ENSOLUM

April 22, 2024

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

Re: Site Summary Report and Closure Request
Kate Standage 1E
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident No: nAPP2406119660

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Site Summary Report and Closure Request* associated with a condensate and produced water release at the Kate Standage 1E natural gas production well (Site). The Site is located on private land in Unit A, Section 12, Township 30 North, Range 12 West, San Juan County, New Mexico (Figure 1).

SITE BACKGROUND

On February 29, 2024, Hilcorp operations identified a release of 8.35 barrels (bbls) of condensate and 6.68 bbls of produced water at the Site. While conducting tank gauging, operations noted a reduction in gauge height on the 300-bbl aboveground storage tank, indicating a probable loss due to a hole in the tank bottom resulting from corrosion. This hole had not been detectable during routine Site inspections or weekly Audio, Visual, and Olfactory (AVO) surveys. As a precautionary measure, the tank and oil dump were removed from service and a water truck, along with a tank cleaning crew, were mobilized to remove remaining liquids. Although the spilled fluids remained contained within secondary containment, they could not be recovered. Hilcorp operations will assess and recoat the tank before it is returned to service.

Hilcorp notified the New Mexico Oil Conservation Division (NMOCD) within 24 hours of discovery and submitted an initial *Form C-141 Release Notification* on February 29, 2024. NMOCD assigned the release incident number nAPP2406119660.

SITE CHARACTERIZATION AND CLOSURE CRITERIA

As part of the Site investigation, local geology/hydrogeology and nearby sensitive receptors were assessed in accordance with Title 19, Chapter 15, Part 29, Sections 11 and 12 (19.15.29.11 and 12) of the New Mexico Administrative Code (NMAC).

The Site is located within the Nacimiento Geologic Formation. In the report titled "*Hydrogeology and Water Resources of San Juan Basin, New Mexico*" (Stone, et. al., 1983), the Nacimiento Formation is characterized by interbedded black carbonaceous mudstones and white, coarse-grained sandstones, which ranges in thickness from 418 feet to 2,232 feet. The hydrogeologic properties of the Nacimiento Formation display variable hydrogeologic properties dependent on location. Where sufficient yield is

present, the primary use of water from this formation is for domestic and/or livestock supply. The Nacimiento Formation is underlain by the Ojo Alamo sandstone (Stone et. al., 1983).

The closest significant watercourse is an unnamed dry wash located 340 feet west of the Site and is defined by a bed and bank and is identified by a dashed blue line on a United States Geologic Survey (USGS) 7.5-minute quadrangle map. The Site is greater than 200 feet from any lakebed, sinkhole, or playa lake, and greater than 300 feet from any wetland (Figure 1). The nearest fresh-water well is New Mexico Office of the State Engineer (NMOSE) permitted well SJ-02140 (Appendix A), located approximately 0.27 miles northeast of the Site. The recorded depth to water on the NMOSE database is 60 feet below ground surface (bgs). The NMOSE well is approximately at the same elevation as the Site, therefore depth to groundwater at the Site is estimated to be greater than 50 feet bgs. No wellhead protection areas, springs, or domestic/stock wells are located within a 500-foot radius from the Site. The Site is not within a 100-year floodplain, overlying a subsurface mine, or located within an area underlain by unstable geology (area designated as low potential karst by the Bureau of Land Management (BLM)). Schools, hospitals, institutions, churches, and/or other occupied permanent residence or structures are not located within 300 feet of the Site.

SITE CLOSURE CRITERIA

Based on the information presented above and in accordance with the *Table I, Closure Criteria for Soils Impacted by a Release* (19.15.29.12 NMAC), the following Closure Criteria for constituents of concern (COCs) should be applied to the Site:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and xylenes (BTEX): 50 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
- GRO+DRO: 1,000 mg/kg
- Chloride: 10,000 mg/kg

2024 SITE ASSESSMENT ACTIVITIES

To assess potential soil impacts resulting from the release, Hilcorp and Ensolum advanced three potholes (PH01 through PH03) using a backhoe on March 26, 2024. The NMOCD was notified prior to commencing on-Site activities, with sampling notifications provided in Appendix B. All three potholes were advanced directly adjacent to the aboveground tank (Figure 2) to assess petroleum hydrocarbon and chloride concentrations at the release source. All three potholes were also advanced to a depth of 8 feet bgs, and soil was screened at 2-foot intervals. During potholing activities, Ensolum personnel observed and field screened the soil for petroleum hydrocarbon staining, odors, and chloride crusting. Soil samples were field screened for the presence of organic vapors using a calibrated photoionization detector (PID) and chloride using Hach® QuanTab® test strips.

Two soil samples were collected from each pothole: one from the depth interval indicating the greatest potential for impacts based on field screening measurements/observation and one from the terminus of each pothole. Soil samples were collected directly into laboratory-provided jars, immediately placed on ice, and submitted to Eurofins Environment Testing (Eurofins) for analysis of BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-MRO following EPA Method 8015M/D; and chloride following EPA Method 300.0. Field indications of petroleum hydrocarbons, including staining, odors, and/or elevated PID readings, were not observed in any of the potholes during the work. Photographs taken during field activities are attached as Appendix C.

Concentrations of total BTEX, TPH-GRO, TPH-DRO, and TPH-MRO were not detected above laboratory report limits in any of the soil samples collected during the March 2024 assessment and were all in compliance with the Closure Criteria and reclamation requirement. Chloride was detected in all samples analyzed during the delineation effort; however, all detected concentrations were below the NMOCD Table I Closure Criteria and the reclamation requirement. Soil sample analytical results are summarized in Table 1, with complete laboratory analytical reports attached as Appendix D.

CONCLUSIONS AND CLOSURE REQUEST

Based on the delineation activities and soil analytical results described above, petroleum hydrocarbon and/or chloride contaminants were not detected in any of the samples collected at the Site above the NMOCD Table I Closure Criteria or reclamation requirement. The Site appears to be absent of soil impacts and waste-containing soil. As such, Site conditions appear to be protective of human health, the environment, and groundwater and Hilcorp respectfully requests closure for Incident Number nAPP2406119660.

REFERENCES

Stone, W., Lyford, F., Frenzel, P., Mizell, N., & Padgett, E. (1983). Hydrogeology and Water Resources of San Juan Basin, New Mexico. New Mexico Bureau of Mines & Mineral Resources.

