APPROVED

August 11, 2016 Reference No. 074633

Mr. Jamie Keyes
Environmental Specialist, District 1
Oil Conservation Division, EMNRD
1625 N. French Drive
Hobbs, New Mexico 88240

Dear Mr. Keyes,

Re: Work Plan
Vacuum Grayburg West Unit Satellite No. 4 Injection
RP# 3941
Unit B, Section 1, Township 18-South, Range 34-East
Latitude: N 32.782451, Longitude: W 103.510857
Lea County, New Mexico

1. Project Information

The Site is located in Unit B, Section 1, Township 18 South, Range 34 East, approximately 1.38-miles southwest of Buckeye, New Mexico, in eastern Lea County. Chevron submitted an initial C-141 Form to the New Mexico Oil Conservation Division (NMOCD) dated March 6, 2009 describing a release of 29 barrels (bbls) of produced water with zero (0) volume being recovered; stating, "No remediation will be done at this time because drilling rig is operating on location (VGSAU #459)." The source of the release was recorded to have been a line leak.

Information available on the Petroleum Recovery Research Center (PRRC) Mapping Portal and the United States Geological Survey (USGS) Current Water Database for the Nation indicates the following:

- The depth to groundwater at the Site is greater than 100-feet below ground surface (bgs);
- The nearest private domestic water source is greater than 200-feet from the release site;
- The nearest public/municipal water source is greater than 1,000-feet from the release site; and
- The release site lies more than 1,000 horizontal feet from the nearest surface water body.

Consequently, the NMOCD total ranking criteria score is zero (0) for the Site. The site-specific Recommended Remediation Action Levels (RRALs) that could be applied to this Site are: 10 milligram per kilogram (mg/kg) for benzene; 50 mg/kg for total benzene, toluene, ethylbenzene, and xylenes (BTEX); 5,000 mg/kg for total petroleum hydrocarbons (TPH); and an NMOCD accepted 500 mg/kg for chlorides.

GHD Services Inc.
6320 Rothway Suite 100 Houston Texas 77040 USA
T 713 734 3090 F W www.ghd.com

Currently, GHD monitors two groundwater sites in proximity to the Site. The Buckeye Compressor Station Site located north-northeast of the Site, and the Buckeye Vacuum Field Unit Site (AP-104) located east southeast of the Site. Upon review of groundwater analytical data pertaining to the Buckeye Compressor Station and Buckeye Vacuum Field Unit, it is suggested that the cross gradient and down gradient monitoring well data from these two sites can be used to support the assessment of potential impacts to groundwater with regard to the Site.

Buckeye Compressor Station Site

The Buckeye Compressor Station Site is monitored with a network of 28 monitoring wells. The Buckeye Compressor Station has two monitoring wells (MW-11 and MW-12) which are located in proximity to the Site. Upon review of historical documents associated with the Buckeye Compressor Station, it is noted that MW-11 was destroyed in 2009, and is no longer monitored by GHD. In addition, MW-12 was damaged in April of 2013, and is no longer monitored by GHD. However, GHD has historical records of (MW-12) groundwater data through October 2013. Below is a table of (MW-12) historical groundwater data associated with chloride analysis results and depths to water:

MW-12 Historical Groundwater Data

Well ID	Date	Chloride (mg/L)	Depth To Water (fbtoc)
MW-12	10/21/12	46.3	131.61
MW-12	11/05/12	38.5	130.31
MW-12	10/21/13	Not sampled	131.61

Buckeye Vacuum Field Unit Site

The Buckeye Vacuum Field Unit Site (AP-104) is monitored with a network of 13 monitoring and recovery wells. The Buckeye Vacuum Field Unit has multiple wells located cross gradient and down gradient (southeast) of the Site; however it is noted that monitoring well (TW-23) is the nearest well to the Site and has the most current groundwater data. TW-23 is located approximately 592-feet south east of the Site. Below is a table of (TW-23) historical groundwater data:

