

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

State of New Mexico
Energy Minerals and Natural
Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

Incident ID	nAPP2104155952
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Hilcorp Energy Company	OGRID 372171
Contact Name Jennifer Deal	Contact Telephone 505-801-6517
Contact email jdeal@hilcorp.com	Incident # nAPP2104155952
Contact mailing address 382 Road 3100, Aztec NM 87410	

Location of Release Source

Latitude 36.880155 _____ Longitude -108.190858 _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Sandrock Water Gathering	Site Type Produced Water Pipeline
Date Release Discovered 1/26/21 @ 2:00pm	API# 3004532686 (Nearest Location – Alamo 22 16)

Unit Letter	Section	Township	Range	County
O	22	31N	13W	San Juan

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (Name: Carl Craig Merilatt _____)

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 20	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls) 0 bbls
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

A release of ~20 bbls of produced water was released due to a pipeline failure from corrosion. Operations isolated and removed remaining pipeline fluids. The portion of pipeline with the hole will be replaced. The release occurred off of location on private land. The closest location is the Alamo 22 16 (API listed above). OCD will be notified 48 hours prior to sampling.

Incident ID	
District RP	
Facility ID	
Application ID	

Closure


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 (electronic submittals in .pdf format are preferred) 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.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

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.

Printed Name: Mitch Killough Title: Environmental Specialist

Signature:  Date: 2/3/2023

email: mkillough@hilcorp.com Telephone: 713-757-5247

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Nelson Velez Date: 02/06/2023

Printed Name: Nelson Velez Title: Environmental Specialist – Adv



February 3, 2023

New Mexico Oil Conservation Division

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

**Re: Addendum to the "Updated Site Characterization Report and Variance Request"
Sandrock Water Gathering Pipeline
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident No: nAPP2104155952**

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this Addendum to the November 11, 2022 *Updated Site Characterization Report and Variance Request* (Report) for the Sandrock Water Gathering Pipeline release (Site). The original Report has been revised in the following manner:

- Page 1 and headers of Pages 2 through 5: The Report submittal date has been updated to February 3, 2023.
- Page 4: "(Appendix E)" has been added to the first sentence under the section "Variance Request".
- Page 5: "Appendix E: Landowner Request" has been added to the last line of the Report under the section "Attachments".

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

Sincerely,

Ensolum, LLC

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

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



February 3, 2023

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 Site Characterization Report and Variance Request
Sandrock Water Gathering Pipeline
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident No: nAPP2104155952**

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Updated Site Characterization Report and Variance Request* for the Sandrock Water Gathering Pipeline release (Site). The Site is located on private land in Bloomfield, New Mexico (Figure 1). The work described herein was performed to further delineate chloride impacts to soil originating from a produced water pipeline release. The Site is located in Unit O, Section 22, Township 31 North, Range 13 West, in San Juan County, New Mexico.

SITE BACKGROUND

The release was discovered on January 26, 2021 originating from corrosion in a produced water pipeline. The release was estimated to consist of approximately 20 barrels (bbls) of produced water. The release occurred on private land and migrated approximately 300 feet south as sheet flow across a vegetated field. In total, the release footprint measured approximately 15,315 square feet. Hilcorp reported the release to the New Mexico Oil Conservation Division (NMOCD) and submitted Form C-141 on February 10, 2021. The release was assigned Incident Number nAPP2104155952.

SITE CLOSURE CRITERIA

Based on the results of the site characterization presented in the WSP USA Inc. (WSP) *Remediation Work Plan* dated April 26, 2021, the following NMOCD Table I Closure Criteria (Closure Criteria) apply to the Site:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH) as gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO): 100 mg/kg
- Chloride: 600 mg/kg

2021 INITIAL DELINEATION ACTIVITIES

Following the release, Hilcorp retained WSP to conduct delineation drilling and soil sampling at the Site. WSP performed an initial site reconnaissance to assess the release extent based on visual observations of wet and/or stained soils. Eleven soil borings, BH01 to BH11, were advanced on April 7, 2021 in the locations shown on Figure 2 to depths up to 5 feet below ground surface (bgs). Boring locations were selected to evaluate the vertical extent of impacted soil closest to the source area, as well as delineate the horizontal extent by placing borings outside of the obvious release footprint. Delineation results were presented in the WSP *Remediation Work Plan* with a recommendation to remove the chloride impacted soil within the entirety of the release footprint (15,315 square feet) by mechanical excavation for off-Site disposal.

LANDOWNER CONCERNS AND REQUESTS

Based on conversations with the landowner, excavation of the chloride-impacted soil is not preferable, considering the large surface disturbance of an active cattle-grazing pasture, amount of time during which large equipment will be operated on the property, number of trips by dump trucks actively accessing the property, and the potential damage to roads and undisturbed areas of the property. For example, standard dump trucks hold approximately 10 cubic yards of soil and weigh 26,000 pounds. It would require approximately 480 roundtrips by dump trucks to remove 4,800 cubic yards of soil from the Site. Import of backfill could require more trips due to compaction and settling.

Additionally, although the release has impacted some vegetation at the Site, the entire 15,315 square foot extent has not been impacted equally. The attached photographs (Appendix A) show the current impact to vegetation. While some of the vegetation is dead, there is visual evidence of live vegetation. An excavation would also impact healthy areas outside of the release footprint. Disturbance at the extent of excavation proposed may be more damaging to the property and outweigh the benefit of soil removal.

2022 ADDITIONAL DELINEATION ACTIVITIES

Based on the landowner's concerns, Ensolum performed additional drilling and sampling activities to further delineate soil and potential groundwater impacts at the Site. Specifically, several areas of the release footprint had not been previously delineated during the April 7, 2021 sampling event. Ensolum utilized a direct-push Geoprobe® rig to advance borings BH12 to BH25 to depths up to 24 feet bgs at the locations presented on Figure 2. During delineation activities, a geologist logged soil lithology and field screened for the presence of chloride using Hach® QuanTab® titrator strips. Soil descriptions were noted in the field soil boring logs attached as Appendix B. Hilcorp notified the NMOCD at least 48 hours in advance of any field activities performed at the Site. Notifications and correspondence with the NMOCD are attached in Appendix C.

Additionally, at three locations, BH25, BH26, and BH27 shown on Figure 3, Ensolum collected grab samples of groundwater using a Geoprobe® Hydropunch sampler. These locations were selected to assess groundwater within the area of elevated chloride concentrations in soil (BH25), upgradient or background conditions (BH27), and projected down/cross-gradient conditions (BH26). Based on site topography and the proximity to the La Plata River, groundwater flow direction was anticipated to be to the east-southeast.

Soil Sample Collection and Results

At least two soil samples were collected from each boring in order to delineate the vertical impacts: one at the depth interval indicating the greatest chloride concentration based on field screening results and a second soil sample collected near the terminus of each boring. Additional soil

samples were collected from borings BH22 through BH25 in order to assess chloride concentrations within the saturated zone of the Site. Soil samples were collected directly into laboratory-provided jars and immediately placed on ice. Samples were submitted to Hall Environmental Analysis Laboratory (Hall) and Envirotech for analysis of chloride by Environmental Protection Agency (EPA) Method 300.0. Sample rods and equipment were decontaminated prior to each use. Once complete, borings were backfilled with hydrated bentonite or grout.

In all borings advanced during the 2022 site work, except BH12 and BH20, soil was too unconsolidated within the top 8 feet bgs to recover using the direct push sampling equipment. In general, unconsolidated, dark brown sand, silt, clay, and organics (topsoil) were encountered between the ground surface and approximately 4 feet bgs. Unconsolidated, brown, moist to very moist sand, and clayey sand was encountered from 4 feet to approximately 13 feet bgs. The sand was underlain by a light brown, moist, cohesive, plastic clay and sandy clay at depths up to 17 feet bgs. Light brown, coarse, saturated sand with some gravel was encountered in the bottom of each boring advanced at the Site. Groundwater was encountered at approximately 17 to 20 feet bgs.

Chloride concentrations in soil samples collected from BH15, BH16, BH17, BH18, and BH25 were detected at concentrations ranging from 860 mg/kg in BH18 to 1,900 mg/kg in BH25, exceeding the NMOCD Table I Closure Criteria of 600 mg/kg. A summary of analytical results are presented on Figure 2 and summarized in attached Table 1. Complete laboratory reports are attached in Appendix D.

Grab-Groundwater Sample Collection and Results

Grab samples of groundwater were collected by advancing a Geoprobe® Hydropunch into the saturated zone at locations BH25, BH26, and BH27 (Figure 3). After the required depths were reached to encounter groundwater, the sample rod was retracted several feet to expose a stainless steel well screen housed inside of the sample rod. Once exposed, groundwater was allowed to infiltrate into the well screen. Tubing was placed through the sample rods into the well screen and samples were collected directly into laboratory provided containers using a peristaltic pump. Samples were submitted to Hall for analysis of chloride by EPA Method 300.0 and total dissolved solids (TDS) by Standard Method (SM) 2540C.

Chloride in the groundwater samples was detected in all three locations at concentrations below the New Mexico Water Quality Control Commission (NMWQCC) standard of 250 milligrams per liter (mg/L). Chloride concentrations ranged from 33 mg/L in BH27 to 91 mg/L in BH26. TDS concentrations were also detected in all samples, ranging from 1,770 mg/L in BH27 to 2,650 mg/L in BH25. Although TDS concentrations exceeded the NMWQCC standard of 1,000 mg/L, groundwater collected in all three locations were similar in concentration and likely attributable to background conditions in the shallow aquifer, as indicated by the elevated concentration in both the upgradient and down/cross-gradient sample locations. A summary of analytical results are summarized in attached Table 2 and Figure 3, with complete laboratory reports also attached in Appendix D.

CONCLUSIONS

Based on the analytical results and subsurface lithology at the Site, it appears that the produced water release has impacted soil to the lateral extent shown on Figure 2. Additionally, chloride concentrations have vertically migrated to approximate depths of 6 feet at the north end of the Site and up to 16 feet bgs near the south end of the release extent. Based on the surface topography of the Site and the migration pathway of the release, the produced water likely pooled in the southern portion of the Site resulting in deeper vertical migration in this area.

Chloride concentrations were detected in soil near the source of the release up to 2,600 mg/kg. In locations south of the source area, maximum chloride concentrations are present in the soil up to 1,900 mg/kg and quickly diminish with depth. Chloride concentrations exceeding the NMOCD Table I Closure Criteria are also predominantly present within the clayey soil lithology at the Site, which is likely restricting additional migration of the chloride. It is estimated that approximately 4,800 cubic yards of soil have been impacted by the release. Groundwater analytical results collected from within the area of impacted soil indicate that groundwater at the Site has not been impacted by the release. Based on the subsurface lithology and soil analytical results, there is vertical separation between impacted soil and the groundwater table.

