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	nAPP2112525706
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Hilcorp Energy Company	OGRID 372171
Contact Name Mitch Killough	Contact Telephone 713-757-5247
Contact email mkillough@hilcorp.com	Incident # nAPP2112525706
Contact mailing address 1111 Travis Street, Houston, Texas 77002	

Location of Release Source

Latitude 36.8433151 Longitude -107.7196426
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Howell G Com 300	Site Type Well
Date Release Discovered 4/21/2021 @ 7:00am (MT)	API# 30-045-26913

Unit Letter	Section	Township	Range	County
F	6	30N	8W	San Juan

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:*)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 24 bbls	Volume Recovered (bbls) 23 bbls
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release
Approximately 24 bbls produced water was released from an active production pit tank due to an overflow. The operator left a valve open to the wrong production tank overnight, which led to the overflow. The spill amount was determined by operator's monthly tank gauging data. The released fluids remained on location and inside the bermed area. 23 bbls were recovered. OCD will be notified 48 hours prior to closure sampling.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2112525706
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Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: __Mitch Killough_____ Title: _____Environmental Specialist_____

Signature: _____ _____ Date: 5/5/2021_____

email: ___mkillough@hilcorp.com_____ Telephone: ____713-757-5247_____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	150 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☒ Yes ☐ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

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

State of New Mexico
Oil Conservation Division

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District RP	
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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.

Printed Name: ___Mitch Killough_____ Title: ____Environmental Specialist_____

Signature:_____ Date: __7/20/2021_____

email: ___mkillough@hilcorp.com _____ Telephone: _____713-757-5247_____

OCD Only

Received by: _____ Date: _____

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: 7/20/2021

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: Jennifer Nobui Date: 01/24/2022

Printed Name: Jennifer Nobui Title: Environmental Specialist A

From: Smith, Cory, EMNRD
To: Mitch Killough; Hyde, Stuart; Adeloye, Abiodun A
Cc: Hencmann, Devin
Subject: RE: [EXTERNAL] RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling
Date: Thursday, July 8, 2021 1:20:27 PM
Attachments: image001.png

Stuart,

That's fine please include this approval in your final C-141

Cory Smith • Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
1000 Rio Brazos | Aztec, NM 87410
505.334.6178 x115 | Cory.Smith@state.nm.us
http://www.emnrd.state.nm.us/OCD/

From: Mitch Killough <mkillough@hilcorp.com>
Sent: Thursday, July 8, 2021 12:52 PM
To: Hyde, Stuart <Stuart.Hyde@wsp.com>; Adeloye, Abiodun A <aadeloye@blm.gov>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>
Subject: RE: [EXTERNAL] RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Thanks Emmanuel.

I will make sure that you continue to be copied on any correspondence regarding this project, including any subsequent NMOCD reporting. Also, we will make sure that our BGT closure plan for the site is adhered to in the event that we remove the BGT at a future date.

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

From: Hyde, Stuart <Stuart.Hyde@wsp.com>
Sent: Thursday, July 8, 2021 1:44 PM
To: Adeloye, Abiodun A <aadeloye@blm.gov>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>
Subject: RE: [EXTERNAL] RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Thank you Emmanuel.

Cory, please let us know if you approve of using the existing confirmation samples collected on

6/30/2021 for closure. Thank you and please call with any questions.

Stuart Hyde, L.G.
Senior Geologist
T+ 1 970-385-1096
M+ 1 970-903-1607

From: Adeloye, Abiodun A <aadeloye@blm.gov>
Sent: Thursday, July 8, 2021 12:04 PM
To: Hyde, Stuart <Stuart.Hyde@wsp.com>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>
Subject: Re: [EXTERNAL] RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Hi Stuart,
I inspected the location on Tuesday and looking at the situation there and that the BGT is still active. The BLM approved the samples as submitted by the Hilcorp Energy Company. Just a reminder that Hilcorp Energy would be responsible for any contamination clean up later if after the BGT is removed and soil contamination is found.
BLM acceptance of this notification to collect final samples does not relieve Hilcorp Energy Company of any other requirements imposed by other regulatory agencies.
Please let me know if you have any questions.
Thank you