TW-23 Historical Groundwater Data

Well ID	Date	Chloride (mg/L)	Depth To Water (fbtoc)
TW-23	2/13/14	75.9	127.01
TW-23	5/20/14	105.0	127.40
TW-23	8/19/14	127.0	127.45

Soil assessment activities were performed in March of 2014 and August of 2015 at the Site. The data from these assessments indicate that vertical and horizontal delineation of chloride impacts have generally been achieved at the Site. However, data from two former soil boring locations (SB-2 and SB-4, see Figure 1) indicated that the vertical extent of chloride in the soil was not completely

assessed. Per NMOCD request, the following scope of work to complete the vertical assessment of chloride impacted soils at the Site is detailed below.

2. Scope of Work

GHD proposes to advance two additional soil borings in the proximity of former soil borings SB-2 and SB-4 to vertically assess both locations (Figure 1). Field screening of soil samples for chlorides will be performed to guide drilling activities, and the terminal depth of each boring will be based on these field screening results. The following outlines basic project details that will be performed by GHD and GHD subcontractors:

Field Program

The field program will consist of the following:

Soil Boring Installation:

- Prior to mobilizing the drilling equipment to the Site, a site visit will be performed by GHD. GHD will mark the proposed boring locations for New Mexico 811notification. A One Call ticket will be initiated by the driller to identify subsurface hazards within the proposed drilling areas. Chevron will spot locate any underground utilities and/or pipelines within the assessment area;
- A ground penetrating radar (GPR) survey will be conducted across the Site and the findings of the survey will be marked, as appropriate;
- GHD will coordinate field work with management personnel of the Chevron FMT. A MCBU Dig Plan and FMT excavation permit will be acquired before performing the proposed tasks;
- An air knife, hydro-excavation methods or similar borehole clearance equipment will be utilized to clear each boring location to a depth of approximately 8-feet bgs (or refusal) and approximately 8-inches in diameter. An air-rotary drilling rig, operated by a licensed State of New Mexico water well driller, will be utilized to advance the proposed borings;
- A geologist will record the subsurface lithology and sample data of soil boring logs. Soil samples will be collected at ten foot intervals. A chloride field sampling kit will be used to field test intervals during boring activities. The total depth and nature of any sampling of soils will be based on results of the chloride field screening and the professional judgment of the GHD geologist. The intent of the sampling is to establish the depth at which soil concentrations are below the Site RRAL's.
- Selected soil samples will be submitted to Xenco Laboratories, Midland, Texas for analysis of chlorides by EPA Method 300.0; and
- The soil borings will be properly plugged with bentonite.

Health and Safety Considerations

Personal protective equipment, including fire-retardant clothing, steel-toed work boots, gloves, safety glasses, and hard hats will be required during all field tasks. The project health and safety plan will be

maintained on Site and will be reviewed and signed by on-Site personnel, subcontractors, and authorized visitors.

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 short letter report summarizing remediation activities will be submitted. The letter 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 soil borings and other Site features;
- Soil boring logs;
- Tabulation of field screening and laboratory analytical results; and
- Geotagged photographic documentation of field activities.

3. Work Plan Approval Request

GHD is prepared to initiate the scope of work immediately. 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