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

Sincerely,
Ensolum, LLC

Wes Weichert
Project Geologist
(816) 266-8732
wweichert@ensolum.com

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

Attachments:

Figure 1: Site Receptor Map
Figure 2: Delineation Soil Sample Locations

Table 1: Soil Sample Analytical Results

Appendix A: NMOSE Well Log
Appendix B: Agency Sampling Notification
Appendix C: Photographic Log
Appendix D: Laboratory Analytical Reports

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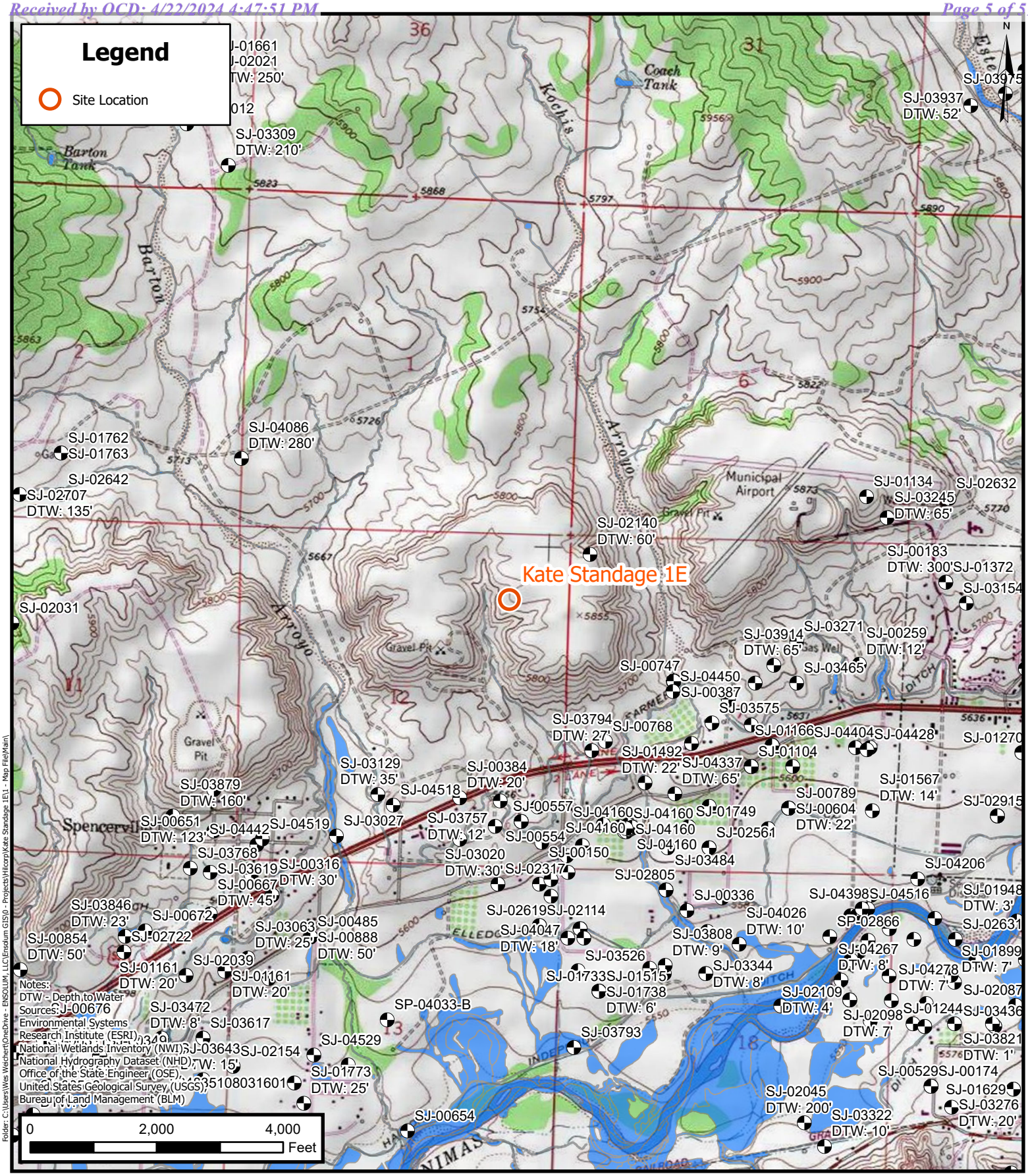
FIGURES



Folder: C:\Users\Wes Welchert\OneDrive - ENSOLUM, LLC\Ensolum GIS\0 - Projects\Hilcorp\Kate Standage 1E\1 - Map File\Main\

ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Receptor Map

Hilcorp Energy Company
Kate Standage 1E
Incident Number: nAPP2406119660
Unit A, Sec 12, T 30N, R 12W
San Juan County, New Mexico, United States

FIGURE 1

Folder: C:\Users\Wes Welchert\OneDrive - ENSOLUM, LLC\Ensolum GIS\0 - Projects\Hilcorp\Kate Standage 1E\1 - Map File\Main\

ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Delineation Soil Sample Locations

Hilcorp Energy Company
Kate Standage 1E
Incident Number: nAPP2406119660
Unit A, Sec 12, T 30N, R 12W
San Juan County, New Mexico, United States

FIGURE 2

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TABLES

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TABLE 1
DELINEATION SOIL SAMPLE ANALYTICAL RESULTS
Kate Standage 1E
Hilcorp Energy Company
San Juan County, New Mexico

Sample ID	Date	Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH MRO (mg/kg)	TPH GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Closure Criteria for Soils Impacted by a Release			**10**	NE	NE	NE	**50**	NE	NE	NE	**1,000**	**2,500**	**10,000**
PH01@2'	3/26/2024	2	<0.0020	<0.0020	<0.0020	<0.0040	<0.0040	<51	<51	<51	<51	<51	50
PH01@8'	3/26/2024	8	<0.0020	<0.0020	<0.0020	<0.0040	<0.0040	<50	<50	<50	<50	<50	37
PH02@2'	3/26/2024	2	<0.0020	<0.0020	<0.0020	<0.0040	<0.0040	<50	<50	<50	<50	<50	48
PH02@8'	3/26/2024	8	<0.0020	<0.0020	<0.0020	<0.0040	<0.0040	<50	<50	<50	<50	<50	62
PH03@2'	3/26/2024	2	<0.0020	<0.0020	<0.0020	<0.0040	<0.0040	<50	<50	<50	<50	<50	38
PH03@8'	3/26/2024	8	<0.0020	<0.0020	<0.0020	<0.0040	<0.0040	<50	<50	<50	<50	<50	46

Notes:

bgs: below ground surface
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
mg/kg: milligrams per kilogram
NE: Not Established
NMOCD: New Mexico Oil Conservation Division
': feet
GRO: Gasoline Range Organics
DRO: Diesel Range Organics
MRO: Motor Oil/Lube Oil Range Organics
TPH: Total Petroleum Hydrocarbon
< : indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Oil Conservation Division Table I Closure Criteria for Soils Impacted by a Release*

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APPENDIX A

NMOSE Well Log

227940

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

88 APR 18 P1:59

Section 1. GENERAL INFORMATION

(A) Owner of well BOBBIE GARCIA Owner's Well No. 9

Street or Post Office Address PO BOX 1373

City and State AZTEC, NM. 87410

STATE ENGINEER OFFICE SANTA FE, NEW MEXICO

Well was drilled under Permit No. SJ-2140 and is located in the:

a. NW ¼ NW ¼ NW ¼ ¼ of Section 7 Township 30 Range 11 N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor TERRY HOOD License No. WD-717

Address FLORA VISTA, N.M.