Abiodun Adeloye (Emmanuel), NRS
Bureau of Land Management
Farmington Field Office
6251 College Blvd., Suite A
Farmington, NM 87402
Office Phone: 505-564-7665
Cell Phone: 505-635-0984

From: Hyde, Stuart <Stuart.Hyde@wsp.com>
Sent: Friday, July 2, 2021 3:55 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; Adeloye, Abiodun A <aadeloye@blm.gov>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>
Subject: [EXTERNAL] RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Cory and Emmanuel,

Please find attached the lab results, table, and figure with the data from boreholes BH01 and BH02. No chlorides, TPH, or BTEX have been detected in either boring. The borings are shown on the attached screenshot, along with the three areas from which I collected composite samples for potential use as confirmation/closure samples. Results from BH03 and BH04 are expected at the end of next week.

Again, we are requesting approval from the NMOCD and BLM to the use of these samples (in additional to the delineation borings) as confirmation soil samples for closure of the site, assuming they are below the applicable closure criteria. Please let us know if you have any questions. Have a good fourth and long weekend.

Stuart Hyde, L.G.
Senior Geologist
T+ 1 970-385-1096
M+ 1 970-903-1607

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Thursday, July 1, 2021 3:08 PM
To: Hyde, Stuart <Stuart.Hyde@wsp.com>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>
Subject: RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Stuart,

Thanks for the information. Were any of the delineation boreholes sent in for laboratory analysis? I am just concerned that since it was a produce water spill that the main constituent of concern is most likely going to be chlorides.

Cory Smith • Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
1000 Rio Brazos | Aztec, NM 87410
505.334.6178 x115 | Cory.Smith@state.nm.us
http://www.emnrd.state.nm.us/OCD/

From: Hyde, Stuart <Stuart.Hyde@wsp.com>

Sent: Thursday, July 1, 2021 1:19 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>
Subject: RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Cory,

Mitch has spoken to Emmanuel about this and we will let you know as soon as he comes to a decision (should be tomorrow). There were no chloride field measurements collected during the delineation. However, we have several shallow soil samples on rush turnaround that we will be able to determine if chlorides are an issue. Thanks for the response and we will keep you posted.

Stuart Hyde, L.G.
Senior Geologist
T+ 1 970-385-1096
M+ 1 970-903-1607

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Wednesday, June 30, 2021 3:47 PM
To: Hyde, Stuart <Stuart.Hyde@wsp.com>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>; Adeloye, Abiodun A <aadeloye@blm.gov>
Subject: RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Stuart,

There is only 1 photo attached. Was there any field Chloride samples collected? Has the BLM been notified of the release and have they approved the alternative sampling schedule?

Cory Smith • Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
1000 Rio Brazos | Aztec, NM 87410
505.334.6178 x115 | Cory.Smith@state.nm.us
http://www.emnrd.state.nm.us/OCD/

From: Hyde, Stuart <Stuart.Hyde@wsp.com>
Sent: Wednesday, June 30, 2021 3:02 PM
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

Cory,

We advanced the remaining delineation borings today from the Howell G Com 300 site. In all, four borings were advanced around the BGT with no field indications that impacted soil remains at the site after Hilcorp removed the spilled fluids using a vacuum truck during their initial response.

While I was onsite today, I also collected three five-point composite soil samples from 0 – 3 inches below ground surface around the BGT and within the bermed area. The entire area within the berm is approximately 500 – 600 square feet, including the tank area. Before submitting for laboratory analysis, I am requesting from the NMOCD the use of these samples (in additional to the delineation borings) as confirmation soil samples for closure of the site, assuming they are below the applicable closure criteria. See the attached photos for reference.

Please feel free to call or email with any questions and have a good fourth.

Stuart Hyde, L.G.
Senior Geologist
T+ 1 970-385-1096
M+ 1 970-903-1607

From: Hyde, Stuart
Sent: Monday, June 28, 2021 8:14 AM
To: 'Enviro, OCD, EMNRD' <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; 'Mitch Killough' <mkillough@hilcorp.com>; 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>
Subject: RE: nAPP2112525706 - Howell G Com 300 Delineation Sampling

On behalf of Hilcorp Energy Company, WSP is submitting this notification that additional delineation activities will occur at the Howell G Com 300 site beginning on June 30, 2021 at 9 AM. The initial C-141 was submitted on 5/5/2021 and assigned incident number nAPP2112525706. Following receipt of analytical results, a characterization report and remediation work plan will be submitted to the NMOCD.

