88</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

<p><u>Characterization Report Checklist:</u> Each of the following items must be included in the report.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells. <input type="checkbox"/> Field data <input type="checkbox"/> Data table of soil contaminant concentration data <input type="checkbox"/> Depth to water determination <input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release <input type="checkbox"/> Boring or excavation logs <input type="checkbox"/> Photographs including date and GIS information <input type="checkbox"/> Topographic/Aerial maps <input type="checkbox"/> Laboratory data including chain of custody
--

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

Appendix B

NMWRRS Water Column/Average Depth to Water Report



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 14180 POD2	L	LE		4	2	2	36	17S	34E	639781	3629735	362	233	126	107
L 14180 POD1	L	LE		4	2	2	36	17S	34E	639756	3629715	364	231	126	105
L 03873	L	LE		3	2	1	31	17S	35E	640421	3629674*	469	230	88	142
L 04247 POD6	L	LE		2	1	3	31	17S	35E	640299	3629074	477	232	117	115

Average Depth to Water: **114 feet**
 Minimum Depth: **88 feet**
 Maximum Depth: **126 feet**

Record Count: 4

UTMNAD83 Radius Search (in meters):

Easting (X): 640007.64

Northing (Y): 3629451.94

Radius: 500

*UTM location was derived from PLSS - see Help

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