Drilling Began 3-8-88 Completed 3-11-88 Type tools _____ Size of hole 6 in.

Elevation of land surface or _____ at well is 5400 ft. Total depth of well 70 ft.

Completed well is ☑ shallow ☐ artesian. Depth to water upon completion of well 60 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
60	70	10	WATER BEARING SAND & GRAVEL	10

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6	SCH 40	PVC	0	70	70		60	70

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

STATE ENGINEER OFFICE DISTRICT I ALBUQUERQUE, N. MEX.
88 MAR 21 P1:46

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____ State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 21, 1988

Quad _____ FWL _____ FSL _____

File No. SJ-2140 Use Dom Location No. 30N.11W.7.1111 (See Quad)

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	60	60	SAND + CLAY
60	70	10	WATER BEARING SAND + GRAVEL

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, exc Section 5, shall be answered as completely . ccurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

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APPENDIX B

Agency Sampling Notification

From: OCDOnline@state.nm.us
To: Stuart Hyde
Subject: The Oil Conservation Division (OCD) has accepted the application, Application ID: 325356
Date: Wednesday, March 20, 2024 5:44:08 PM

[**EXTERNAL EMAIL**]

To whom it may concern (c/o Stuart Hyde for HILCORP ENERGY COMPANY),

The OCD has received the submitted *Notification for (Final) Sampling of a Release* (C-141N), for incident ID (n#) nAPP2406119660.

The sampling event is expected to take place:

When: 03/25/2024 @ 12:30
Where: A-12-30N-12W 1000 FNL 725 FEL (36.831216,-108.042821)

Additional Information: Contact PM Stuart Hyde, 970-903-1607

Additional Instructions: Kate Standage 1E well pad, coordinates 36.831216, -108.042821

Sampling being conducted for initial assessment and delineation purposes.

An OCD representative may be available onsite at the date and time reported. In the absence or presence of an OCD representative, sampling pursuant to 19.15.29.12.D NMAC is required. Sampling must be performed following an approved sampling plan or pursuant to 19.15.29.12.D.(1).(c) NMAC. Should there be a change in the scheduled date and time of the sampling event, then another notification should be resubmitted through OCD permitting as soon as possible.

- **Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.**

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

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

From: Velez, Nelson, EMNRD
To: Stuart Hyde
Cc: Mitch Killough; Wes Weichert
Subject: Re: [EXTERNAL] FW: The Oil Conservation Division (OCD) has accepted the application, Application ID: 326280
Date: Monday, March 25, 2024 9:19:23 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Outlook-3gbb5qp0.png

[**EXTERNAL EMAIL**]
Good morning Stuart,

Thank you for the notice. Your variance request specifically addressing 19.15.29.12D (1a) NMAC is approved.

If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC or from an OCD pre-approved sampling plan. For whatever reason, if the sampling timeframe is altered, please notify the OCD as soon as possible so we may adjust our schedule(s). Failure to notify the OCD of this change may result in the closure sample(s) not being accepted.

Please keep a copy of this communication for inclusion within the appropriate report submittal.

Regards,

Nelson Velez ● Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@emnrd.nm.gov
http://www.emnrd.state.nm.us/OCD/

From: Stuart Hyde <shyde@ensolum.com>
Sent: Monday, March 25, 2024 9:15 AM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Cc: Mitch Killough <mkillough@hilcorp.com>; Wes Weichert <wweichert@ensolum.com>
Subject: [EXTERNAL] FW: The Oil Conservation Division (OCD) has accepted the application,

Application ID: 326280

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Nelson,

Due to weather conditions, work originally scheduled for 3/25/2024 at the Kate Standage 1E site has been changed to begin on 3/26/2024. As such, we are requesting a variance of the 2-business day sampling notification requirement set forth in 19.15.29.12.D.(1).(a) in order to collect confirmation samples on Tuesday March 26, 2024 at 12:30 PM.

Please let us know if you have any questions. Thanks.

Stuart Hyde, PG
(Licensed in WA/TX)
Senior Geologist
970-903-1607
Ensolum, LLC

"If you want to go fast, go alone. If you want to go far, go together." – African Proverb

---

From: OCDOnline@state.nm.us <OCDOnline@state.nm.us>
Sent: Monday, March 25, 2024 9:08 AM
To: Stuart Hyde <shyde@ensolum.com>
Subject: The Oil Conservation Division (OCD) has accepted the application, Application ID: 326280

[**EXTERNAL EMAIL**]
To whom it may concern (c/o Stuart Hyde for HILCORP ENERGY COMPANY),
The OCD has received the submitted *Notification for (Final) Sampling of a Release* (C-141N), for incident ID (n#) nAPP2406119660.

The sampling event is expected to take place:

When: 03/26/2024 @ 12:30
Where: A-12-30N-12W 1000 FNL 725 FEL (36.831216,-108.042821)

Additional Information: Contact PM Stuart Hyde, 970-903-1607

Additional Instructions: Kate Standage 1E well pad, coordinates 36.831216, -108.042821

Due to weather conditions, work originally scheduled for 3/25/2024 has been changed to begin on 3/26/2024. As such, we are requesting a variance of the 2-business day sampling notification requirement set forth in 19.15.29.12.D.(1).(a) in order to collect confirmation samples on Tuesday March 26, 2024 at 12:30 PM.

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or presence of an OCD representative, sampling pursuant to 19.15.29.12.D NMAC is required. Sampling must be performed following an approved sampling plan or pursuant to 19.15.29.12.D.(1).(c) NMAC. Should there be a change in the scheduled date and time of the sampling event, then another notification should be resubmitted through OCD permitting as soon as possible.

- **Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.**

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

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

From: OCDOnline@state.nm.us
To: Stuart Hyde
Subject: The Oil Conservation Division (OCD) has accepted the application, Application ID: 326280
Date: Monday, March 25, 2024 9:07:54 AM

[**EXTERNAL EMAIL**]

To whom it may concern (c/o Stuart Hyde for HILCORP ENERGY COMPANY),

The OCD has received the submitted *Notification for (Final) Sampling of a Release* (C-141N), for incident ID (n#) nAPP2406119660.

