ENSOLUM

December 8, 2022

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

Re: Updated Remediation Work Plan
Moore LS 6B
Incident Number: nAPP2206056316
San Juan County, New Mexico
Hilcorp Energy Company

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Updated Remediation Work Plan* for the Moore LS 6B natural gas production well (Site). The Site is located on private land in Section 25, Township 32 North, Range 12 West in San Juan County, New Mexico (Figure 1).

On February 14, 2022, Hilcorp discovered two bullet holes in the 268-barrel (bbl) condensate aboveground storage tank located within a bermed secondary containment at the Site (Figure 2). Based on tank-gauging data and the volume of fluid remaining in the tank, approximately 42 bbls of condensate were released from the tank and remained within the limits of the earthen secondary containment berm on the production pad. No fluids were recovered from the release. The initial footprint of visibly impacted soil was approximately 40 feet by 25 feet in lateral extent. Hilcorp provided verbal notification to the New Mexico Oil Conservation Division (NMOCD) on February 15, 2022, and submitted the initial C-141 on March 1, 2022.

Following the discovery of the release, Ensolum performed delineation activities at the Site to assess the vertical and lateral extent of impacts. Details regarding the delineation activities were provided in the *Site Characterization Report and Remediation Work Plan* prepared by Ensolum and dated July 8, 2022. Based on the Site characterization information presented in the July 8, 2022 report, the following closure criteria were applied based on the *Table I, Closure Criteria for Soils Impacted by a Release* presented in 19.15.29.12 of the New Mexico Administrative Code:

- Chloride: 10,000 milligrams per kilogram (mg/kg)
- Total Petroleum Hydrocarbons (TPH) as a combination of gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO): 2,500 mg/kg
- TPH-GRO + TPH-DRO: 1,000 mg/kg
- A combination of benzene, toluene, ethylbenzene, and xylenes (BTEX): 50 mg/kg
- Benzene: 10 mg/kg

Based on the drilling and analytical results gathered during the delineation activities, an estimated 500 cubic yards of soil were impacted by the condensate release to a depth of approximately 17 feet below ground surface (bgs). The impacts to soil appeared to correlate to the current footprint of the secondary containment. Based on the nature of the release, favorable soil lithology, and the proximity of impacted soil to active equipment, Ensolum recommended pilot testing soil vapor extraction (SVE) techniques to remediate soil at the Site.

SVE PILOT TEST RESULTS

With approval from the NMOCD, Ensolum performed an SVE pilot test on October 18, 2022 to evaluate the effectiveness of SVE for the Site and, if applicable, assess the Site-specific flow and vacuum rates required to volatilize and remove contaminants from the subsurface. Data collected during the SVE pilot test are applied to estimate the system's radius-of-influence (ROI) and radius-of-effect (ROE) to determine well spacing and the potential need for additional SVE wells at the Site.

During the pilot test, a vacuum truck was used to extract air at one SVE well ("extraction" well). Flow and vacuum rates were measured at the extraction well using an adjustable manifold and vacuum responses were measured in the other SVE wells at the Site ("observation" wells). The pilot-test manifold was used to control and incrementally increase vacuum being applied to the extraction well to assess the relationship between flow and vacuum.

Based on the field observations collected during the pilot test, no observable influence was achieved in the observation wells when a vacuum of 16 inches of mercury (vacuum truck's maximum capable vacuum) was applied at the extraction well. The inability to create a vacuum in the subsurface and achieve observable influence in the observation wells could be caused by several factors. Based on the test observations and data, the most likely prohibiting factor is "short circuiting" of air from the well to the ground surface and/or nearby utility corridors containing loosely compacted backfill. The vacuum is lost to lower permeability areas, and sufficient vacuum does not reach the impacted soils to volatilize and/or remove targeted contaminants. Based on the pilot test data, SVE is not a viable remedial option for the Site using the existing wells.

UPDATED REMEDIATION WORK PLAN

Rather than pursue an enhanced SVE design, Hilcorp proposes to excavate impacted soil to below the established Table I Closure Criteria. Based on the delineation soil sample analytical results (presented on Figure 2) and the area of the release extent, an estimated 500 cubic yards of impacted soil will be excavated from the well pad and transported for disposal at a permitted landfarm. Once field screening results indicate impacted soil has been removed, confirmation samples will be collected at least every 200 square feet from the floor and sidewalls of the excavation. The samples will be analyzed for TPH and BTEX only since delineation soil sample results excluded chloride as a contaminant of concern. Once sampling results indicate that concentrations of TPH and BTEX are in compliance with Table I Closure Criteria, a closure report will be submitted to NMOCD requesting site closure. Hilcorp will complete the Site excavation, confirmation soil sampling, and preparation of a Closure Report within 90 days of NMOCD approval of this *Updated Remediation Work Plan*.