Scott Foord

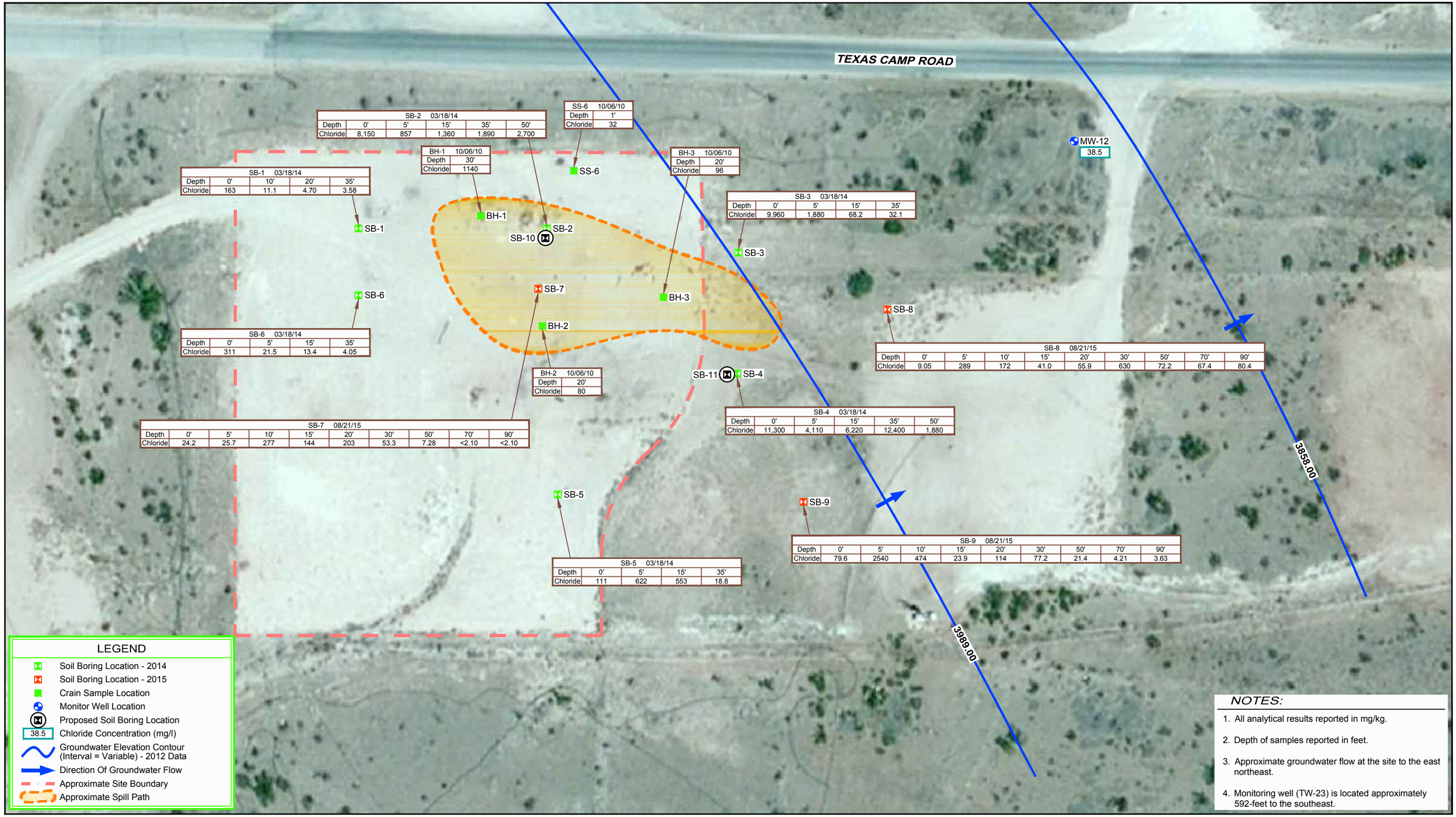
Project Manager

Bernard Bockisch, PMP

Senior Project Manager

Sf/bb/1

Encl. (1)



Source: USDA FSA Imagery, May 10, 2014

LAT/LONG: 32.7827° NORTH, 103.5106° WEST

0 50 100ft

Coordinate System:
NAD 83 STATE PLANE - NEW MEXICO EAST (US FEET)

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
LEA COUNTY, NEW MEXICO
VGWU SATELLITE #4 TRUNK LINE

074633-00

Aug 11, 2016

PROPOSED BORING LOCATION MAP

FIGURE 1

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