Stuart Hyde, L.G.
Senior Geologist
T+ 1 970-385-1096
M+ 1 970-903-1607

From: Hyde, Stuart
Sent: Wednesday, June 23, 2021 9:01 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; Mitch Killough <mkillough@hilcorp.com>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>

Subject: nAPP2112525706 - Howell G Com 300 Delineation Sampling

On behalf of Hilcorp Energy Company, WSP is submitting this notification that delineation activities will occur at the Howell G Com 300 site beginning on June 25, 2021 at 9 AM. The initial C-141 was submitted on 5/5/2021 and assigned incident number nAPP2112525706. Following receipt of analytical results, a characterization report and remediation work plan will be submitted to the NMOCD.

Stuart Hyde, L.G.
Environmental Geologist

T+ 1 970-385-1096
M+ 1 970-903-1607
Email : stuart.hyde@wsp.com

WSP USA
848 East 2nd Avenue
Durango, Colorado 81301

wsp.com

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July 20, 2020

New Mexico Energy, Minerals and Natural Resources Department
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

Subject: **Site Characterization Report and Closure Request**
Howell G Com 300
San Juan County, New Mexico
NMOCD Incident Number: nAPP2112525706

To Whom It May Concern:

On behalf of Hilcorp Energy Company (Hilcorp), WSP USA Inc. (WSP) has prepared this *Site Characterization Report and Closure Request* for the Howell G Com 300 (Site) located in San Juan County, New Mexico (Figure 1). WSP conducted soil delineation and confirmation sampling activities to investigate a release of produced water from an active production pit tank due to an overflow. As reported on the *Release Notification Form C-141* to the New Mexico Oil Conservation Division (NMOCD) on May 5, 2021, a Hilcorp operator left a valve open to the wrong production tank overnight, which led to the overflow that was discovered on April 21, 2021. The release volume was determined by the operator's monthly tank gauging data and estimated to be approximately 24 barrels (bbls). Specifically, previously collected gauging data was used to estimate the volume of water produced over the period of time between site visits by the Hilcorp operator. Of the released fluids, 23 bbls were recovered from the pit tank vault on April 21, 2021 using a vacuum truck. Saturated soil/sediment located around the pit tank was removed by the vacuum truck while recovering the fluids. The released fluids remained on location and inside the bermed containment in the area immediately around the pit tank. NMOCD has assigned Incident Number nAPP2112525706 to the Site.

SITE CHARACTERIZATION

The Site is located on Bureau of Land Management (BLM) managed land in Unit F of Section 6, Township 30 North, Range 8 West, San Juan County, New Mexico (Figure 1). The Site is approximately 6.5 miles northwest of Navajo Dam, New Mexico, north of New Mexico State Route 173 within Manga Canyon. As part of the site investigation, local geology/hydrogeology and nearby sensitive receptors were accessed in accordance with 19.15.29.11 of the New Mexico Administrative Code (NMAC). This information is further discussed below.

GEOLOGY AND HYDROGEOLOGY

Based on United States Geological Survey (USGS) geologic mapping, the Site is located within the Tertiary San Jose Formation. In the report titled "Hydrogeology and Water Resources of San Juan Basin, New Mexico" (Stone, Lyford, Frenzel, Mizell, & Padgett, 1983), the San Jose Formation as characterized by various lithologies including course-grained arkose, mudstones, and lenses of claystone, siltstone, and poorly consolidated sandstone. This formation ranges in thickness from 200 to 2,700 feet. The San Jose Formation is the youngest Tertiary bedrock unit in the San Juan Basin and is underlain by the Nacimiento Formation.

SITE CHARACTERIZATION

Assessment of potential nearby receptors was conducted through desktop reviews of topographic maps, Federal Emergency Management Administration (FEMA) Geographic Information System (GIS) maps, United States Geological Survey (USGS) GIS maps, New Mexico Office of the State Engineer database, and aerial photographs, as well as site-specific observations.