We appreciate the opportunity to provide this report to the NMOCD. If you should have any questions or comments regarding this document, please contact the undersigned.

Sincerely,
Ensolum, LLC

Stuart Hyde, LG
Senior Geologist
(970) 903-1607
shyde@ensolum.com

Ashley Ager, MS, PG
Principal, Geologist
(970) 946-1093
aager@ensolum.com

Attachments:

Figure 1: Site Location Map
Figure 2: Soil Delineation Results

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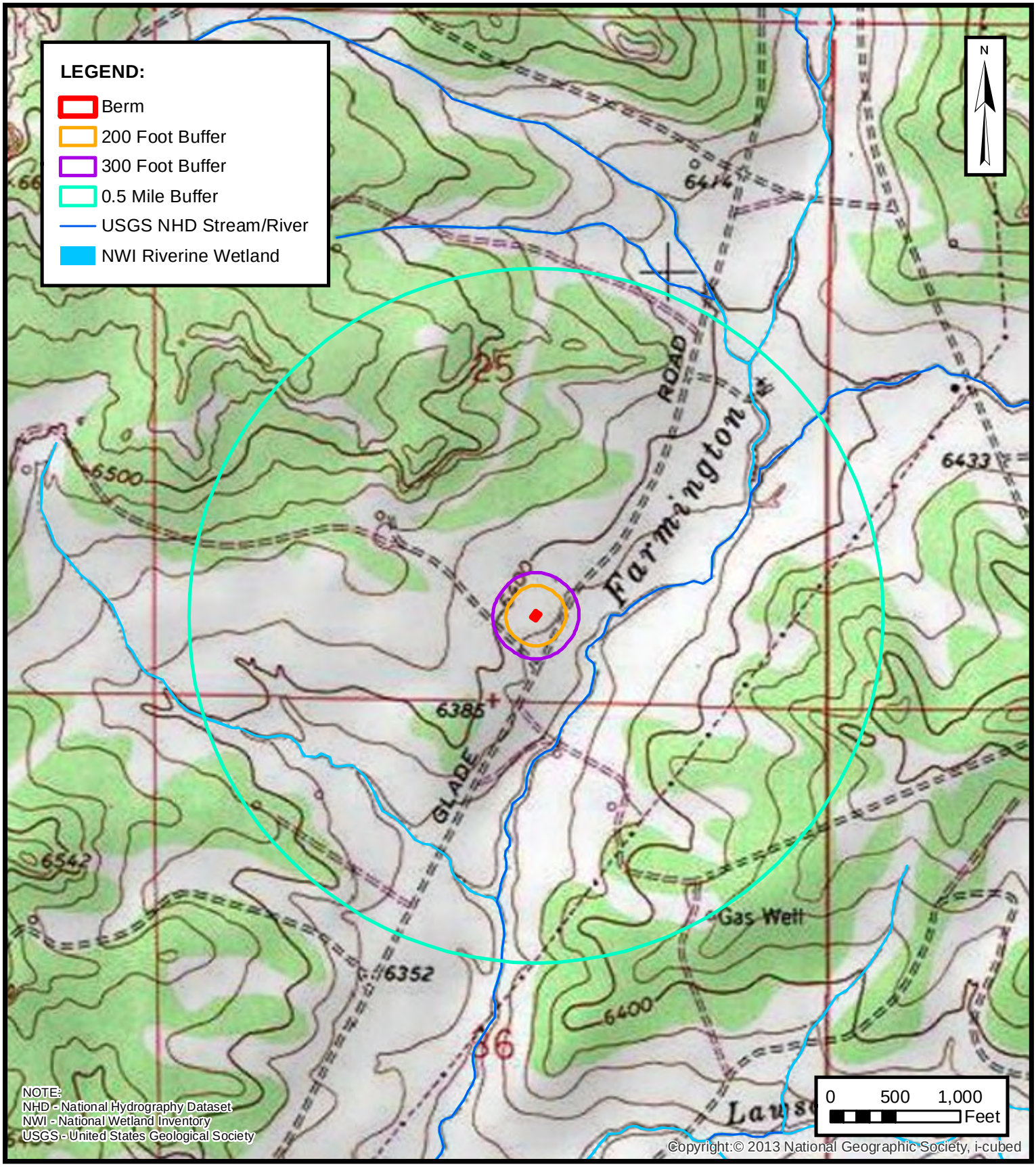
FIGURES