The sampling event is expected to take place:

When: 03/26/2024 @ 12:30
Where: A-12-30N-12W 1000 FNL 725 FEL (36.831216,-108.042821)

Additional Information: Contact PM Stuart Hyde, 970-903-1607

Additional Instructions: Kate Standage 1E well pad, coordinates 36.831216, -108.042821

Due to weather conditions, work originally scheduled for 3/25/2024 has been changed to begin on 3/26/2024. As such, we are requesting a variance of the 2-business day sampling notification requirement set forth in 19.15.29.12.D.(1).(a) in order to collect confirmation samples on Tuesday March 26, 2024 at 12:30 PM.

An OCD representative may be available onsite at the date and time reported. In the absence or presence of an OCD representative, sampling pursuant to 19.15.29.12.D NMAC is required. Sampling must be performed following an approved sampling plan or pursuant to 19.15.29.12.D.(1).(c) NMAC. Should there be a change in the scheduled date and time of the sampling event, then another notification should be resubmitted through OCD permitting as soon as possible.

- **Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.**

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

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

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APPENDIX C

Photographic Log

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Photographic Log
Hilcorp Energy Company
Kate Standage 1E
nAPP2406119660

Photograph: 1 Date: 3/26/2024
Description: Tank Containment
View: Northwest

Photograph: 2 Date: 3/26/2024
Description: Pothole 1
View: West

Photograph: 3 Date: 3/26/2024
Description: Pothole 2
View: Northeast

Photograph: 4 Date: 3/26/2024
Description: Back Filled Pothole
View: East

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APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mitch Killough
Hilcorp Energy
PO BOX 4700
Farmington, New Mexico 87499

Generated 4/2/2024 10:01:03 PM

JOB DESCRIPTION

Kate Standage 1E

JOB NUMBER

885-1870-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization

Generated
4/2/2024 10:01:03 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Laboratory Job ID: 885-1870-1

Table of Contents

Definitions/Glossary

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Hilcorp Energy
Project: Kate Standage 1E

Job ID: 885-1870-1

Job ID: 885-1870-1 Eurofins Albuquerque

Job Narrative
885-1870-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 3/27/2024 7:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.1°C.

GC VOA
Method 8021B: Surrogate recovery for the following samples were outside control limits: PH01@8' (885-1870-2), PH02@2' (885-1870-3) and (885-1870-A-1-E MS). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-76839 and analytical batch 880-76687 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA
Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-76837 and analytical batch 880-76762 was outside the upper control limits.

Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-76919 and analytical batch 880-76887 was outside the upper control limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
Method 300_ORGFM_28D - Soluble: The Chloride matrix spike (MS) recoveries for preparation batch 880-76941 and 880-76941 and analytical batch 880-76961 were outside control limits. Non-homogeneity is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

PH01@2' (885-1870-1), PH01@8' (885-1870-2), PH02@2' (885-1870-3), PH02@8' (885-1870-4), PH03@2' (885-1870-5), PH03@8' (885-1870-6) and (885-1870-A-1-I MS)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Client Sample ID: PH01@2'
Date Collected: 03/26/24 11:24
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-1
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	F1	0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:01	1
Toluene	ND	F1	0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:01	1
Ethylbenzene	ND	F2 F1	0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:01	1
Xylenes, Total	ND	F2 F1	0.0040		mg/Kg		03/28/24 11:49	03/28/24 23:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*70 - 130*	*03/28/24 11:49*	*03/28/24 23:01*	*1*
1,4-Difluorobenzene (Surr)	*81*		*70 - 130*	*03/28/24 11:49*	*03/28/24 23:01*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		51		mg/Kg		03/28/24 12:48	03/29/24 04:39	1
Diesel Range Organics (Over C10-C28)	ND		51		mg/Kg		03/28/24 12:48	03/29/24 04:39	1
OII Range Organics (Over C28-C36)	ND		51		mg/Kg		03/28/24 12:48	03/29/24 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*128*		*70 - 130*	*03/28/24 12:48*	*03/29/24 04:39*	*1*
o-Terphenyl	*111*		*70 - 130*	*03/28/24 12:48*	*03/29/24 04:39*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**50**	**F1**	5.0		mg/Kg			04/01/24 14:33	1

Client Sample ID: PH01@8'
Date Collected: 03/26/24 11:30
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-2
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:21	1
Toluene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:21	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:21	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 11:49	03/28/24 23:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*58*	*S1-*	*70 - 130*	*03/28/24 11:49*	*03/28/24 23:21*	*1*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*	*03/28/24 11:49*	*03/28/24 23:21*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:00	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:00	1
OII Range Organics (Over C28-C36)	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*122*		*70 - 130*	*03/28/24 12:48*	*03/29/24 05:00*	*1*
o-Terphenyl	*104*		*70 - 130*	*03/28/24 12:48*	*03/29/24 05:00*	*1*

Client Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Client Sample ID: PH01@8'
Lab Sample ID: 885-1870-2
Date Collected: 03/26/24 11:30
Matrix: Solid
Date Received: 03/27/24 07:00

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	37		5.0		mg/Kg			04/01/24 14:51	1

Client Sample ID: PH02@2'
Lab Sample ID: 885-1870-3
Date Collected: 03/26/24 11:44
Matrix: Solid
Date Received: 03/27/24 07:00

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:42	1
Toluene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:42	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 23:42	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 11:49	03/28/24 23:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*57*	*S1-*	*70 - 130*	*03/28/24 11:49*	*03/28/24 23:42*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*03/28/24 11:49*	*03/28/24 23:42*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:21	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:21	1
Oil Range Organics (Over C28-C36)	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*126*		*70 - 130*	*03/28/24 12:48*	*03/29/24 05:21*	*1*
o-Terphenyl	*110*		*70 - 130*	*03/28/24 12:48*	*03/29/24 05:21*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	48		5.0		mg/Kg			04/01/24 14:57	1

Client Sample ID: PH02@8'
Lab Sample ID: 885-1870-4
Date Collected: 03/26/24 11:50
Matrix: Solid
Date Received: 03/27/24 07:00

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:03	1
Toluene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:03	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:03	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 11:49	03/29/24 00:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*03/28/24 11:49*	*03/29/24 00:03*	*1*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*	*03/28/24 11:49*	*03/29/24 00:03*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:42	1

Client Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Client Sample ID: PH02@8'
Date Collected: 03/26/24 11:50
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-4
Matrix: Solid