VARIANCE REQUEST

At this time, the landowner has requested that the Site be left undisturbed (Appendix E). Based on the recent activities conducted at the Site, chloride impacts to soil have been successfully delineated and the release has not impacted groundwater. Vegetation within the release extent has been variably impacted, but based on soil sampling data, vegetation outside the release extent is unlikely to be impacted. The closest continuously flowing or significant watercourse to the Site is the Helton Ditch, an irrigation canal located approximately 130 feet west of the Site. The Helton Ditch is located upgradient and at an elevation higher than the Site. Additionally, the irrigation ditch is not a receiving watercourse, therefore it does not have the potential for groundwater impacts, if they were present, to negatively impact the water. The next closest continuously flowing or significant watercourse is the La Plata River located 1,600 feet east of the Site.

Based on the information provided above, Hilcorp respectfully requests a variance to leave chloride concentrations exceeding NMOCD Table I Closure Criteria in place. Based on Site sampling results, impacts appear to be stable, with relatively low chloride concentrations present in clayey lithologies. Remediation would require significant land disturbance, which outweighs the potential benefits of removal of chloride impacted soil. Considering the lack of nearby sensitive receptors, as well as the substantial negative impacts associated with removing 4,800 cubic yards of soil from the Site (i.e., greenhouse gas emissions from dump trucks and heavy equipment, roadway damage, additional traffic and potential vehicle accidents, etc.), Hilcorp believes that this variance is equally protective of human health and the environment.

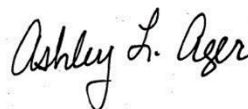
We appreciate the opportunity to provide this report to the NMOCD. If you should have any questions or comments regarding this document, please contact the undersigned.

Sincerely,

Ensolum, LLC



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



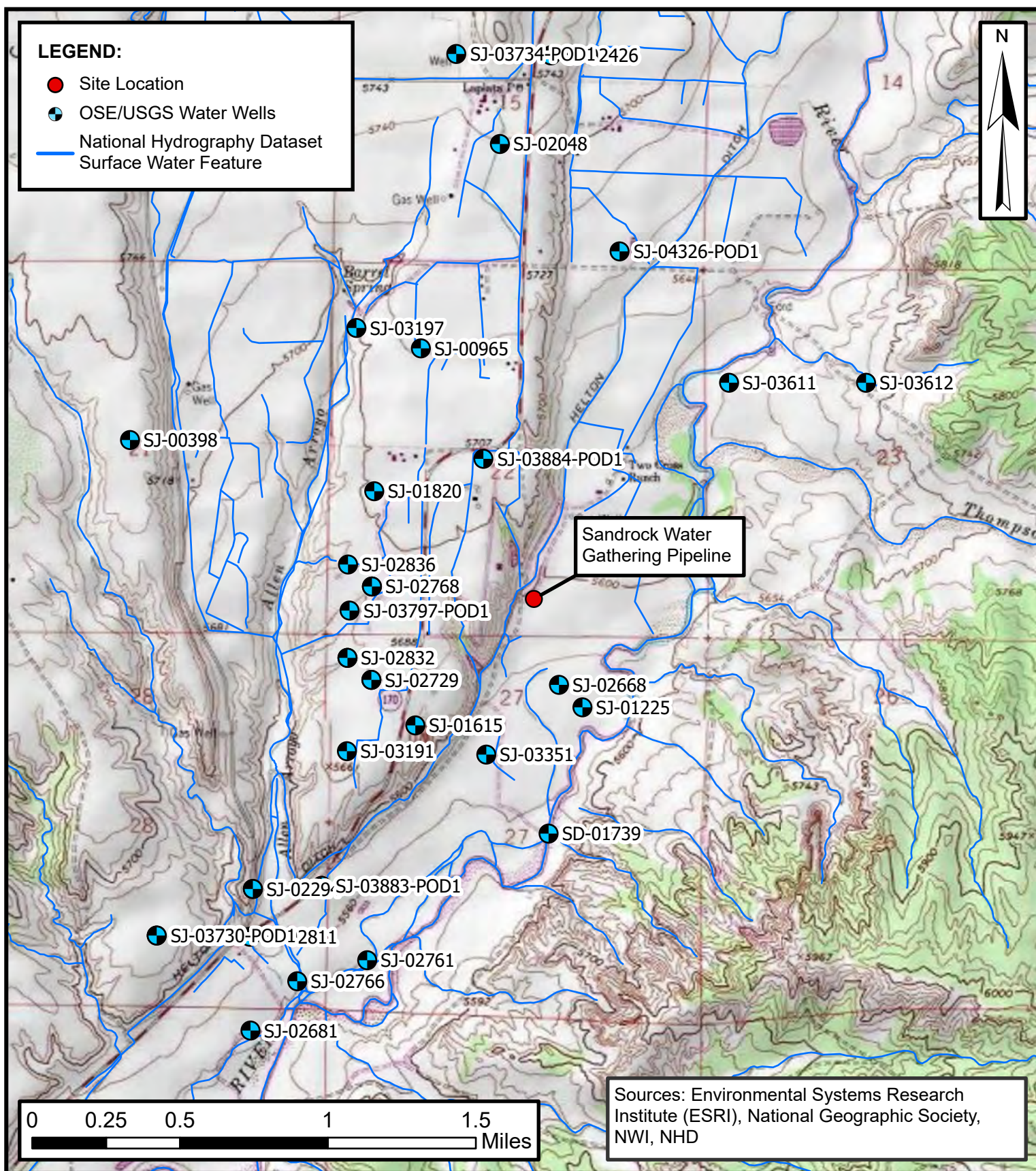
Ashley Ager, MS, PG
Program Director, Geologist
(970) 946-1093
aager@ensolum.com

Attachments:

Figure 1:	Site Location Map
Figure 2:	Soil Analytical Results
Figure 3:	Groundwater Analytical Results
Table 1:	Delineation Soil Sample Analytical Results
Table 2:	Groundwater Sampling Analytical Results
Appendix A:	Project Photographs
Appendix B:	Boring Logs
Appendix C:	NMOCD Notifications and Correspondence
Appendix D:	Laboratory Analytical Reports
Appendix E:	Landowner Request



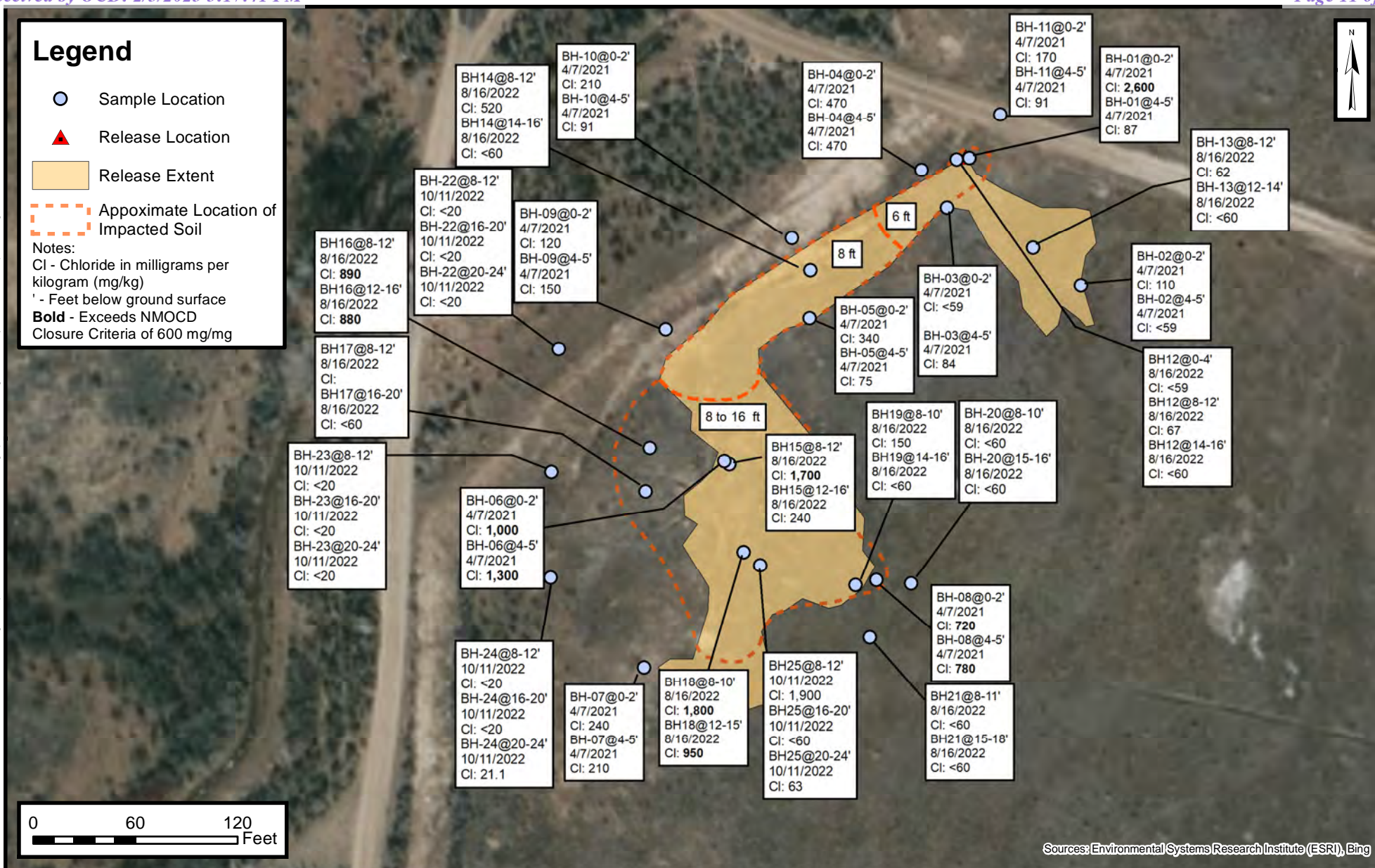
FIGURES



Site Location Map

Sandrock Water Gathering Pipeline
Hilcorp Energy Company
San Juan County, NM
36.87975°N, -108.19077°W
Project Number: 07A1988037

FIGURE
1



Soil Analytical Results

Sandrock Water Gathering Pipeline
 Hilcorp Energy Company

San Juan County, NM

36.87975°N, -108.19077°W

Project Number: 07A1988037

FIGURE
2

Document Path: C:\Users\Justin Valdez\GIS\Ensolium GIS\1 - Durango\Hilcorp\07A1988037 - Sandrock Water Gathering Pipeline1 - Mxd\Figure 4 Soil Analytical Results and Proposed Boring Locations.mxd

Legend

▲ Release Location

○ Sample Location

Release Extent

Approximate Location of Impacted Soil

Notes:

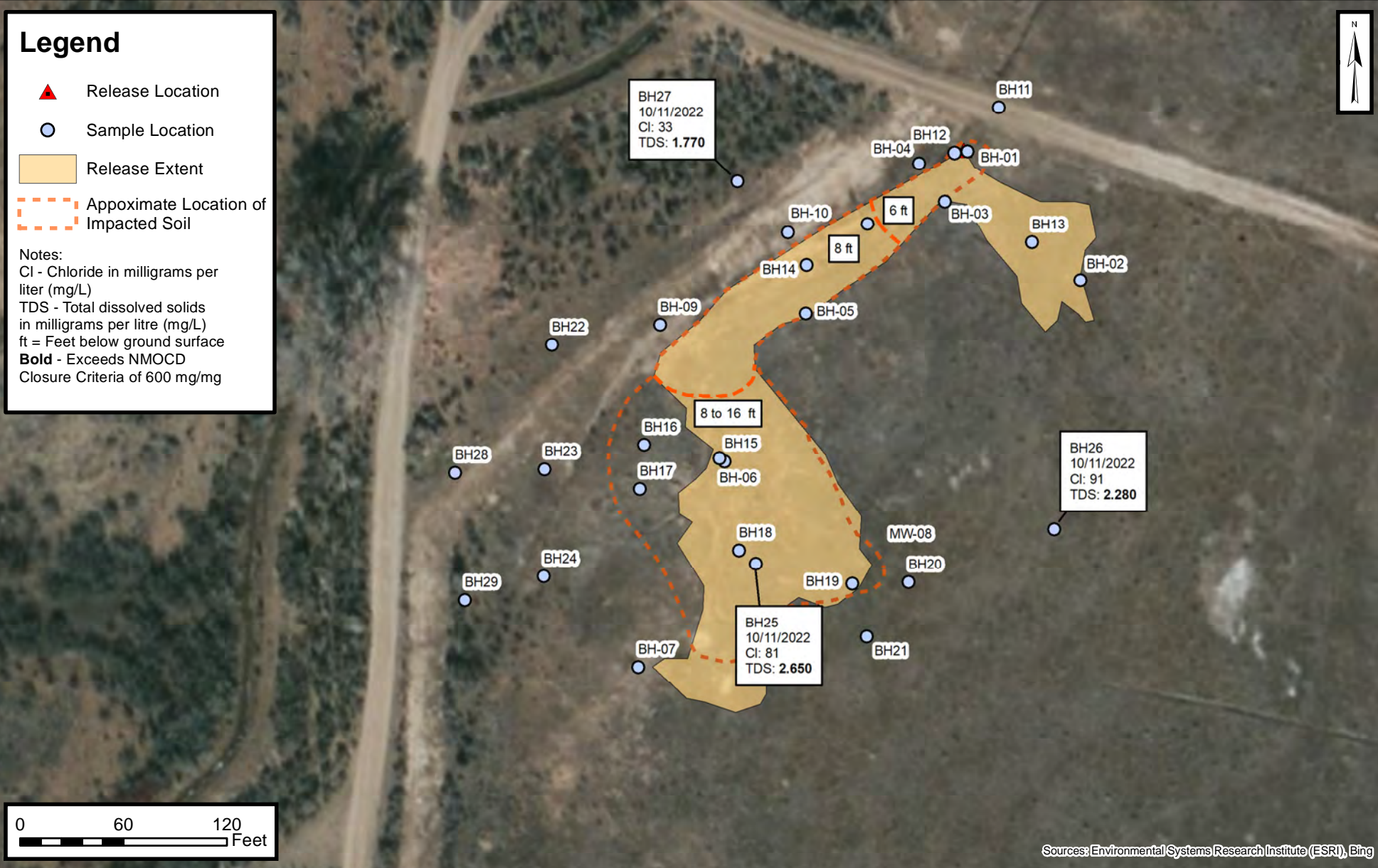
Cl - Chloride in milligrams per liter (mg/L)

TDS - Total dissolved solids in milligrams per litre (mg/L)

ft = Feet below ground surface

Bold - Exceeds NMOCD

Closure Criteria of 600 mg/mg



Groundwater Analytical Results

Sandrock Water Gathering Pipeline
Hilcorp Energy Company

San Juan County, NM

36.87975°N, -108.19077°W

Project Number: 07A1988037

FIGURE
3





TABLES



TABLE 1
DELINEATION SOIL SAMPLE ANALYTICAL RESULTS
 Sandrock Gathering Water Pipeline
 Hilcorp Energy Company
 San Juan County, New Mexico

Sample Designation	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)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Closure Criteria for Soils Impacted by a Release (Groundwater <50 feet)			10	NE	NE	NE	50	NE	NE	NE	100	600
BH01 0-2'	4/7/2021	0 - 2	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<9.8	<49	<63.4	2,600
BH01 4-5'	4/7/2021	4 - 5	<0.024	<0.048	<0.048	<0.097	<0.217	<4.8	<9.7	<49	<63.5	87
BH02 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	110
BH02 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	<59
BH03 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	<59
BH03 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	84
BH04 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	350
BH04 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	470
BH05 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	340
BH05 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	75
BH06 0-2'	4/7/2021	0 - 2	<0.024	<0.049	<0.049	<0.098	<0.220	<4.9	<9.2	<46	<60.1	1,000
BH06 4-5'	4/7/2021	4 - 5	<0.024	<0.048	<0.048	<0.096	<0.216	<4.8	<9.6	<48	<62.4	1,300
BH07 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	240
BH07 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	210
BH08 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	720
BH08 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	780
BH09 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	120
BH09 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	150
BH10 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	210
BH10 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	91
BH11 0-2'	4/7/2021	0 - 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	170
BH11 4-5'	4/7/2021	4 - 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	91
BH12 0-4'	8/16/2022	0 - 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	<59
BH12 8-12'	8/16/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	67
BH12 14-16'	8/16/2022	14 - 16	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH13 8 - 12'	8/16/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	62
BH13 12-14'	8/16/2022	12 - 14	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH14 8-12'	8/16/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	520
BH14 14-16'	8/16/2022	14 - 16	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH15 8-12'	8/16/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,700
BH15 12-16'	8/16/2022	12 - 16	NA	NA	NA	NA	NA	NA	NA	NA	NA	240
BH16 8-12'	8/16/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800
BH16 12-16'	8/16/2022	12 - 16	NA	NA	NA	NA	NA	NA	NA	NA	NA	880



TABLE 1
DELINEATION SOIL SAMPLE ANALYTICAL RESULTS
 Sandrock Gathering Water Pipeline
 Hilcorp Energy Company
 San Juan County, New Mexico

Sample Designation	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)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Closure Criteria for Soils Impacted by a Release (Groundwater <50 feet)			10	NE	NE	NE	50	NE	NE	NE	100	600
BH17 8-12'	8/16/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	890
BH17 16-20'	8/16/2022	16 - 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH18 8-10'	8/16/2022	8 - 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800
BH18 12-15'	8/16/2022	12 - 15	NA	NA	NA	NA	NA	NA	NA	NA	NA	950
BH19 8-10'	8/16/2022	8 - 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	150
BH19 14-16'	8/16/2022	14 - 16	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH20 8-10'	8/16/2022	8 - 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH20 15-16'	8/16/2022	15 - 16	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH21 8-11'	8/16/2022	8 - 11	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH21 15-18'	8/16/2022	15 - 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH22 8-12'	10/12/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH22 16-20'	10/12/2022	16 - 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH22 20-24'	10/12/2022	20 - 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH23 8-12'	10/12/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH23 16-20'	10/12/2022	16 - 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH23 20-24'	10/12/2022	20 - 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH24 8-12'	10/12/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH24 16-20'	10/12/2022	16 - 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20.0
BH24 20-24'	10/12/2022	20 - 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.1
BH25 8-12'	10/12/2022	8 - 12	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,900
BH25 16-20'	10/12/2022	16 - 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	<60
BH25 20-24'	10/12/2022	20 - 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	63

Notes:

bgs: below ground surface

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

mg/kg: milligrams per kilogram

NA: Not Analyzed

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

<0.037: indicates result less than the stated laboratory reporting limit (RL)

Concentrations in **bold** and shaded exceed the New Mexico Oil Conservation Division Table 1 Closure Criteria for Soils Impacted by a Release



TABLE 2 GROUNDWATER SAMPLE ANALYTICAL RESULTS Sandrock Gathering Water Pipeline Hilcorp Energy Company San Juan County, New Mexico			
Sample Designation	Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
NMWQCC Standards for Ground Water of 10,000 mg/L TDS Concentration or Less		250	1,000
BH25	10/11/2022	81	2,650
BH26	10/11/2022	91	2,280
BH27	10/11/2022	33	1,770

Notes:

mg/L: milligrams per liter

NMWQCC: New Mexico water quality control commission

TDS: total dissolved solids

Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards



APPENDIX A

Project Photographs

PROJECT PHOTOGRAPHS
Sandrock Water Gathering Pipeline
San Juan County, New Mexico
Hilcorp Energy Company

Photograph 1



View of pasture looking south, impacted area outlined in red, taken June 28, 2022.

**Photograph 2**

View of pasture looking southwest, impacted area outlined in red. Other bare areas in photograph are cattle paths. Photograph taken June 28, 2022.




PROJECT PHOTOGRAPHS
Sandrock Water Gathering Pipeline
San Juan County, New Mexico
Hilcorp Energy Company

<p>Photograph 3</p> <p>View of pasture looking south-southwest, impacted area outlined in red. Photograph taken June 28, 2022.</p>	
<p>Photograph 4</p> <p>View of pasture looking southeast, impacted area outlined in red. Photograph taken June 28, 2022.</p>	



APPENDIX B

Boring Logs

		WSP USA INC								
		848 East 2nd Avenue								
		Durango, CO 81301								
		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
Boring/Well Number: BH01		Project: Sandrock Water Gathering								
Date: 4/7/2021		Project Number:								
Logged By: Eric Carroll		Drilled By: Hilcorp								
Elevation: 6,000	Detector: PID	Drilling Method: Hollow Stem	Sampling Method: Continuous							
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite							
Casing Type: Schedule 40 PVC	Diameter: 2"	Length: NA	Hole Diameter: 6"							
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA							
		Total Depth: 9'	Depth to Liquid: NA							
			Depth to Water: 6-5							
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	5.6	✓	BH01 0-2'	0			SM	moist, loose, red brown, silty sand no stain/odor	
					1	1			CI ⁻ = 4.2 636	
					2					
	m	4.1	✓		3	2		SM	SAA	
					4				CI ⁻ = 3.2 392	
					5					
	m	3.2		BH01 4-5'	6	3		SM	SAA	
					7				CI ⁻ = 1.8 152	
					8					
	w	2.2			9	4		SC	wet, cohesive, sand, some clay	
					10				Dark brown GW @ 6.5'	
					11				CI ⁻ 1.2 <124	
					12					
					13					
					14					
					15					
									to SAA	
									CI ⁻ 0.4 <125	



WSP USA INC

848 East 2nd Avenue

Durango, CO 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM


Boring/Well Number: BH02	Project: Sandrock Water Gathering
Date: 4/7/2021	Project Number:
Logged By: Eric Carroll	Drilled By: Hilcorp
Drilling Method: Hollow Stem	Sampling Method: Continuous
Seal: Bentonite	Grout: Bentonite
Diameter: 2"	Length: NA
Hole Diameter: 6"	Depth to Liquid: NA
Diameter: 2"	Length: NA
Total Depth: 8'	Depth to Water: 6'


Elevation:
6,000Detector:
PIDGravel Pack:
10-20 Silica SandCasing Type:
Schedule 40 PVCScreen Type:
Schedule 40 PVC