Borings at the Site indicate groundwater is not present at depths up to 12 feet below ground surface (bgs). However, an unnamed dry wash is located 120 feet to the south of the Site that is considered a "significant watercourse" as defined in 19.15.17.7 NMAC. The nearest groundwater well (monitoring well SJ 04261) is located approximately 0.51 miles southeast of the Site (Figure 2) and is associated with the Pritchard #2A remediation site (managed by Harvest Four Corners). Depth-to-water information was obtained

WSP USA
848 EAST 2ND AVENUE
DURANGO CO 81301

Tel.: 970-385-1096
wsp.com

from the *2016 Annual Groundwater Report* (prepared by LT Environmental, Inc. in April 2017 and accessed from the NMOCD Online Imaging database) and indicated that groundwater in the area is approximately 80 feet below ground surface (bgs). In addition, the data sheet for a cathodic protection well submitted for the Site in 1991 indicated that water was encountered at a depth of 150 feet. Based on this information, groundwater at the Site is greater than 50 feet bgs, and potentially greater than 100 feet bgs based on the information provided in the cathodic well data sheet.

The Site is greater than 200 feet from any lakebed, sinkhole, or playa lake, and greater than 300 feet from any wetland (Figures 2 and 3). Surface land use surrounding the Site consists primarily of oil and gas development and livestock grazing. No occupied permanent residence or structures, including schools, hospitals, institutions, and/or churches, are located within 300 feet of the Site. The Site is not within the area of a subsurface mine or unstable area and is not within the 100-year floodplain.

SITE CLOSURE CRITERIA

WSP has characterized the Site according to *Table 1, Closure Criteria for Soils Impacted by a Release* of 19.15.29.12 NMAC. Due to the Site's proximity to a significant watercourse, the following NMOCD Table 1 closure criteria apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX); 100 mg/kg total petroleum hydrocarbons (TPH); and 600 mg/kg chloride.

SITE INVESTIGATION AND CONFIRMATION SAMPLING

After the discovery of the release, Hilcorp retained WSP to conduct a site investigation in an attempt to define the vertical and lateral extent of petroleum-hydrocarbon impacted soil. WSP advanced four borings at the Site using a hand auger. Soil lithology was logged by a WSP geologist and described based on the Unified Soil Classification System (USCS) as specified in American Society for Testing and Materials (ASTM) D2488. Soil also was inspected for visual staining and the presence or absence of odor. The soil was characterized by visually inspecting the soil samples and field screening the soil headspace using a photoionization detector (PID) to monitor for the presence of organic vapors. Boring logs are attached as Enclosure A.

SITE CHARACTERIZATION SAMPLING AND RESULTS

WSP advanced two initial borings on June 25, 2021 within the containment on the north (boring BH01) and south (boring BH02) sides of the pit tank to assess potential impacts directly around the tank (Figure 4). Soil was field screened using a PID at 2-foot intervals. Because the release was caused by an overflow onto the ground, samples were collected from 6 inches bgs from each of these borings. Two additional samples were collected from each boring, one sample from the interval with the highest PID reading and one sample from the terminus of each boring. Samples were submitted to Hall Environmental Analysis Laboratory (Hall) for analysis of BTEX by United States Environmental Protection Agency (EPA) method 8021, TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), TPH-motor oil range organics (MRO) by EPA Method 8015, and chloride by EPA method 300.0. There were no field indications (based on odors or staining) that petroleum hydrocarbons were present at elevated concentrations. Laboratory analytical results indicated that TPH, BTEX, and chloride were not present in any of the samples at concentrations above laboratory reporting limits (Table 1).

Two additional borings were advanced on June 30, 2021 to the west (BH03) and east (BH04) of the containment berm. Soil was also field screened at 2-foot intervals with samples collected from the interval with the highest PID reading and from the terminus of the borings. Again, petroleum staining and odors were not observed at any interval while advancing these borings. Laboratory analytical results indicated that TPH was present at a concentration of 64 mg/kg in boring BH04 at a depth of 2 feet. No other analytes were detected above laboratory reporting limits in the remaining analyzed samples.