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:42	1
Oll Range Organics (Over C28-C36)	ND		50		mg/Kg		03/28/24 12:48	03/29/24 05:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*126*		*70 - 130*	*03/28/24 12:48*	*03/29/24 05:42*	*1*
o-Terphenyl	*108*		*70 - 130*	*03/28/24 12:48*	*03/29/24 05:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**62**		5.0		mg/Kg			04/01/24 15:16	1

Client Sample ID: PH03@2'
Date Collected: 03/26/24 12:14
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-5
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:23	1
Toluene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:23	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:23	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 11:49	03/29/24 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*	*03/28/24 11:49*	*03/29/24 00:23*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*	*03/28/24 11:49*	*03/29/24 00:23*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/29/24 12:09	03/29/24 12:22	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/29/24 12:09	03/29/24 12:22	1
Oll Range Organics (Over C28-C36)	ND		50		mg/Kg		03/29/24 12:09	03/29/24 12:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*120*		*70 - 130*	*03/29/24 12:09*	*03/29/24 12:22*	*1*
o-Terphenyl	*101*		*70 - 130*	*03/29/24 12:09*	*03/29/24 12:22*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**38**		5.0		mg/Kg			04/01/24 15:22	1

Client Sample ID: PH03@8'
Date Collected: 03/26/24 12:20
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-6
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:44	1
Toluene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:44	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/29/24 00:44	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 11:49	03/29/24 00:44	1

Client Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Client Sample ID: PH03@8'
Date Collected: 03/26/24 12:20
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-6
Matrix: Solid

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*03/28/24 11:49*	*03/29/24 00:44*	*1*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*	*03/28/24 11:49*	*03/29/24 00:44*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/29/24 12:09	03/29/24 13:26	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/29/24 12:09	03/29/24 13:26	1
Oll Range Organics (Over C28-C36)	ND		50		mg/Kg		03/29/24 12:09	03/29/24 13:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*116*		*70 - 130*	*03/29/24 12:09*	*03/29/24 13:26*	*1*
o-Terphenyl	*100*		*70 - 130*	*03/29/24 12:09*	*03/29/24 13:26*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**46**		5.0		mg/Kg			04/01/24 15:28	1

QC Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-76821/5-A
Matrix: Solid
Analysis Batch: 76687

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76821

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 10:31	03/28/24 12:00	1
Toluene	ND		0.0020		mg/Kg		03/28/24 10:31	03/28/24 12:00	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 10:31	03/28/24 12:00	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 10:31	03/28/24 12:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*73*		*70 - 130*	*03/28/24 10:31*	*03/28/24 12:00*	*1*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*	*03/28/24 10:31*	*03/28/24 12:00*	*1*

Lab Sample ID: MB 880-76839/5-A
Matrix: Solid
Analysis Batch: 76687

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76839

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 22:39	1
Toluene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 22:39	1
Ethylbenzene	ND		0.0020		mg/Kg		03/28/24 11:49	03/28/24 22:39	1
Xylenes, Total	ND		0.0040		mg/Kg		03/28/24 11:49	03/28/24 22:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*72*		*70 - 130*	*03/28/24 11:49*	*03/28/24 22:39*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*03/28/24 11:49*	*03/28/24 22:39*	*1*

Lab Sample ID: LCS 880-76839/1-A
Matrix: Solid
Analysis Batch: 76687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76839

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.0946		mg/Kg		95	70 - 130		
Toluene			0.100	0.0899		mg/Kg		90	70 - 130		
Ethylbenzene			0.100	0.0957		mg/Kg		96	70 - 130		
m-Xylene & p-Xylene			0.200	0.194		mg/Kg		97	70 - 130		
o-Xylene			0.100	0.0971		mg/Kg		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: LCSD 880-76839/2-A
Matrix: Solid
Analysis Batch: 76687

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76839

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.0986		mg/Kg		99	70 - 130	4	35
Toluene			0.100	0.0981		mg/Kg		98	70 - 130	9	35
Ethylbenzene			0.100	0.103		mg/Kg		103	70 - 130	8	35
m-Xylene & p-Xylene			0.200	0.213		mg/Kg		106	70 - 130	9	35
o-Xylene			0.100	0.107		mg/Kg		107	70 - 130	10	35

QC Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 885-1870-1 MS — **Client Sample ID: PH01@2'**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 76687 — **Prep Batch: 76839**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND	F1	0.0996	0.0526	F1	mg/Kg		53	70 - 130		
Toluene	ND	F1	0.0996	0.0419	F1	mg/Kg		42	70 - 130		
Ethylbenzene	ND	F2 F1	0.0996	0.0396	F1	mg/Kg		40	70 - 130		
m-Xylene & p-Xylene	ND	F2 F1	0.199	0.0760	F1	mg/Kg		38	70 - 130		
o-Xylene	ND	F2 F1	0.0996	0.0384	F1	mg/Kg		39	70 - 130		

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*67*	*S1-*	*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: 885-1870-1 MSD — **Client Sample ID: PH01@2'**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 76687 — **Prep Batch: 76839**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND	F1	0.100	0.0446	F1	mg/Kg		44	70 - 130	16	35
Toluene	ND	F1	0.100	0.0577	F1	mg/Kg		57	70 - 130	32	35
Ethylbenzene	ND	F2 F1	0.100	0.0584	F2 F1	mg/Kg		58	70 - 130	38	35
m-Xylene & p-Xylene	ND	F2 F1	0.201	0.113	F2 F1	mg/Kg		56	70 - 130	39	35
o-Xylene	ND	F2 F1	0.100	0.0569	F2 F1	mg/Kg		57	70 - 130	39	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*84*		*70 - 130*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-76837/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 76762 — **Prep Batch: 76837**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/28/24 10:56	03/28/24 20:48	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/28/24 10:56	03/28/24 20:48	1
Oil Range Organics (Over C28-C36)	ND		50		mg/Kg		03/28/24 10:56	03/28/24 20:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*180*	*S1+*	*70 - 130*	*03/28/24 10:56*	*03/28/24 20:48*	*1*
o-Terphenyl	*168*	*S1+*	*70 - 130*	*03/28/24 10:56*	*03/28/24 20:48*	*1*

QC Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 880-76837/2-A
Matrix: Solid
Analysis Batch: 76762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76837

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1070		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	953		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*111*		*70 - 130*
o-Terphenyl	*111*		*70 - 130*

Lab Sample ID: LCSD 880-76837/3-A
Matrix: Solid
Analysis Batch: 76762

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76837

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1120		mg/Kg		112	70 - 130	5	20
Diesel Range Organics (Over C10-C28)			1000	959		mg/Kg		96	70 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*109*		*70 - 130*
o-Terphenyl	*110*		*70 - 130*