Slot:


0.010"Diameter:
2"Length:
NAHole Diameter:
6"Depth to Liquid:
NATotal Depth:
8'Depth to Water:
6'


Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	0.3	N	BH01 0-2	0			SM	moist dark brown, silty sand few clay, w/ organics	
					1	1		SM	CI ⁻ = 1.0 < 124	
					2					
	m	0.0	N		3	2		SM	SAA	
					4				CI ⁻ = 0.8 < 124	
					5	3		SM	moist, dark brown, silty sand little clay	
	m	0.0	N	BH01 4-5	6				CI ⁻ = 0.6 < 124	
					7	4		SC	Gw @ 6'-6.5'	
	vm	0.0	N		8				wet Dark brown clayey sand	
					9					
					10					
					11					
					12					
					13					
					14					
					15					


		WSP USA INC								
		848 East 2nd Avenue Durango, CO 81301								
		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
		Boring/Well Number: BH03	Project: Sandrock Water Gathering							
Date: 4/7/2021		Project Number:								
Logged By: Eric Carroll		Drilled By: Hilcorp								
Elevation: 6,000	Detector: PID	Drilling Method: Hollow Stem	Sampling Method: Continuous							
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite							
Casing Type: Schedule 40 PVC		Diameter: 2"	Length: 6'							
Screen Type: Schedule 40 PVC		Slot: 0.010"	Diameter: 2"							
		Length:	Total Depth: 5'							
			Depth to Liquid: NA							
			Depth to Water:							
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	24.7	N		0			SM	moist dark brown silty sand Cl ⁻ = 0.8 < 124	
					1	1				
					2					
					3	2		SM	moist, red brown silty sand Cl ⁻ = 0.8 < 124	
					4					
					5	3		SC	moist, brown, silty sand, few clay Cl ⁻ 0.6 < 124	
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


				WSP USA INC						
				848 East 2nd Avenue						
				Durango, CO 81301						
				BORING LOG/MONITORING WELL COMPLETION DIAGRAM						
Boring/Well Number: BH04				Project: Sandrock Water Gathering						
Date: 4/7/2021				Project Number:						
Logged By: Eric Carroll				Drilled By: Hilcorp						
Drilling Method: Hollow Stem				Sampling Method: Continuous						
Elevation: 6,000				Detector: PID						
Gravel Pack: 10-20 Silica Sand				Seal: Bentonite						
Casing Type: Schedule 40 PVC				Diameter: 2"		Length: NA				
Screen Type: Schedule 40 PVC				Slot: 0.010"		Diameter: 2"				
						Hole Diameter: 6"				
						Depth to Liquid: NA				
						Total Depth: 5'				
						Depth to Water:				
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	6.6	N		0			SM	moist, red brown silty sand	
					1				CI⁻ = 0.4 < 124	
					2					
					3			SM	SAA	
					4				CI⁻ = 0.4 < 124	
					5			SC	moist brown, sand, some silt and clay cohesive	
					6				CI⁻ = 0.4 < 124	
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


		WSP USA INC								
		848 East 2nd Avenue								
		Durango, CO 81301								
		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
Boring/Well Number: BH05		Project: Sandrock Water Gathering								
Date: 4/7/2021		Project Number:								
Logged By: Eric Carroll		Drilled By: Hilcorp								
Drilling Method: Hollow Stem		Sampling Method: Continuous								
Elevation: 6,000	Detector: PID	Seal: Bentonite								
Gravel Pack: 10-20 Silica Sand		Grout: Bentonite								
Casing Type: Schedule 40 PVC		Diameter: 2"	Length: NA							
Screen Type: Schedule 40 PVC		Diameter: 2"	Length: NA							
Slot: 0.010"		Total Depth: 5'	Depth to Liquid: NA							
Depth to Water: NA										
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	4.7	N	BH05 0-2	0			SM	moist, red brown, silty sand	
					1	1			CI- 0.4 <124	
					2					
	m	3.1	N		3	2		SM	SAA	
					4				CI- 0.4 <124	
	m	2.8	N	BH05 4-5	5	3		SC	moist brown, sand, some silt & clay cohesive	
					6				CI- 0.2 <124	
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


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Boring/Well Number: BH06		Project: Sandrock Water Gathering																																																																																																																																																																																												
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Diameter: 2" Length: NA		Total Depth: 5'	Depth to Water:																																																																																																																																																																																											
<table border="1"> <thead> <tr> <th>Penetration Resistance</th> <th>Moisture Content</th> <th>Vapor (ppm)</th> <th>HC Staining?</th> <th>Sample #</th> <th>Depth (ft. bgs.)</th> <th>Sample Run</th> <th>Recovery</th> <th>Soil/Rock Type</th> <th>Lithology/Remarks</th> <th>Well Completion</th> </tr> </thead> <tbody> <tr> <td></td> <td>m</td> <td>3.6</td> <td>N</td> <td>BH06 0-2</td> <td>0</td> <td></td> <td></td> <td>SM</td> <td>moist, red brown, silty sand</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> <td></td> <td>CI⁻ = 4.0 580</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>m</td> <td>3.4</td> <td>N</td> <td></td> <td>3</td> <td>2</td> <td></td> <td></td> <td>SAA</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4</td> <td></td> <td></td> <td></td> <td>CI⁻ = 2.8 312</td> <td></td> </tr> <tr> <td></td> <td>m</td> <td>3.1</td> <td>N</td> <td>BH06 4-5</td> <td>5</td> <td>3</td> <td></td> <td></td> <td>moist, brown, sand, some clay & silt, cohesive</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6</td> <td></td> <td></td> <td></td> <td>CI⁻ = 1.4 < 124</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>13</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>14</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>15</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion		m	3.6	N	BH06 0-2	0			SM	moist, red brown, silty sand							1	1			CI ⁻ = 4.0 580							2							m	3.4	N		3	2			SAA							4				CI ⁻ = 2.8 312			m	3.1	N	BH06 4-5	5	3			moist, brown, sand, some clay & silt, cohesive							6				CI ⁻ = 1.4 < 124							7											8											9											10											11											12											13											14											15					
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		WSP USA INC								
		848 East 2nd Avenue								
		Durango, CO 81301								
		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
Boring/Well Number: BH07		Project: Sandrock Water Gathering								
Date: 4/7/2021		Project Number:								
Logged By: Eric Carroll		Drilled By: Hilcorp								
Elevation: 6,000	Detector: PID	Drilling Method: Hollow Stem	Sampling Method: Continuous							
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite							
Casing Type: Schedule 40 PVC	Diameter: 2"	Length: NA	Hole Diameter: 6"							
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA							
		Total Depth: 5'	Depth to Water:							
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	1.7	N	BH07 0-2	0				moist, red brown, silty sand	
					1				CI ⁻ = 1.8 152	
					2	1				
	m	1.1	N		3	2			SAA =	
					4				CI ⁻ = 1.6 124	
	m	0.8	N	BH07 4-5	5	3			moist, brown, sand, some clay & silt, cohesive	
					6				CI ⁻ = 0.8 < 124	
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


				WSP USA INC						
				848 East 2nd Avenue						
				Durango, CO 81301						
				BORING LOG/MONITORING WELL COMPLETION DIAGRAM						
Boring/Well Number: B408				Project: Sandrock Water Gathering						
Date: 4/7/2021				Project Number:						
Logged By: Eric Carroll				Drilled By: Hilcorp						
Drilling Method: Hollow Stem				Sampling Method: Continuous						
Gravel Pack: 10-20 Silica Sand				Seal: Bentonite						
Grout: Bentonite										
Casing Type: Schedule 40 PVC				Diameter: 2"	Length: NA	Hole Diameter: 6"	Depth to Liquid: NA			
Screen Type: Schedule 40 PVC				Slot: 0.010"	Diameter: 2"	Length: NA	Total Depth: 5'			
				Depth to Water:						
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	3.9	N	B408 0-2	0				moist, red brown, silty sand	
					1	1			CI = 1.6 < 124	
					2					
	m	2.7	N		3	2			SAA	
					4				CI = 1.2 < 124	
	m	2.4	N	B408 4-5	5	3			moist, brown, cohesive, sand	
					6				some clay & silt	
					7				CI = 0.6 < 124	
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


		WSP USA INC								
		848 East 2nd Avenue								
		Durango, CO 81301								
		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
Boring/Well Number: BH09		Project: Sandrock Water Gathering								
Date: 4/7/2021		Project Number:								
Logged By: Eric Carroll		Drilled By: Hilcorp								
Elevation: 6,000	Detector: PID	Drilling Method: Hollow Stem	Sampling Method: Continuous							
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite							
Casing Type: Schedule 40 PVC		Diameter: 2"	Length: NA							
Screen Type: Schedule 40 PVC		Diameter: 2"	Length: NA							
Slot: 0.010"		Total Depth: 5'	Depth to Liquid: NA							
Depth to Water: 5'										
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	6.9	N	BH09 0-2	0				moist, red brown, loose sand	
					1	1			CI = 1.8 152	
					2					
	m	4.9	N		3	2			moist, red brown, loose, sand	
					4				CI = 1.4 <124	
					5	3			moist, brown, cohesive, sand	
	m	4.7	N	BH09 4-5	6				Some clay & silt	
					7				CI = 0.8 <124	
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


				WSP USA INC						
				848 East 2nd Avenue						
				Durango, CO 81301						
				BORING LOG/MONITORING WELL COMPLETION DIAGRAM						
Boring/Well Number: BH10				Project: Sandrock Water Gathering						
Date: 4/7/2021				Project Number:						
Logged By: Eric Carroll				Drilled By: Hilcorp						
Elevation: 6,000		Detector: PID		Drilling Method: Hollow Stem		Sampling Method: Continuous				
Gravel Pack: 10-20 Silica Sand				Seal: Bentonite		Grout: Bentonite				
Casing Type: Schedule 40 PVC				Diameter: 2"		Length: NA				
Screen Type: Schedule 40 PVC				Slot: 0.010"		Diameter: 2"				
				Length: NA		Total Depth: 5'				
						Depth to Liquid: NA				
						Depth to Water:				
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	m	8.7	N	BH10 0-2	0	1		SM	moist, red brown, loose, silty sand	
					1				CI ⁻ = 2.0 180	
					2					
	m	7.6	N		3	2		SM	SAA CI ⁻ = 1.6 124	
					4					
	m	5.11	N	BH10 4-5	5	3		SC	moist, brown, cohesive, sand some silt & clay	
					6				CI ⁻ = 0.8 < 124	
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					