Sample results are summarized in Table 1, with laboratory analytical reports included in Enclosure B. Boring locations were recorded using a handheld Global Positing System (GPS) unit. Figure 4 presents the delineation boring locations. The attached Photographic Log includes photographs taken during characterization activities.

CONFIRMATION SOIL SAMPLE RESULTS

Based on field screening and the analytical results from delineation samples collected from borings BH01 and BH02, WSP collected three, 5-point composite samples (FS01, FS02, and FS03 shown on Figure 4) from the ground surface where soil was removed with the vacuum truck within the release area on June 30, 2021 to potentially use as confirmation and closure samples. Based on email

communication with the BLM and NMOCD, these samples were approved by both agencies to be used as closure samples for the release. Laboratory analytical results indicated that sampling area FS01 contained TPH at a concentration of 184 mg/kg, above the NMOCD Table 1 Closure Criteria of 100 mg/kg. Closure Criteria were not exceeded for BTEX and chloride in sample FS01. Additionally, TPH, BTEX, and chloride were not detected above Closure Criteria in samples collected from areas FS02 and FS03.

Because of the TPH exceedance in area FS01, the BLM and NMOCD were given notice that additional soil was to be removed from area FS01 and resampled for TPH, BTEX, and chloride. On July 13, 2021, approximately 10 to 12 inches of additional soil were removed from area FS01 totaling approximately 4 cubic yards. The area was resampled and submitted for laboratory analysis as sample "FS01B". Laboratory analytical results indicate that TPH, BTEX, and chloride were not detected above laboratory reporting limits and that the impacted soil had been successfully removed from area FS01B.

Confirmation sample results are summarized in Table 2, with laboratory analytical reports included in Enclosure B. Boring locations were recorded using a handheld Global Positing System (GPS) unit. Figure 4 presents the confirmation sampling areas. The attached Photographic Log includes photographs taken during confirmation sampling.

CONCLUSIONS AND CLOSURE REQUEST

In response to the release of produced water, Hilcorp captured a majority of the released liquids and impacted soil/sediment on April 21, 2021. Borings advanced by WSP around the pit tank indicated that impacts did not significantly migrate laterally or vertically at the Site. Additionally, confirmation soil samples (FS01, FS02, and FS03) collected at the Site indicated that only a limited area (FS01) contained elevated TPH concentrations after the initial fluid recovery effort on April 21, 2021. The remaining impacted soil from area FS01 was subsequently removed on July 13, 2021, with confirmation samples collected at the Site confirming that concentrations of TPH, BTEX, and chloride were below the NMOCD Table 1 Closure Criteria. As such, Hilcorp formally requests Site closure from the NMOCD and BLM and approval that no further action is necessary to remediate the Site.

REFERENCES

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

WSP appreciates the opportunity to provide this report to you. If you have any questions or comments regarding this report, do not hesitate to contact Stuart Hyde at (970) 903-1607 or at stuart.hyde@wsp.com, or Mitch Killough at (713) 757-5274 or at mkillough@hilcorp.com.

Kind regards,

Stuart Hyde, L.G.
Environmental Geologist

Ashley Ager, M.S., P.G.
Managing Director, Geologist

Enclosed:

Figure 1: Site Location Map
Figure 2: Site Receptor Map
Figure 3: Proximity to Watercourse, Lakebed, Sinkhole, or Playa Lake
Figure 4: Borehole and Closure Sampling Locations

Table 1: Soil Delineation Analytical Results
Table 2: Soil Composite Confirmation Sample Analytical Results