Lab Sample ID: MB 880-76919/1-A
Matrix: Solid
Analysis Batch: 76887

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76919

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/29/24 09:00	03/29/24 09:33	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/29/24 09:00	03/29/24 09:33	1
Oil Range Organics (Over C28-C36)	ND		50		mg/Kg		03/29/24 09:00	03/29/24 09:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*182*	*S1+*	*70 - 130*	*03/29/24 09:00*	*03/29/24 09:33*	*1*
o-Terphenyl	*168*	*S1+*	*70 - 130*	*03/29/24 09:00*	*03/29/24 09:33*	*1*

Lab Sample ID: LCS 880-76919/2-A
Matrix: Solid
Analysis Batch: 76887

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76919

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	912		mg/Kg		91	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	915		mg/Kg		91	70 - 130		

QC Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 880-76919/2-A
Matrix: Solid
Analysis Batch: 76887

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76919

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	105		70 - 130
o-Terphenyl	105		70 - 130

Lab Sample ID: LCSD 880-76919/3-A
Matrix: Solid
Analysis Batch: 76887

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76919

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	959		mg/Kg		96	70 - 130	5	20
Diesel Range Organics (Over C10-C28)			1000	923		mg/Kg		92	70 - 130	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	104		70 - 130
o-Terphenyl	105		70 - 130

Lab Sample ID: 885-1870-5 MS
Matrix: Solid
Analysis Batch: 76887

Client Sample ID: PH03@2'
Prep Type: Total/NA
Prep Batch: 76919

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	ND		1000	1270		mg/Kg		123	70 - 130
Diesel Range Organics (Over C10-C28)	ND		1000	1020		mg/Kg		99	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	99		70 - 130
o-Terphenyl	78		70 - 130

Lab Sample ID: 885-1870-5 MSD
Matrix: Solid
Analysis Batch: 76887

Client Sample ID: PH03@2'
Prep Type: Total/NA
Prep Batch: 76919

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	122		70 - 130
o-Terphenyl	93		70 - 130

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-76941/1-A
Matrix: Solid
Analysis Batch: 76961

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/Kg			04/01/24 12:48	1

QC Sample Results

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 880-76941/2-A
Matrix: Solid
Analysis Batch: 76961

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	252		mg/Kg		101	90 - 110		

Lab Sample ID: LCSD 880-76941/3-A
Matrix: Solid
Analysis Batch: 76961

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	252		mg/Kg		101	90 - 110	0	20

Lab Sample ID: 885-1870-1 MS
Matrix: Solid
Analysis Batch: 76961

Client Sample ID: PH01@2'
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	50	F1	250	332	F1	mg/Kg		113	90 - 110		

Lab Sample ID: 885-1870-1 MSD
Matrix: Solid
Analysis Batch: 76961

Client Sample ID: PH01@2'
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	50	F1	250	320		mg/Kg		108	90 - 110	4	20

QC Association Summary

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

GC VOA

Analysis Batch: 76687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-1	PH01@2'	Total/NA	Solid	8021B	76839
885-1870-2	PH01@8'	Total/NA	Solid	8021B	76839
885-1870-3	PH02@2'	Total/NA	Solid	8021B	76839
885-1870-4	PH02@8'	Total/NA	Solid	8021B	76839
885-1870-5	PH03@2'	Total/NA	Solid	8021B	76839
885-1870-6	PH03@8'	Total/NA	Solid	8021B	76839
MB 880-76821/5-A	Method Blank	Total/NA	Solid	8021B	76821
MB 880-76839/5-A	Method Blank	Total/NA	Solid	8021B	76839
LCS 880-76839/1-A	Lab Control Sample	Total/NA	Solid	8021B	76839
LCSD 880-76839/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	76839
885-1870-1 MS	PH01@2'	Total/NA	Solid	8021B	76839
885-1870-1 MSD	PH01@2'	Total/NA	Solid	8021B	76839

Prep Batch: 76821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-76821/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 76839

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-1	PH01@2'	Total/NA	Solid	5035	
885-1870-2	PH01@8'	Total/NA	Solid	5035	
885-1870-3	PH02@2'	Total/NA	Solid	5035	
885-1870-4	PH02@8'	Total/NA	Solid	5035	
885-1870-5	PH03@2'	Total/NA	Solid	5035	
885-1870-6	PH03@8'	Total/NA	Solid	5035	
MB 880-76839/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-76839/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-76839/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
885-1870-1 MS	PH01@2'	Total/NA	Solid	5035	
885-1870-1 MSD	PH01@2'	Total/NA	Solid	5035	

GC Semi VOA

Analysis Batch: 76762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-1	PH01@2'	Total/NA	Solid	8015B NM	76837
885-1870-2	PH01@8'	Total/NA	Solid	8015B NM	76837
885-1870-3	PH02@2'	Total/NA	Solid	8015B NM	76837
885-1870-4	PH02@8'	Total/NA	Solid	8015B NM	76837
MB 880-76837/1-A	Method Blank	Total/NA	Solid	8015B NM	76837
LCS 880-76837/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	76837
LCSD 880-76837/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	76837

Prep Batch: 76837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-1	PH01@2'	Total/NA	Solid	8015NM Prep	
885-1870-2	PH01@8'	Total/NA	Solid	8015NM Prep	
885-1870-3	PH02@2'	Total/NA	Solid	8015NM Prep	
885-1870-4	PH02@8'	Total/NA	Solid	8015NM Prep	
MB 880-76837/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-76837/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

GC Semi VOA (Continued)

Prep Batch: 76837 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-76837/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 76887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-5	PH03@2'	Total/NA	Solid	8015B NM	76919
885-1870-6	PH03@8'	Total/NA	Solid	8015B NM	76919
MB 880-76919/1-A	Method Blank	Total/NA	Solid	8015B NM	76919
LCS 880-76919/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	76919
LCSD 880-76919/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	76919
885-1870-5 MS	PH03@2'	Total/NA	Solid	8015B NM	76919
885-1870-5 MSD	PH03@2'	Total/NA	Solid	8015B NM	76919

Prep Batch: 76919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-5	PH03@2'	Total/NA	Solid	8015NM Prep	
885-1870-6	PH03@8'	Total/NA	Solid	8015NM Prep	
MB 880-76919/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-76919/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-76919/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
885-1870-5 MS	PH03@2'	Total/NA	Solid	8015NM Prep	
885-1870-5 MSD	PH03@2'	Total/NA	Solid	8015NM Prep	