				WSP USA INC						
				848 East 2nd Avenue						
				Durango, CO 81301						
				BORING LOG/MONITORING WELL COMPLETION DIAGRAM						
Boring/Well Number: <i>BH11</i>				Project: <i>Sandrock Water Gathering</i>						
Date: <i>4/7/2021</i>				Project Number:						
Logged By: <i>Eric Carroll</i>				Drilled By: <i>Hilcorp</i>						
Elevation: <i>6,000</i>				Detector: <i>PID</i>						
Gravel Pack: <i>10-20 Silica Sand</i>				Seal: <i>Bentonite</i>						
Casing Type: <i>Schedule 40 PVC</i>				Grout: <i>Bentonite</i>						
Screen Type: <i>Schedule 40 PVC</i>				Diameter: <i>2"</i>						
Slot: <i>0.010"</i>				Length: <i>NA</i>						
Diameter: <i>2"</i>				Hole Diameter: <i>6"</i>						
Length: <i>NA</i>				Depth to Liquid: <i>NA</i>						
Total Depth: <i>5'</i>				Depth to Water:						
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	<i>m</i>	<i>0.2</i>	<i>N</i>		<i>0</i>				<i>moist, red brown, loose, sand</i>	
					<i>1</i>				<i>CI⁻ = 0.2 <124</i>	
					<i>2</i>					
	<i>m</i>	<i>0.1</i>	<i>N</i>		<i>3</i>				<i>SAA</i>	
					<i>4</i>				<i>CI⁻ = 0.2 <124</i>	
	<i>m</i>	<i>0.1</i>	<i>N</i>		<i>5</i>				<i>SAA</i>	
					<i>6</i>				<i>CI⁻ = 0.2 <124</i>	
					<i>7</i>					
					<i>8</i>					
					<i>9</i>					
					<i>10</i>					
					<i>11</i>					
					<i>12</i>					
					<i>13</i>					
					<i>14</i>					
					<i>15</i>					


		Client: <u>HEC</u> Project Name: <u>Sandrock</u> Project Location: <u>San Juan Co. NM</u> Project Manager: <u>S. Hyde</u>		BORING LOG NUMBER <u>BH6B</u> Project No. _____				
		Date Sampled: <u>8-16</u> Drilled by: <u>Earthwork</u> Driller: <u>L</u> Logged by: <u>E. Carroll</u> Sampler: <u>E. Carroll</u>		Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input type="checkbox"/> At Completion <input checked="" type="checkbox"/> At Well Stabilization		Borehole Diameter: <u>2-5 inches</u> Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: <u>DP</u>		
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/FID READING (ppm)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)
0	0-4'	0-4' 10:00	60%	0.4 <128	CL	CL	Dark brown sand & clay/silt moist, organics (top soil)	
5	4-8'		0%	NA		-	No Recovery after multiple attempts	
8	8-12'	8-12 10:10		0.6 <128	SP	SP	very moist, sand, lt. brown	
10					SP	SP	SAH	
12	12-16'	14-16 10:15		0.6 <128	OH	OH	14" moist sandy clay cohesive	
15					OH	OH	SAH	
17	16-20'	17-20 10:20		0.2 <128	SP	SP	17' wet saturated coarse sand organic (swampy) odor	
20							TD = 20'	
25								


						Client: <u>HEC</u> Project Name: <u>Sandrock</u> Project Location: <u>SF County, NM</u> Project Manager: <u>S. Hyde</u>		BORING LOG NUMBER <u>BH13</u> Project No. _____	
Date Sampled: <u>8-16</u> Drilled by: <u>Earshaw</u> Driller: <u>L. Trujillo</u> Logged by: <u>E. Carvey</u> Sampler: <u>E. Carvey</u>						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input type="checkbox"/> At Completion <input type="checkbox"/> At Well Stabilization		Borehole Diameter: <u>2.5"</u> Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: <u>DP</u>	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0									
5									
10	8-12	(8-12)		0.8 428		SP	15' brown very moist sand few clay		
12	12-14	(12-14)				OH	12' 18' brown clay/sandy clay moist		
14	12-16	14-16		0.2 4138		SP	14' wet saturated coarse sand 18 brown organic odor		
15									
20									
25									


						Client: <u>HEC</u> Project Name: <u>SANDRACK</u> Project Location: <u>ST. COUNTRY, MN</u> Project Manager: <u>S. Hyde</u>		BORING LOG NUMBER <u>BH14</u> Project No. _____	
Date Sampled: <u>8-16</u> Drilled by: <u>Karolyak</u> Driller: <u>L. Tullio</u> Logged by: <u>E. Carroll</u> Sampler: <u>1</u>						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ * At Completion * At Well Stabilization		Borehole Diameter: <u>2.6"</u> Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: <u>DP</u>	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/FID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0									
							0-8' NO RECOVERY		
8-12'	(8-12')			3.8 536		SP	15' brown very moist sand few clay		
12-13.5'				2.2 212		OH	13' 15' brown cohesive moist clay		
12-16'	(12.5-16')			0.6 2128					
16-20'	(16-20')			0.2 2124		SP	15' brown coarse sand wet saturated		
							TD = 20'		


		Client: <u>HEC</u>		BORING LOG NUMBER						
		Project Name: <u>SANDROCK</u> Project Location: <u>SJ COUNTY, NM</u> Project Manager: <u>S. Hyde</u>		<u>BH15</u> Project No. _____						
Date Sampled: <u>8-16</u> Drilled by: <u>Earthwork</u> Driller: <u>L. Tenaillon</u> Logged by: <u>E. Carillo</u> Sampler: <u>11</u>		Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ At Completion _____ At Well Stabilization _____		Borehole Diameter: <u>2.5"</u> Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: <u>DP</u>						
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)		
0										
5										
8-12	9-12			3.0 356		SP	0-8' NO Recovery 16. brown moist sand few clay			
12-16	12-16			0.6 4128		OH	16. brown cohesive clay 1'			
16-20				0.2 4128		SP	wet saturated, dark brown coarse sand & gravel little recovery no sample (lab) collected			
25							TD = 30'			


				Client: <u>HEC</u> Project Name: <u>Sandrock</u> Project Location: <u>SJ County, NM</u> Project Manager: <u>S. Hyde</u>				BORING LOG NUMBER <u>BH16</u> Project No. _____			
Date Sampled: <u>8-16</u> Drilled by: <u>E. Carro</u> Driller: <u>L. Truitt</u> Logged by: <u>E. Carro</u> Sampler: <u>1</u>				Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ At Completion At Well Stabilization				Borehole Diameter: <u>2.5'</u> Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: <u>DP</u>			
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION		BORING / WELL COMPLETION (GRAPHIC DEPICTION)		
0							0-8' No Recovery				
5											
8-12	8-12			3.0 356		SP	moist, lb. brown sand few clay				
10				2.6 210		GH	11' moist brown, cohesive clay				
12-16	12-16			1.0 4129		SP	14' wet saturated brown, coarse sand & gravel				
15											
16-20						SP	wet, gravel, some sand poor recovery				
20							TD = 20'				
25											

						Client: _____ Project Name: _____ Project Location: _____ Project Manager: _____		BORING LOG NUMBER <u>BH 17</u> Project No. _____	
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input type="checkbox"/> At Completion <input checked="" type="checkbox"/> At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0									
5									
8-12	8-12	8-12		2.4 256		SP	0-8' NO Recovery very moist, lb brown sand few clay		
12-16				0.4 128		OH	moist brown ^{sandy} clay, cohesive firm, plastic		
16-20	16-20	16-20				SP	wet gravelly coarse sand poor recovery		
20									
25									


						Client: _____ Project Name: _____ Project Location: _____ Project Manager: _____		BORING LOG NUMBER <u>BH 18</u> Project No. _____	
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ At Completion At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0							0-8' NO Recovery		
5									
8-12	8-10			2.6 210		SP	8-10' Very moist it brown sand		
10				1.8 152		SR	10-12 moist Sandy clay		
12-16	12-13			0.4 4128		OH	12-13 moist clay Cohesive Plastic		
15						SP	15-16 wet Saturated sand & Gravel		
16-20	16-19					SP	wet sand & gravel NO recovery		
20									
25									


		Client: _____		BORING LOG NUMBER						
		Project Name: _____		Project No. <u>B419</u>						
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____		Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ At Completion At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____						
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)		
0							0-8' NO Recovery			
5										
8-10		8-10		0.9 C128		SC	8-10 moist clayey sand			
10				0.6 C128		OH	10-14 moist lb. brown sandy clay, cohesive, plastic			
12-16		14-16		0.2 C128		SP	14-20 wet sand & gravel Poor recovery 16-20'			
15										
20							TP = 20'			
25										


						Client: _____ Project Name: _____ Project Location: _____ Project Manager: _____		BORING LOG NUMBER <u>BH20</u> Project No. _____	
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input checked="" type="checkbox"/> At Completion <input type="checkbox"/> At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0							0-4' no recovery		
5	4-8	8-10		0.6 2129		SP	Dry Dark brown Sand some clay/silt		
10	8-12	13-16		1.0 2129		SC	8-10 Very moist clayey sand		
						OH	10-13 moist clay, cohesive plastic		
							13-16		
15	12-16			0.4 2128		SP	13-16 wet saturated coarse sand		
				0.9 2128		SP	16-20 wet sand & gravel poor recovery		
20									
25									


							Client: _____ Project Name: _____ Project Location: _____ Project Manager: _____		BORING LOG NUMBER <u>BH21</u> Project No. _____		
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____							Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ At Completion At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____		
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION		BORING / WELL COMPLETION (GRAPHIC DEPICTION)		
0							0-8' NO Recovery				
5											
10	8-12	8-11		0.6 C125		SC	8-11' moist sand few clay/silt				
15	12-16	15-16		0.7 C125		OH	11'-14' moist clay, cohesive, plastic				
20	16-20					SP	14-20 well saturated coarse sand & gravel				
25											


Released to Imaging: 2/6/2023 9:18:31 AM

						Client: <u>HFC</u> Project Name: <u>Sandrock</u> Project Location: <u>La Plata, NM</u> Project Manager: <u>S. Lyde</u>		BORING LOG NUMBER <u>BH 23</u> Project No. _____	
Date Sampled: <u>10-11</u> Drilled by: <u>E. Carroll</u> Driller: <u>L. Trujillo</u> Logged by: <u>E. Carroll</u> Sampler: _____						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ * At Completion * At Well Stabilization		Borehole Diameter: <u>4"</u> Casing Diameter: <u>NA</u> Well Materials: _____ Surface Completion: _____ Boring Method: <u>Direct push</u>	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0									
5							0-8' no recovery		
10	8-12	*		0.2 C130			moist, red brown, sand, few clay		
15	12-16			0.0 C130			moist dark brown clayey sand some gravel		
20	16-20	*		0.0 C126			moist, dark brown, clayey sand		
25	20-24	*		0.0 C126			wet, coarse sand & gravel		
							wet, saturated, sand & gravel		

							Client: <u>HEC</u> Project Name: <u>SANDROCK</u> Project Location: <u>Los Placa NM</u> Project Manager: <u>S Hyde</u>			BORING LOG NUMBER <u>BH 24</u> Project No. _____		
Date Sampled: <u>10-11</u> Drilled by: <u>Earthwork</u> Driller: <u>L. Trujillo</u> Logged by: <u>E. Carroll</u> Sampler: _____							Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input type="checkbox"/> At Completion <input type="checkbox"/> At Well Stabilization			Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____		
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION		BORING / WELL COMPLETION (GRAPHIC DEPICTION)			
0							0-8' No Recovery					
5							moist, red brown sand, little clay					
10	8-12	*					moist dark brown clayey sand					
15	12-16						moist dark brown, sand & gravel few clay					
20	16-20	*					very moist red brown coarse sand					
25	20-24	*					wet saturated gravel & sand					