Photographic Log

Enclosure A: Boring Logs
Enclosure B: Analytical Laboratory Reports

FIGURES

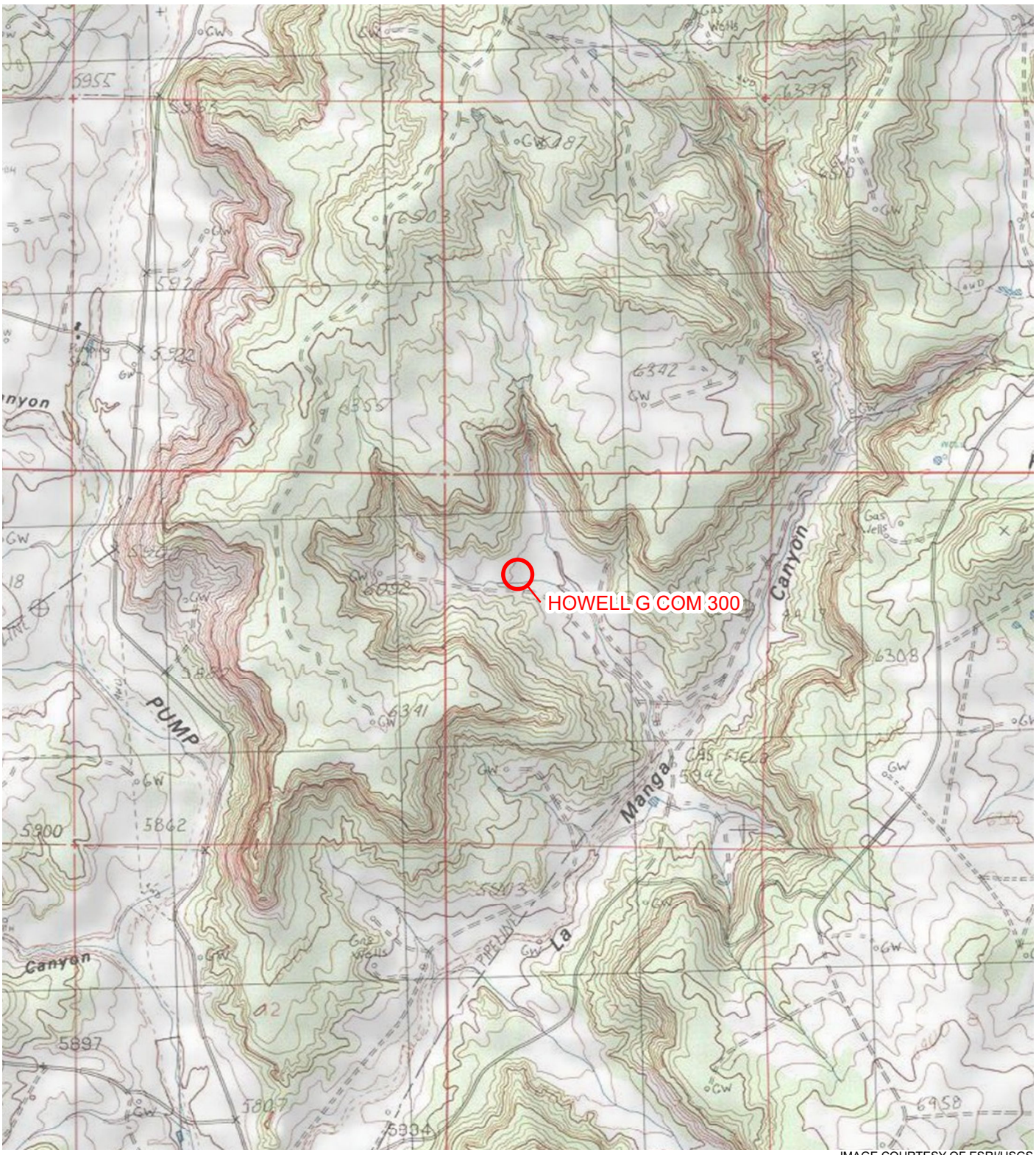


IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
HOWELL G COM 300
SENW SEC 6-T30N-R8W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017821022_HOWELL G COM 300\017821022_FIG01_HOWELL_G COM 300_SL_2021.mxd