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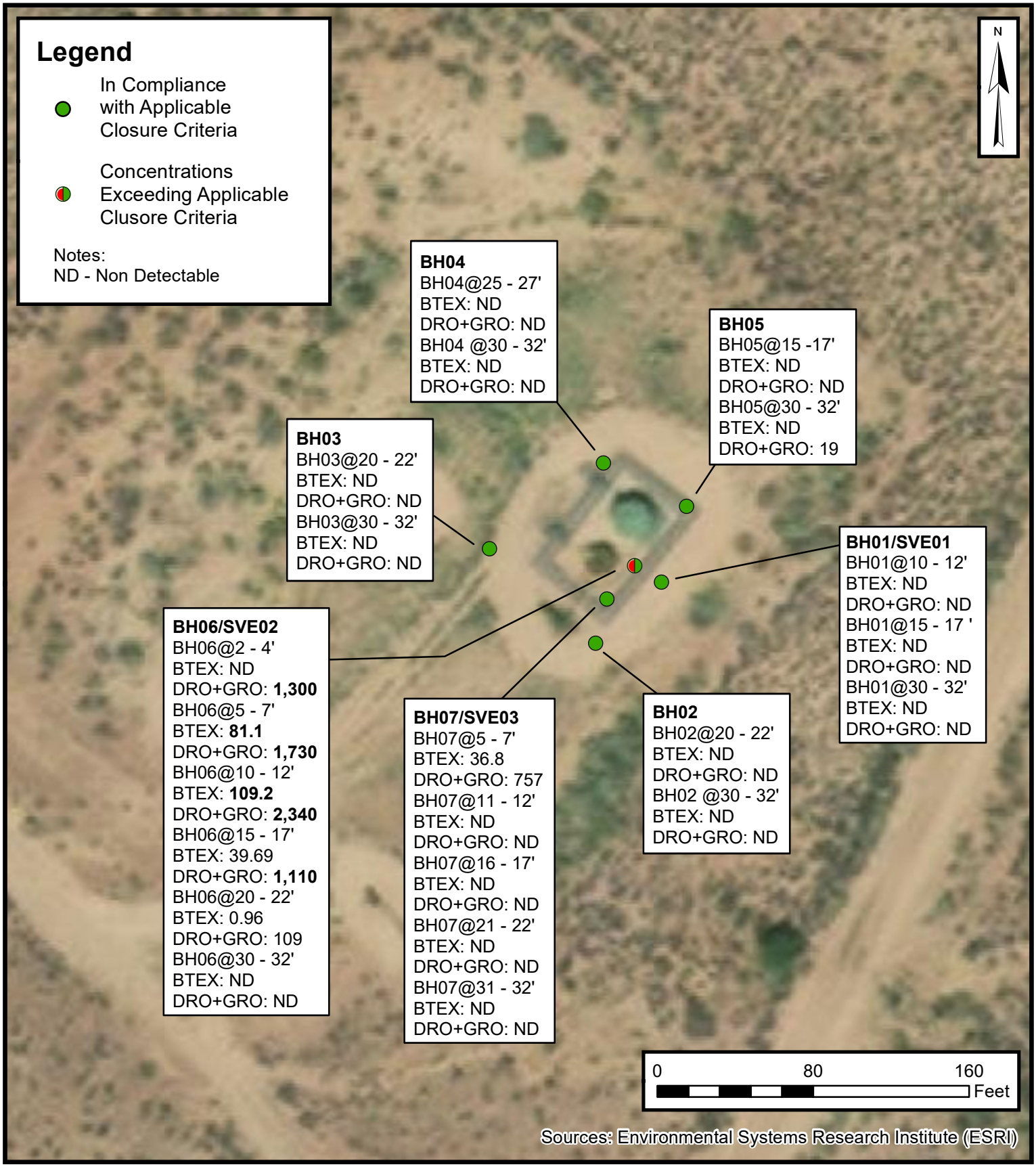
Environmental & Hydrogeologic Consultants

Site Location Map

Moore LS 6B
Hilcorp Energy Company
36.951042, -108.045756
San Juan County, NM

FIGURE
1



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Soil Delineation Results

Moore LS 6B
Hilcorp Energy Company
36.951042, -108.045756
San Juan County, NM

FIGURE
2

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 165835

CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 165835
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Remediation plan is approved as written. Hilcorp has until June 24, 2024 to submit to OCD its appropriate or final remediation closure report. Please submit using [C-141] Release Corrective Action under "Submissions", followed by the drop down menu under "Releases".	3/26/2024