						Client: <u>HEC</u> Project Name: <u>Sandrock</u> Project Location: <u>LA Plata NM</u> Project Manager: <u>S Hyde</u>		BORING LOG NUMBER <u>BH 25</u> Project No. _____	
Date Sampled: <u>10-11</u> Drilled by: <u>Forshaw</u> Driller: <u>L. Truitt</u> Logged by: <u>E. Carroll</u> Sampler: _____						Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input checked="" type="checkbox"/> At Completion <input checked="" type="checkbox"/> At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0									
5									
10	8'-12'	✱					0-8' NO Recovery		
15	12-16						moist dark brown clayey sand		
20	16'-20'	✱					very moist dark brown sand fine clay		
25	20'-24'	✱					moist dark brown clayey sand few gravel		
							med saturated sand & gravel		
							moist, cohesive, gray, clay, little sand		

							Client: _____ Project Name: _____ Project Location: _____ Project Manager: _____		BORING LOG NUMBER <u>BH 26</u> Project No. _____	
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____							Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input type="checkbox"/> At Completion <input checked="" type="checkbox"/> At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING / WELL COMPLETION (GRAPHIC DEPICTION)		
0							Hydropunch water sample			
5										
10										
15										
20										
25										

							Client: _____ Project Name: _____ Project Location: _____ Project Manager: _____		BORING LOG NUMBER <u>BH 27</u> Project No. _____	
Date Sampled: _____ Drilled by: _____ Driller: _____ Logged by: _____ Sampler: _____							Ground Surface Elevation: _____ Top of Casing Elevation: _____ North Coordinate: _____ West Coordinate: _____ Bench Mark Elevation: _____ <input type="checkbox"/> At Completion <input checked="" type="checkbox"/> At Well Stabilization		Borehole Diameter: _____ Casing Diameter: _____ Well Materials: _____ Surface Completion: _____ Boring Method: _____	
DEPTH (ft)	SAMPLE INTERVAL	SAMPLE ID	RECOVERY (%)	FID/PID READING (ppm)	POTENTIAL METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION		BORING / WELL COMPLETION (GRAPHIC DEPICTION)	
0							Hydropunch water sample			
5							No soil recovery			
10										
15										
20										
25										



APPENDIX C

NMOCD Notifications and Correspondence

From: [Velez, Nelson, EMNRD](#)
To: [Stuart Hyde](#)
Cc: [Mitch Killough](#); [Devin Hencmann](#); [Ben Mitchell](#)
Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification
Date: Friday, September 30, 2022 9:31:07 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)

[**EXTERNAL EMAIL **]

Stuart,

Thank you for the notice. If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC. 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.

The OCD requires a copy of all correspondence relative to remedial activities be included in all proposals and/or final closure reports. Correspondence required to be included in reports may include, but not limited to, notifications for liner inspections, sample events, spill/release/fire, and request for time extensions or variances.

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

Work Hrs.:
7:00am - 11:00pm & 12:00 - 3:30 pm Mon.-Thur.
7:00am - 11:00pm & 12:00 - 4:00 pm Fri.

From: Stuart Hyde <shyde@ensolum.com>
Sent: Friday, September 30, 2022 9:24 AM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>; Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Cc: Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhencmann@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>
Subject: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

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

On behalf of Hilcorp Energy Company, Ensolum is submitting this notification for delineation sampling at the Sandrock Gathering Water Pipeline site located in rural San Juan County, NM

(coordinates 36.87975, -108.19077). Sampling activities will begin on Wednesday October 5, 2022 at 9 AM. Please reach out with any questions regarding the upcoming activities. Thanks.



Stuart Hyde, LG

Senior Geologist

970-903-1607

Ensolum, LLC

in f 

From: [Velez, Nelson, EMNRD](#)
To: [Stuart Hyde](#); [Enviro, OCD, EMNRD](#)
Cc: [Mitch Killough](#); [Devin Hencmann](#); [Eric Carroll](#); [Ben Mitchell](#); [Joey Becker](#)
Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification
Date: Friday, August 12, 2022 8:10:37 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)

[**EXTERNAL EMAIL**]

Stuart,

Thank you for the notice. If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC. 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.

The OCD requires a copy of all correspondence relative to remedial activities be included in all proposals and/or final closure reports. Correspondence required to be included in reports may include, but not limited to, notifications for liner inspections, sample events, spill/release/fire, and request for time extensions or variances.

Regards

Nelson Velez • Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@state.nm.us

Office Hrs.:
7:00am – 12:00pm & 1:00 – 3:30 pm Mon.–Thur.
7:00am – 12:00pm & 1:00 – 4:00 pm Fri.

From: Stuart Hyde <shyde@ensolum.com>
Sent: Thursday, August 11, 2022 9:58 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>
Cc: Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>; Joey Becker <jobecker@hilcorp.com>
Subject: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

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

links or opening attachments.

On behalf of Hilcorp Energy Company, we are submitting this notification for delineation sampling at the Sandrock Gathering Water Pipeline site located in rural San Juan County, NM (coordinates 36.87975, -108.19077). Sampling activities will begin on Tuesday August 16, 2022 at 9 AM. Please reach out with any questions regarding the upcoming activities. Thanks.



Stuart Hyde, LG

Senior Geologist

970-903-1607

Ensolum, LLC

in f 

From: [Mitch Killough](#)
To: [Velez, Nelson, EMNRD](#)
Cc: [Devin Hencmann](#); [Eric Carroll](#); [Ben Mitchell](#); [Stuart Hyde](#); [Christopher Bramwell](#); [Bratcher, Michael, EMNRD](#)
Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification
Date: Monday, September 26, 2022 7:18:23 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)

[**EXTERNAL EMAIL**]

I appreciate the deadline extension Nelson. Have a good week.

Mitch Killough
Hilcorp Energy Company
713-757-5247 (Office)
281-851-2338 (Mobile)

From: Velez, Nelson, EMNRD <Nelson.Velez@emnrn.nm.gov>
Sent: Thursday, September 22, 2022 12:18 PM
To: Mitch Killough <mkillough@hilcorp.com>
Cc: Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>; Stuart Hyde <shyde@ensolum.com>; Christopher Bramwell <cbramwell@hilcorp.com>; Bratcher, Michael, EMNRD <mike.bratcher@emnrn.nm.gov>
Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

CAUTION: External sender. DO NOT open links or attachments from UNKNOWN senders.

Hi Mitch,

Thanks for the correspondence. Your time extension request is approved. The new deadline for the final closure report will be Tuesday, November 22, 2022 and has been updated within the site's incident page.

Please keep a copy of this communication for inclusion within the final closure submittal.

Thanks again and I hope you and everyone have an enjoyable extended weekend.

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

Office Hrs.:

7:00am – 12:00pm & 1:00 – 3:30 pm Mon.–Thur.

7:00am – 12:00pm & 1:00 – 4:00 pm Fri.

From: Mitch Killough <mkillough@hilcorp.com>

Sent: Thursday, September 22, 2022 10:41 AM

To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>

Cc: Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>; Stuart Hyde <shyde@ensolum.com>; Christopher Bramwell <cbramwell@hilcorp.com>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>

Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

Morning Nelson.

Following up on the Sandrock Gathering project. To recap, Ensolum oversaw the installation of 10 soil borings to depths ranging from 4 – 20 ft bgs during the week of August 15. The goal was to provide both the landowner and NMOCD a full soil delineation. However, after reviewing the analytical data, it was determined that soil chloride concentrations exceeding the NMOCD Table I Closure Criteria were detected in two (2) borings, indicating that the release has not been laterally delineated in the southwestern portion of the Site. This would also include needing to vertically delineate soils at two (2) borings. As a result of these findings, Hilcorp/Ensolum have Earthworx lined up to conduct additional drilling with a direct-push rig for the week of October 3. For this delineation attempt, Earthworx is prepared to include a standby day while we wait for rush sample analytical from Envirotech to ensure we are delineated. Once we have a successful delineation, Ensolum will prepare the closure report. This plan would also entail meeting with the landowner to discuss the completed report before submitting a copy to the NMOCD.

For this plan above, Hilcorp respectfully requests a 60-day deadline extension. If the NMOCD is agreeable to this plan, our deadline would be moved to Tuesday, November 22. Our goal would be to submit the closure report earlier than this date, but this provides Hilcorp a few contingencies for weather, coordination with landowner, and third party delays. If you have any question or concerns, just let me know.

Thanks.

Mitch Killough
Hilcorp Energy Company
713-757-5247 (Office)
281-851-2338 (Mobile)

From: Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>

Sent: Friday, September 2, 2022 4:08 PM

To: Mitch Killough <mkillough@hilcorp.com>

Cc: Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben

Mitchell <bemitchell@hilcorp.com>; Joey Becker <jobecker@hilcorp.com>; Stuart Hyde <shyde@ensolum.com>; Christopher Bramwell <cbramwell@hilcorp.com>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>

Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

Hey Mitch,

Thanks for the correspondence. Your time extension request is approved. The new deadline for the final closure report will be Friday, September 23, 2022 and has been updated within the site's incident page.

Please keep a copy of this communication for inclusion within the final closure submittal.

Thanks again and I hope you and everyone have an enjoyable extended weekend.

Regards,

Nelson Velez • Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@state.nm.us

Office Hrs.:
7:00am – 12:00pm & 1:00 – 3:30 pm Mon.–Thur.
7:00am – 12:00pm & 1:00 – 4:00 pm Fri.

From: Mitch Killough <mkillough@hilcorp.com>

Sent: Friday, September 2, 2022 1:36 PM

To: Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>

Cc: Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>; Joey Becker <jobecker@hilcorp.com>; Stuart Hyde <shyde@ensolum.com>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; Christopher Bramwell <cbramwell@hilcorp.com>

Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

Hi Nelson.

I wanted to circle back on the Sandrock Gathering project. As indicated below, Ensolum collected soil samples on our behalf during the week of August 15. Following the sample collection, we received our lab report from Hall on the evening of 8/31/2022. With a current deadline of 9/6/2022, that doesn't leave us enough time to wrap up the report and re-visit with the landowner regarding the results. In light of this, would you be ok with extending our current deadline out an additional two weeks? If you are agreeable to this, our new deadline would be 9/20/2022.

If you have any question or concerns, just let me know.

Thanks.

Mitch Killough
Hilcorp Energy Company
713-757-5247 (Office)
281-851-2338 (Mobile)

From: Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>
Sent: Friday, August 12, 2022 9:10 AM
To: Stuart Hyde <shyde@ensolum.com>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>; Joey Becker <jobecker@hilcorp.com>
Subject: RE: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

Stuart,

Thank you for the notice. If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC. 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.

The OCD requires a copy of all correspondence relative to remedial activities be included in all proposals and/or final closure reports. Correspondence required to be included in reports may include, but not limited to, notifications for liner inspections, sample events, spill/release/fire, and request for time extensions or variances.