HPLC/IC

Leach Batch: 76941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-1	PH01@2'	Soluble	Solid	DI Leach	
885-1870-2	PH01@8'	Soluble	Solid	DI Leach	
885-1870-3	PH02@2'	Soluble	Solid	DI Leach	
885-1870-4	PH02@8'	Soluble	Solid	DI Leach	
885-1870-5	PH03@2'	Soluble	Solid	DI Leach	
885-1870-6	PH03@8'	Soluble	Solid	DI Leach	
MB 880-76941/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-76941/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-76941/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
885-1870-1 MS	PH01@2'	Soluble	Solid	DI Leach	
885-1870-1 MSD	PH01@2'	Soluble	Solid	DI Leach	

Analysis Batch: 76961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1870-1	PH01@2'	Soluble	Solid	300.0	76941
885-1870-2	PH01@8'	Soluble	Solid	300.0	76941
885-1870-3	PH02@2'	Soluble	Solid	300.0	76941
885-1870-4	PH02@8'	Soluble	Solid	300.0	76941
885-1870-5	PH03@2'	Soluble	Solid	300.0	76941
885-1870-6	PH03@8'	Soluble	Solid	300.0	76941
MB 880-76941/1-A	Method Blank	Soluble	Solid	300.0	76941
LCS 880-76941/2-A	Lab Control Sample	Soluble	Solid	300.0	76941
LCSD 880-76941/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	76941
885-1870-1 MS	PH01@2'	Soluble	Solid	300.0	76941
885-1870-1 MSD	PH01@2'	Soluble	Solid	300.0	76941

Lab Chronicle

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Client Sample ID: PH01@2'
Date Collected: 03/26/24 11:24
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76839	MNR	EET MID	03/28/24 11:49
Total/NA	Analysis	8021B		1	76687	MNR	EET MID	03/28/24 23:01
Total/NA	Prep	8015NM Prep			76837	EL	EET MID	03/28/24 12:48
Total/NA	Analysis	8015B NM		1	76762	SM	EET MID	03/29/24 04:39
Soluble	Leach	DI Leach			76941	SA	EET MID	03/29/24 13:03
Soluble	Analysis	300.0		1	76961	SMC	EET MID	04/01/24 14:33

Client Sample ID: PH01@8'
Date Collected: 03/26/24 11:30
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76839	MNR	EET MID	03/28/24 11:49
Total/NA	Analysis	8021B		1	76687	MNR	EET MID	03/28/24 23:21
Total/NA	Prep	8015NM Prep			76837	EL	EET MID	03/28/24 12:48
Total/NA	Analysis	8015B NM		1	76762	SM	EET MID	03/29/24 05:00
Soluble	Leach	DI Leach			76941	SA	EET MID	03/29/24 13:03
Soluble	Analysis	300.0		1	76961	SMC	EET MID	04/01/24 14:51

Client Sample ID: PH02@2'
Date Collected: 03/26/24 11:44
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76839	MNR	EET MID	03/28/24 11:49
Total/NA	Analysis	8021B		1	76687	MNR	EET MID	03/28/24 23:42
Total/NA	Prep	8015NM Prep			76837	EL	EET MID	03/28/24 12:48
Total/NA	Analysis	8015B NM		1	76762	SM	EET MID	03/29/24 05:21
Soluble	Leach	DI Leach			76941	SA	EET MID	03/29/24 13:03
Soluble	Analysis	300.0		1	76961	SMC	EET MID	04/01/24 14:57

Client Sample ID: PH02@8'
Date Collected: 03/26/24 11:50
Date Received: 03/27/24 07:00

Lab Sample ID: 885-1870-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76839	MNR	EET MID	03/28/24 11:49
Total/NA	Analysis	8021B		1	76687	MNR	EET MID	03/29/24 00:03
Total/NA	Prep	8015NM Prep			76837	EL	EET MID	03/28/24 12:48
Total/NA	Analysis	8015B NM		1	76762	SM	EET MID	03/29/24 05:42
Soluble	Leach	DI Leach			76941	SA	EET MID	03/29/24 13:03
Soluble	Analysis	300.0		1	76961	SMC	EET MID	04/01/24 15:16

Lab Chronicle

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Client Sample ID: PH03@2'

Lab Sample ID: 885-1870-5
Matrix: Solid
Date Collected: 03/26/24 12:14
Date Received: 03/27/24 07:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76839	MNR	EET MID	03/28/24 11:49
Total/NA	Analysis	8021B		1	76687	MNR	EET MID	03/29/24 00:23
Total/NA	Prep	8015NM Prep			76919	EL	EET MID	03/29/24 12:09
Total/NA	Analysis	8015B NM		1	76887	SM	EET MID	03/29/24 12:22
Soluble	Leach	DI Leach			76941	SA	EET MID	03/29/24 13:03
Soluble	Analysis	300.0		1	76961	SMC	EET MID	04/01/24 15:22

Client Sample ID: PH03@8'

Lab Sample ID: 885-1870-6
Matrix: Solid
Date Collected: 03/26/24 12:20
Date Received: 03/27/24 07:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76839	MNR	EET MID	03/28/24 11:49
Total/NA	Analysis	8021B		1	76687	MNR	EET MID	03/29/24 00:44
Total/NA	Prep	8015NM Prep			76919	EL	EET MID	03/29/24 12:09
Total/NA	Analysis	8015B NM		1	76887	SM	EET MID	03/29/24 13:26
Soluble	Leach	DI Leach			76941	SA	EET MID	03/29/24 13:03
Soluble	Analysis	300.0		1	76961	SMC	EET MID	04/01/24 15:28

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Hilcorp Energy
Project/Site: Kate Standage 1E

Job ID: 885-1870-1

Laboratory: Eurofins Midland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-23-26	06-30-24

Chain-of-Custody Record

Client: Hilcorp Energy Co

Attn: Mitch Killough

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day

☒ Standard ☐ Rush

Project Name: Kate Standage 1E

Project #:

Project Manager: Stuart Hyde

Sampler: Danny Burns

On Ice: ☑ Yes ☐ No monty

# of Coolers: 1

Cooler Temp(including CF): 0.2-0.1 = 0.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

885-1870 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
3-26-2024	1124	SOIL	PH01@2'	1-4oz	COOL	1	X	X					X			
	1130		PH01@8'			2										
	1144		PH02@2'			3										
	1150		PH02@8'			4										
	1214		PH03@2'			5										
	1220		PH03@8'			6										

Date	Time	Relinquished by	Received by	Via	Date	Time
3-26-2024	1333		Chant Walt		3/26/24	1333
3/26/24	1717	Chant Walt		courier	3/27/24	7:00

Remarks: cc: shyde @ensolum.com dburns

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories This serves as notice of this possibility Any sub-contracted data will be clearly notated on the analytical report.