Regards

Nelson Velez • Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@state.nm.us

Office Hrs.:
7:00am – 12:00pm & 1:00 – 3:30 pm Mon.–Thur.
7:00am – 12:00pm & 1:00 – 4:00 pm Fri.

From: Stuart Hyde <shyde@ensolum.com>
Sent: Thursday, August 11, 2022 9:58 AM

To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>

Cc: Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhencmann@ensolum.com>; Eric Carroll <ecarroll@ensolum.com>; Ben Mitchell <bemitchell@hilcorp.com>; Joey Becker <jobecker@hilcorp.com>

Subject: [EXTERNAL] nAPP2104155952 - Sandrock Gathering Water Pipeline Delineation Sampling Notification

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

On behalf of Hilcorp Energy Company, we are submitting this notification for delineation sampling at the Sandrock Gathering Water Pipeline site located in rural San Juan County, NM (coordinates 36.87975, -108.19077). Sampling activities will begin on Tuesday August 16, 2022 at 9 AM. Please reach out with any questions regarding the upcoming activities. Thanks.



Stuart Hyde, LG

Senior Geologist

970-903-1607

Ensolum, LLC

in f 

The information contained in this email message is confidential and may be legally privileged and is intended only for the use of the individual or entity named above. If you are not an intended recipient or if you have received this message in error, you are hereby notified that any dissemination, distribution, or copy of this email is strictly prohibited. If you have received this email in error, please immediately notify us by return email or telephone if the sender's phone number is listed above, then promptly and permanently delete this message.

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The information contained in this email message is confidential and may be legally privileged and is intended only for the use of the individual or entity named above. If you are not an intended recipient or if you have received this message in error, you are hereby notified that any dissemination, distribution, or copy of this email is strictly prohibited. If you have received this email in error, please immediately notify us by return email or telephone if the sender's phone number is listed above, then promptly and permanently delete this message.

While all reasonable care has been taken to avoid the transmission of viruses, it is the responsibility of the recipient to ensure that the onward transmission, opening, or use of this message and any attachments will not adversely affect its systems or data. No responsibility

is accepted by the company in this regard and the recipient should carry out such virus and other checks as it considers appropriate.



APPENDIX D

Laboratory Analytical Reports



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 31, 2022

Stuart Hyde

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX

RE: Sandrock

OrderNo.: 2208B96

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 21 sample(s) on 8/19/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 2208B96

Date Reported: 8/31/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 2208B96

Project: Sandrock

Lab ID: 2208B96-001

Collection Date: 8/16/2022 10:00:00 AM

Client Sample ID: BH12 0-4'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride

ND

59

mg/Kg

20

8/25/2022 1:53:33 PM

69770

Lab ID: 2208B96-002

Collection Date: 8/16/2022 10:10:00 AM

Client Sample ID: BH12 8-12'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride

67

60

mg/Kg

20

8/25/2022 2:30:46 PM

69770

Lab ID: 2208B96-003

Collection Date: 8/16/2022 10:15:00 AM

Client Sample ID: BH12 14-16'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride

ND

60

mg/Kg

20

8/25/2022 3:07:59 PM

69770

Lab ID: 2208B96-004

Collection Date: 8/16/2022 10:30:00 AM

Client Sample ID: BH13 8-12'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride

62

60

mg/Kg

20

8/25/2022 3:20:24 PM

69770

Lab ID: 2208B96-005

Collection Date: 8/16/2022 10:35:00 AM

Client Sample ID: BH13 12-14'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride

ND

60

mg/Kg

20

8/25/2022 3:57:38 PM

69770

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference

- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 1 of 6

Analytical Report

Lab Order: 2208B96

Date Reported: 8/31/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 2208B96

Project: Sandrock

Lab ID: 2208B96-006

Collection Date: 8/16/2022 11:15:00 AM

Client Sample ID: BH14 8-12'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	520	60		mg/Kg	20	8/25/2022 4:10:02 PM	69770
----------	-----	----	--	-------	----	----------------------	-------

Lab ID: 2208B96-007

Collection Date: 8/16/2022 11:20:00 AM

Client Sample ID: BH14 14-16'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	ND	60		mg/Kg	20	8/25/2022 4:22:26 PM	69770
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Lab ID: 2208B96-008

Collection Date: 8/16/2022 11:45:00 AM

Client Sample ID: BH15 8-12'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	1700	60		mg/Kg	20	8/25/2022 4:34:51 PM	69770
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Lab ID: 2208B96-009

Collection Date: 8/16/2022 11:50:00 AM

Client Sample ID: BH15 12-16'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	240	60		mg/Kg	20	8/25/2022 4:47:16 PM	69770
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Lab ID: 2208B96-010

Collection Date: 8/16/2022 12:50:00 PM

Client Sample ID: BH16 8-12'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	1800	60		mg/Kg	20	8/25/2022 4:59:40 PM	69770
----------	------	----	--	-------	----	----------------------	-------

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference

- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 2 of 6

Analytical Report

Lab Order: 2208B96

Date Reported: 8/31/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 2208B96

Project: Sandrock

Lab ID: 2208B96-011

Collection Date: 8/16/2022 12:55:00 PM

Client Sample ID: BH16 12-16'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	880	60		mg/Kg	20	8/25/2022 5:12:05 PM	69770
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Lab ID: 2208B96-012

Collection Date: 8/16/2022 1:10:00 PM

Client Sample ID: BH17 8-12'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	890	60		mg/Kg	20	8/25/2022 5:24:30 PM	69770
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Lab ID: 2208B96-013

Collection Date: 8/16/2022 1:15:00 PM

Client Sample ID: BH17 16-20'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	ND	60		mg/Kg	20	8/25/2022 5:36:54 PM	69770
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Lab ID: 2208B96-014

Collection Date: 8/16/2022 1:40:00 PM

Client Sample ID: BH18 8-10'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	1800	60		mg/Kg	20	8/25/2022 5:49:19 PM	69770
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Lab ID: 2208B96-015

Collection Date: 8/16/2022 1:45:00 PM

Client Sample ID: BH18 12-15'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	950	60		mg/Kg	20	8/25/2022 6:26:33 PM	69770
----------	-----	----	--	-------	----	----------------------	-------

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference

- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 3 of 6

Analytical Report

Lab Order: 2208B96

Date Reported: 8/31/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 2208B96

Project: Sandrock

Lab ID: 2208B96-016

Collection Date: 8/16/2022 2:00:00 PM

Client Sample ID: BH19 8-10'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	150	60		mg/Kg	20	8/25/2022 6:38:57 PM	69770
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Lab ID: 2208B96-017

Collection Date: 8/16/2022 2:05:00 PM

Client Sample ID: BH19 14-16'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	ND	60		mg/Kg	20	8/25/2022 6:51:22 PM	69770
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Lab ID: 2208B96-018

Collection Date: 8/16/2022 2:20:00 PM

Client Sample ID: BH20 8-10'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	ND	60		mg/Kg	20	8/25/2022 7:03:46 PM	69770
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Lab ID: 2208B96-019

Collection Date: 8/16/2022 2:25:00 PM

Client Sample ID: BH20 15-16'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	ND	60		mg/Kg	20	8/25/2022 7:16:10 PM	69770
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Lab ID: 2208B96-020

Collection Date: 8/16/2022 2:40:00 PM

Client Sample ID: BH21 8-11'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: NAI

Chloride	ND	60		mg/Kg	20	8/25/2022 7:28:35 PM	69770
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix interference

- B Analyte detected in the associated Method Blank
- E Estimated value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 4 of 6

Analytical Report

Lab Order: 2208B96

Date Reported: 8/31/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 2208B96

Project: Sandrock

Lab ID: 2208B96-021

Collection Date: 8/16/2022 2:50:00 PM

Client Sample ID: BH 15-18'

Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: JTT
Chloride	ND	60		mg/Kg	20	8/26/2022 9:19:27 AM	69783

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 5 of 6

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2208B96

31-Aug-22

Client: Hilcorp Energy**Project:** Sandrock

Sample ID: MB-69770	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 69770	RunNo: 90575								
Prep Date: 8/25/2022	Analysis Date: 8/25/2022	SeqNo: 3236645	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

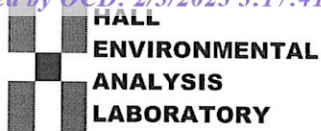
Sample ID: LCS-69770	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 69770	RunNo: 90575								
Prep Date: 8/25/2022	Analysis Date: 8/25/2022	SeqNo: 3236646	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.1	90	110			

Sample ID: MB-69783	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 69783	RunNo: 90630								
Prep Date: 8/26/2022	Analysis Date: 8/26/2022	SeqNo: 3238422	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-69783	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 69783	RunNo: 90630								
Prep Date: 8/26/2022	Analysis Date: 8/26/2022	SeqNo: 3238423	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Hilcorp Energy

Work Order Number: 2208B96

RcptNo: 1

Received By: Juan Rojas 8/19/2022 6:35:00 AM

Completed By: Tracy Casarrubias 8/19/2022 8:15:38 AM

Reviewed By: Jn 8/19/22

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: J 8-19-22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Client: Hilcorp

Mitch Killough

Mailing Address: _____

Phone #: _____

email or Fax#: mkillough@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other _____

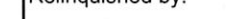



☐ EDD (Type) _____

Turn-Around Time:	
<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush
Project Name:	
Sandrock	
Project #:	
Project Manager:	
Stuart Hyde - EnSolum	
Sampler: E. Carroll	
On Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
# of Coolers: 1	
Cooler Temp (Including CF): $1.2 + 0.2 = 1.4$ (°C)	

Container Type and #	Preservative Type	HEAL No. 2208396
-------------------------	----------------------	---------------------

14 ⁹²	CoO1	013
↓	↓	014
		015
		016
		017
		018
		019
		020
		021

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, NO₂, NO₃, PO₄, SO₄	X
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
8/18	1500				8/18/22	1500
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
8/18/22	1819				8/19/22	6:35

Remarks:

CC: Shyde@Ensoulum.com

Report to:
Stuart Hyde



envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Hilcorp Energy Co

Project Name: Sandrock

Work Order: E210045

Job Number: 17051-0002

Received: 10/11/2022

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
10/12/22

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com



Envirotech Inc. certifies the test results meet all requirements of TNI unless noted otherwise.
Statement of Data Authenticity: Envirotech Inc. attests the data reported has not been altered in any way.
Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech Inc.
Envirotech Inc. holds the Utah TNI certification NM00979 for data reported.
Envirotech Inc. holds the Texas TNI certification T104704557 for data reported.
Envirotech Inc. holds the NM SDWA certification for data reported. (Lab #NM00979)

Date Reported: 10/12/22

Stuart Hyde
PO Box 61529
Houston, TX 77208



Project Name: Sandrock
Workorder: E210045
Date Received: 10/11/2022 12:33:00PM

Stuart Hyde,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 10/11/2022 12:33:00PM, under the Project Name: Sandrock.

The analytical test results summarized in this report with the Project Name: Sandrock apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues regarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
Sample Custody Officer
Office: 505-632-1881
labadmin@envirotech-inc.com

Field Offices:

Southern New Mexico Area
Lynn Jarboe
Technical Representative/Client Services
Office: 505-421-LABS(5227)
Cell: 505-320-4759
ljjarboe@envirotech-inc.com

West Texas Midland/Odessa Area
Rayny Hagan
Technical Representative
Office: 505-421-LABS(5227)

Envirotech Web Address: www.envirotech-inc.com

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Sample Summary

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/22 11:09
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
BH22 8 - 12	E210045-01A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH22 16 - 20	E210045-02A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH22 20 - 24	E210045-03A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH23 8 - 12	E210045-04A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH23 16 - 20	E210045-05A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH23 20 - 24	E210045-06A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH24 8 - 12	E210045-07A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH24 16 - 20	E210045-08A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.
BH24 20 - 24	E210045-09A	Soil	10/11/22	10/11/22	Glass Jar, 4 oz.



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	
PO Box 61529	Project Number:	17051-0002	Reported:
Houston TX, 77208	Project Manager:	Stuart Hyde	10/12/2022 11:09:33AM

BH22 8 - 12

E210045-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
---------	--------	-----------------	----------	----------	----------	-------

Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2242030
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH22 16 - 20

E210045-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH22 20 - 24

E210045-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH23 8 - 12

E210045-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH23 16 - 20

E210045-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH23 20 - 24

E210045-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH24 8 - 12
E210045-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH24 16 - 20

E210045-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	ND	20.0	1	10/11/22	10/11/22	



Sample Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported: 10/12/2022 11:09:33AM
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	

BH24 20 - 24

E210045-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL		Batch: 2242030	
Chloride	21.1	20.0	1	10/11/22	10/11/22	



QC Summary Data

Hilcorp Energy Co	Project Name:	Sandrock	Reported:
PO Box 61529	Project Number:	17051-0002	
Houston TX, 77208	Project Manager:	Stuart Hyde	10/12/2022 11:09:33AM

Anions by EPA 300.0/9056A

Analyst: KL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	

Blank (2242030-BLK1)					Prepared: 10/11/22 Analyzed: 10/11/22				
Chloride	ND	20.0							
LCS (2242030-BS1)					Prepared: 10/11/22 Analyzed: 10/11/22				
Chloride	260	20.0	250		104	90-110			
Matrix Spike (2242030-MS1)					Source: E210045-01		Prepared: 10/11/22 Analyzed: 10/11/22		
Chloride	264	20.0	250	ND	106	80-120			
Matrix Spike Dup (2242030-MSD1)					Source: E210045-01		Prepared: 10/11/22 Analyzed: 10/11/22		
Chloride	265	20.0	250	ND	106	80-120	0.175	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures.
Therefore, hand calculated values may differ slightly.



Definitions and Notes

Hilcorp Energy Co	Project Name:	Sandrock	
PO Box 61529	Project Number:	17051-0002	Reported:
Houston TX, 77208	Project Manager:	Stuart Hyde	10/12/22 11:09

- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- RPD Relative Percent Difference
- DNI Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.



Envirotech Analytical Laboratory

Printed: 10/11/2022 12:49:08PM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.

If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Hilcorp Energy Co	Date Received:	10/11/22 12:33	Work Order ID:	E210045
Phone:	-	Date Logged In:	10/11/22 12:35	Logged In By:	Caitlin Christian
Email:	shyde@ensolum.com	Due Date:	10/11/22 17:00 (0 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC? Yes
2. Does the number of samples per sampling site location match the COC? Yes
3. Were samples dropped off by client or carrier? Yes
4. Was the COC complete, i.e., signatures, dates/times, requested analyses? Yes
5. Were all samples received within holding time? Yes

Note: Analysis, such as pH which should be conducted in the field, i.e., 15 minute hold time, are not included in this discussion.

Carrier: Reece HansonComments/ResolutionSample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT? Yes

Sample Cooler

7. Was a sample cooler received? Yes
8. If yes, was cooler received in good condition? Yes
9. Was the sample(s) received intact, i.e., not broken? Yes
10. Were custody/security seals present? No
11. If yes, were custody/security seals intact? NA
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Yes

Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling

13. If no visible ice, record the temperature. Actual sample temperature: 4°C

Sample Container

14. Are aqueous VOC samples present? No
15. Are VOC samples collected in VOA Vials? NA
16. Is the head space less than 6-8 mm (pea sized or less)? NA
17. Was a trip blank (TB) included for VOC analyses? NA
18. Are non-VOC samples collected in the correct containers? Yes
19. Is the appropriate volume/weight or number of sample containers collected? Yes

Field Label

20. Were field sample labels filled out with the minimum information:
 - Sample ID? Yes
 - Date/Time Collected? Yes
 - Collectors name? Yes

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved? No
22. Are sample(s) correctly preserved? NA
24. Is lab filtration required and/or requested for dissolved metals? No

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase? No
27. If yes, does the COC specify which phase(s) is to be analyzed? NA

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory? No
29. Was a subcontract laboratory specified by the client and if so who? NA Subcontract Lab: na

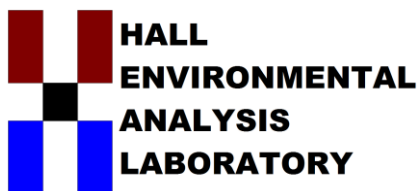
Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date



envirotech Inc.



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 27, 2022

Stuart Hyde

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX:

RE: Sandrock

OrderNo.: 2210723

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 6 sample(s) on 10/14/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2210723

Date Reported: 10/27/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: BH25 8-12

Project: Sandroek

Collection Date: 10/11/2022 11:40:00 AM

Lab ID: 2210723-001

Matrix: SOIL

Received Date: 10/14/2022 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JTT
Chloride	1900	61		mg/Kg	20	10/21/2022 10:05:05 AM	70978

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 1 of 9

Analytical Report

Lab Order 2210723

Date Reported: 10/27/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: BH25 16-20

Project: Sandroek

Collection Date: 10/11/2022 11:45:00 AM

Lab ID: 2210723-002

Matrix: SOIL

Received Date: 10/14/2022 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JTT
Chloride	ND	60		mg/Kg	20	10/21/2022 10:17:30 AM	70978

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2210723

Date Reported: 10/27/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: BH25 20-24

Project: Sandroek

Collection Date: 10/11/2022 11:50:00 AM

Lab ID: 2210723-003

Matrix: SOIL

Received Date: 10/14/2022 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: JTT	
Chloride	63	60		mg/Kg	20	10/21/2022 10:29:54 AM	70978

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 3 of 9

Analytical Report

Lab Order 2210723

Date Reported: 10/27/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: BH26

Project: Sandrock

Collection Date: 10/11/2022 12:15:00 PM

Lab ID: 2210723-004

Matrix: GROUNDWA

Received Date: 10/14/2022 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: NAI
Chloride	91	5.0		mg/L	10	10/15/2022 4:10:10 AM	A91835
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: SNS
Total Dissolved Solids	2280	400	*D	mg/L	1	10/19/2022 10:22:00 AM	70878

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 4 of 9

Analytical Report

Lab Order 2210723

Date Reported: 10/27/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: BH27

Project: Sandrook

Collection Date: 10/11/2022 12:30:00 PM

Lab ID: 2210723-005

Matrix: GROUNDWA

Received Date: 10/14/2022 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: NAI
Chloride	33	5.0		mg/L	10	10/15/2022 4:34:59 AM	A91835
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: SNS
Total Dissolved Solids	1770	200	*D	mg/L	1	10/19/2022 10:22:00 AM	70878

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 5 of 9

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 2210723

Date Reported: 10/27/2022

CLIENT: Hilcorp Energy Client Sample ID: BH25
Project: Sandrock Collection Date: 10/11/2022 11:47:00 AM
Lab ID: 2210723-006 Matrix: GROUNDWA Received Date: 10/14/2022 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: NAI
Chloride	81	5.0		mg/L	10	10/15/2022 5:24:37 AM	A91835
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: SNS
Total Dissolved Solids	2650	200	*D	mg/L	1	10/19/2022 10:22:00 AM	70878

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2210723
27-Oct-22

Client: Hilcorp Energy
Project: Sandrock

Sample ID: MB-70978	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 70978	RunNo: 92015
Prep Date: 10/21/2022	Analysis Date: 10/21/2022	SeqNo: 3301674 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-70978	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 70978	RunNo: 92015
Prep Date: 10/21/2022	Analysis Date: 10/21/2022	SeqNo: 3301675 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 96.6 90 110

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2210723
27-Oct-22

Client: Hilcorp Energy
Project: Sandrock

Sample ID: MB		SampType: mblk			TestCode: EPA Method 300.0: Anions					
Client ID: PBW		Batch ID: A91835			RunNo: 91835					
Prep Date:		Analysis Date: 10/15/2022			SeqNo: 3293230		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: LCS		SampType: lcs			TestCode: EPA Method 300.0: Anions					
Client ID: LCSW		Batch ID: A91835			RunNo: 91835					
Prep Date:		Analysis Date: 10/15/2022			SeqNo: 3293231		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.2	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2210723
27-Oct-22

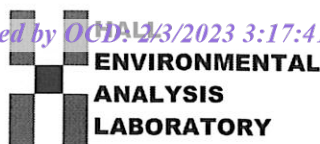
Client: Hilcorp Energy
Project: Sandrock

Sample ID: MB-70878	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: PBW	Batch ID: 70878	RunNo: 91897								
Prep Date: 10/17/2022	Analysis Date: 10/19/2022	SeqNo: 3296171 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: LCS-70878	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: LCSW	Batch ID: 70878	RunNo: 91897								
Prep Date: 10/17/2022	Analysis Date: 10/19/2022	SeqNo: 3296172 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	991	20.0	1000	0	99.1	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Above Quantitation Range/Estimated Value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.	



4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Hilcorp Energy

Work Order Number: 2210723

RcptNo: 1

Received By: Tracy Casarrubias 10/14/2022 7:15:00 AM

Completed By: Tracy Casarrubias 10/14/2022 9:43:18 AM

Reviewed By:

K. Casarrubias

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☐ No ☐ NA ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH:

(≤ 2 or >12 unless noted)

Adjusted? _____

Checked by: Cue 10/14/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			
2	0.2	Good	Yes			
3	3.8	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

[illegible]

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.



APPENDIX E

Landowner Request

January 30, 2023


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

Re: Statement of Agreement to Remediate in Place
Incident No: nAPP2104155952

To whom it may concern,

I hope this letter finds you well. It is our understanding that prior to granting Hilcorp a variance to incident No: nAPP2104155952 (the "Incident"), the New Mexico Oil Conservation Division (the "NMOCD") requires our written consent to leave the soils undisturbed in lieu of removing the impacted soils. Please consider this letter formal notice to the NMOCD memorializing that an agreement between us and Hilcorp has been reached to leave the soils undisturbed.

Sincerely,


Carl Merilatt
Denise Merilatt

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 182577

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 182577
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Release located on private/fee surface ownership. Agreement reached between operator and landowner to leave constituent of concern in place (signed agreement in the report). Hardship and negative impacts from dig and haul approach explained within report. Closure report approved and release resolved.	2/6/2023