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109
Phone 505-345-3975 Fax. 505-345-4107

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler	Lab PM: Freeman, Andy	Carrier Tracking No(s)	COC No: 885-233 1
Client Contact: Shipping/Receiving	Phone	E-Mail: andy freeman@et.eurofinsus com	State of Origin: New Mexico	Page: Page 1 of 1
Company: Eurofins Environment Testing South Centr		Accreditations Required (See note): NELAP - Oregon, State - New Mexico		Job #: 885-1870-1
Address: 1211 W Florida Ave, ,	Due Date Requested: 4/2/2024			
City: Midland	TAT Requested (days):			
State Zip: TX, 79701	PO #:			
Phone: 432-704-5440(Tel)	WO #:			
Email:	Project #: 88500531			
Project Name: KAte Standage 1E	SSOW#:			
Site				

Analysis Requested

Preservation Codes

A - HCL, B NaOH, C Zn Acetate, D Nitric Acid, E - NaHSO4, F MeOH, G - Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O - AsNaO2, P Na2O4S, Q Na2SO3, R - Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8021B/5035FM_Calc BTEX	8015MOD_NM/8015NM_S_Prep (MOD) DRO and GRO	300_ORGFM_28D/DI_LEACH Chloride	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PH01@2' (885-1870-1)	3/26/24	11 24 Mountain		Solid			X	X	X	1	
PH01@8' (885-1870-2)	3/26/24	11 30 Mountain		Solid			X	X	X	1	
PH02@2' (885-1870-3)	3/26/24	11 44 Mountain		Solid			X	X	X	1	
PH02@8' (885-1870-4)	3/26/24	11 50 Mountain		Solid			X	X	X	1	
PH03@2' (885-1870-5)	3/26/24	12 14 Mountain		Solid			X	X	X	1	
PH03@8' (885-1870-6)	3/26/24	12 20 Mountain		Solid			X	X	X	1	

Note Since laboratory accreditations are subject to change, Eurofins Environment Testing South Central, LLC places the ownership of method analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing South Central LLC laboratory or other instructions will be provided Any changes to accreditation status should be brought to Eurofins Environment Testing South Central LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing South Central, LLC

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested I, II, III IV Other (specify) Primary Deliverable Rank 2	Special Instructions/QC Requirements.

Empty Kit Relinquished by	Date	Time	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		3/27/24 14:43			3/28/24 1115	
2	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
3	Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks. 4.3/4.2

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Hilcorp Energy Job Number: 885-1870-1

Login Number: 1870 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Hilcorp Energy Job Number: 885-1870-1

Login Number: 1870
List Number: 2
Creator: Kramer, Jessica

List Source: Eurofins Midland
List Creation: 03/28/24 11:22 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

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QUESTIONS

Action 336255

QUESTIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2406119660**
Incident Name	**NAPP2406119660 KATE STANDAGE 1E @ 30-045-33413**
Incident Type	**Release Other**
Incident Status	**Remediation Closure Report Received**
Incident Well	**[30-045-33413] KATE STANDAGE #001E**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	Kate Standage 1E
Date Release Discovered	02/29/2024
Surface Owner	Private

Incident Details	
Please answer all the questions in this group.	
Incident Type	Release Other
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	Cause: Corrosion | Production Tank | Produced Water | Released: 7 BBL | Recovered: 0 BBL | Lost: 7 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	Cause: Corrosion | Production Tank | Condensate | Released: 8 BBL | Recovered: 0 BBL | Lost: 8 BBL.
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	On 2/29/2024, Hilcorp operations discovered a 15.03-bbl condensate/produced water release (8.35 bbls condensate, 6.68 bbls produced water) at the Kate Standage 1E in San Juan County, NM. While conducting tank gauging operations, an operator observed that a 300-bbl storage tank had a drop in gauge height from the prior month. Upon further inspection of the tank and adjacent surface soils, it was determined that a loss in the storage tank occurred most likely due to a hole in the bottom of the tank (corrosion). This would not have been visible during routine site visits or weekly AVO surveys. At this time, the storage tank and oil dump have been removed from service. In addition, a water truck and tank cleaning crew were called out to pull remaining liquids. The spilled fluids did not migrate horizontally outside of secondary containment. However, none of the fluids could be recovered since the secondary containment area is unlined. Area 3 operations will work with

	Integrity to assess the tank and re-coat before placing back into service.

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**No**
Reasons why this would be considered a submission for a notification of a major release	*Unavailable.*
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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.

I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 04/22/2024

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). 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 in feet below ground surface (ft bgs)	Between 51 and 75 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 300 and 500 (ft.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between ½ and 1 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1000 (ft.) and ½ (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1000 (ft.) and ½ (mi.)
Any other fresh water well or spring	Between 1000 (ft.) and ½ (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Between 1000 (ft.) and ½ (mi.)
A wetland	Between 300 and 500 (ft.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	None
A 100-year floodplain	Between 1000 (ft.) and ½ (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	62
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	0
GRO+DRO (EPA SW-846 Method 8015M)	0
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	03/26/2024
On what date will (or did) the final sampling or liner inspection occur	03/26/2024
On what date will (or was) the remediation complete(d)	03/26/2024
What is the estimated surface area (in square feet) that will be reclaimed	0
What is the estimated volume (in cubic yards) that will be reclaimed	0
What is the estimated surface area (in square feet) that will be remediated	0
What is the estimated volume (in cubic yards) that will be remediated	0
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	No
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	No
(In Situ) Soil Vapor Extraction	No
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	No
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	No
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	No
Ground Water Abatement pursuant to 19.15.30 NMAC	No
OTHER (Non-listed remedial process)	Yes
Other Non-listed Remedial Process. Please specify	Petroleum hydrocarbon and/or chloride contaminants were not detected in any of the samples collected at the Site above the NMOCD Table I Closure Criteria or reclamation requirement
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	

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.

I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 04/22/2024

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**326280**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**03/26/2024**
What was the (estimated) number of samples that were to be gathered	**12**
What was the sampling surface area in square feet	**10000**

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Was this release entirely contained within a lined containment area	**No**
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	0
What was the total volume (cubic yards) remediated	0
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	0
What was the total volume (in cubic yards) reclaimed	0
Summarize any additional remediation activities not included by answers (above)	Petroleum hydrocarbon and/or chloride contaminants were not detected in any of the samples collected at the Site above the NMOCD Table I Closure Criteria or reclamation requirement. The Site appears to be absent of soil impacts and waste-containing soil.

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 04/22/2024

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

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CONDITIONS

Action 336255

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 336255
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	5/15/2024