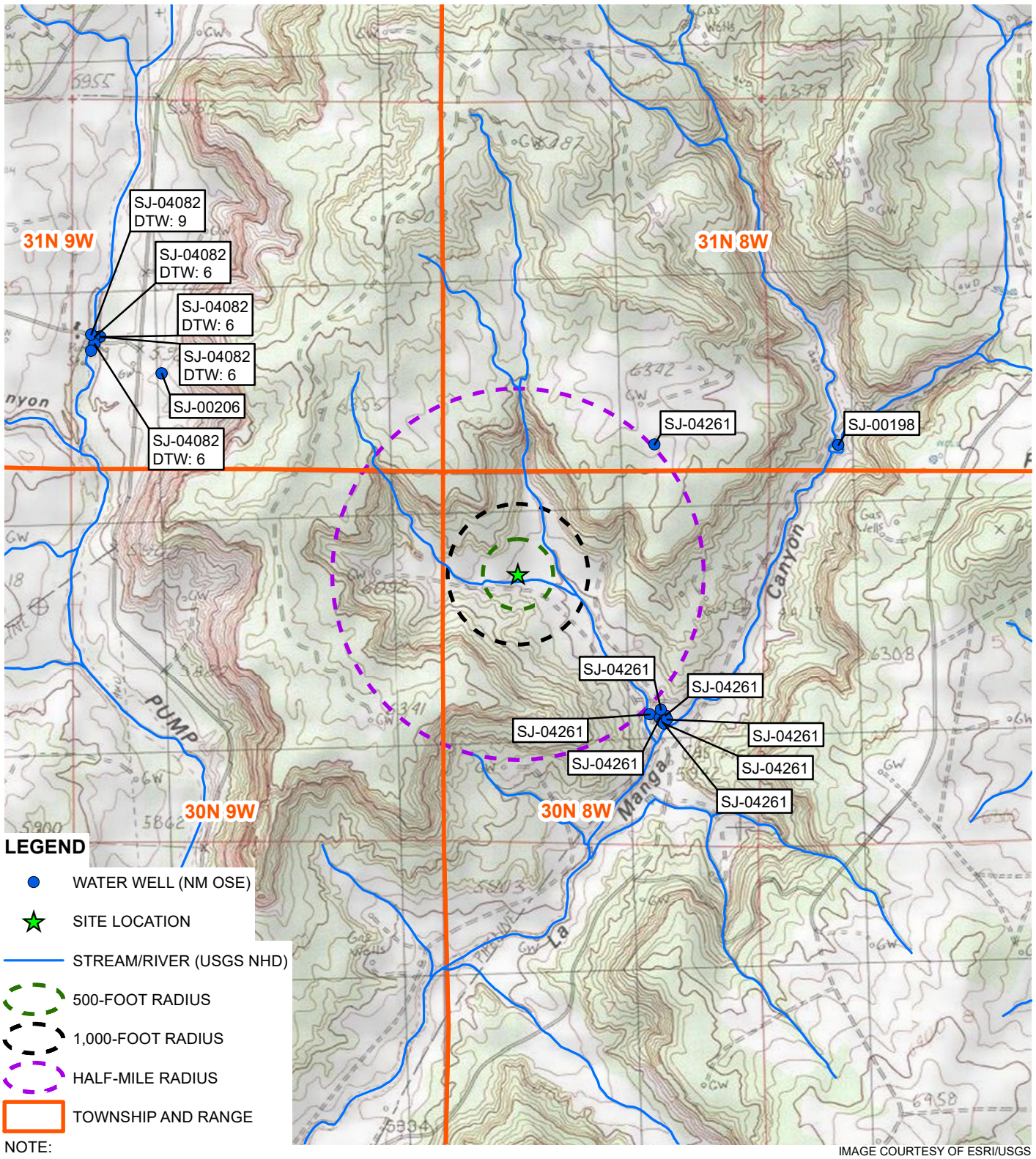


IMAGE COURTESY OF ESRI/USGS

NOTE:
ACCORDING TO 19.15.2 NMAC, A WELLHEAD PROTECTION AREA CONSISTS OF THE AREA WITHIN 200 HORIZONTAL FEET OF A PRIVATE, DOMESTIC FRESH WATER WELL OR SPRING USED BY <5 HOUSEHOLDS FOR DOMESTIC OR STOCK WATERING PURPOSE, OR WITHIN 1,000 HORIZONTAL FEET OF ANY OTHER FRESH WATER WELL OR SPRING. NO USGS WELLS IN AREA PER NWIS.

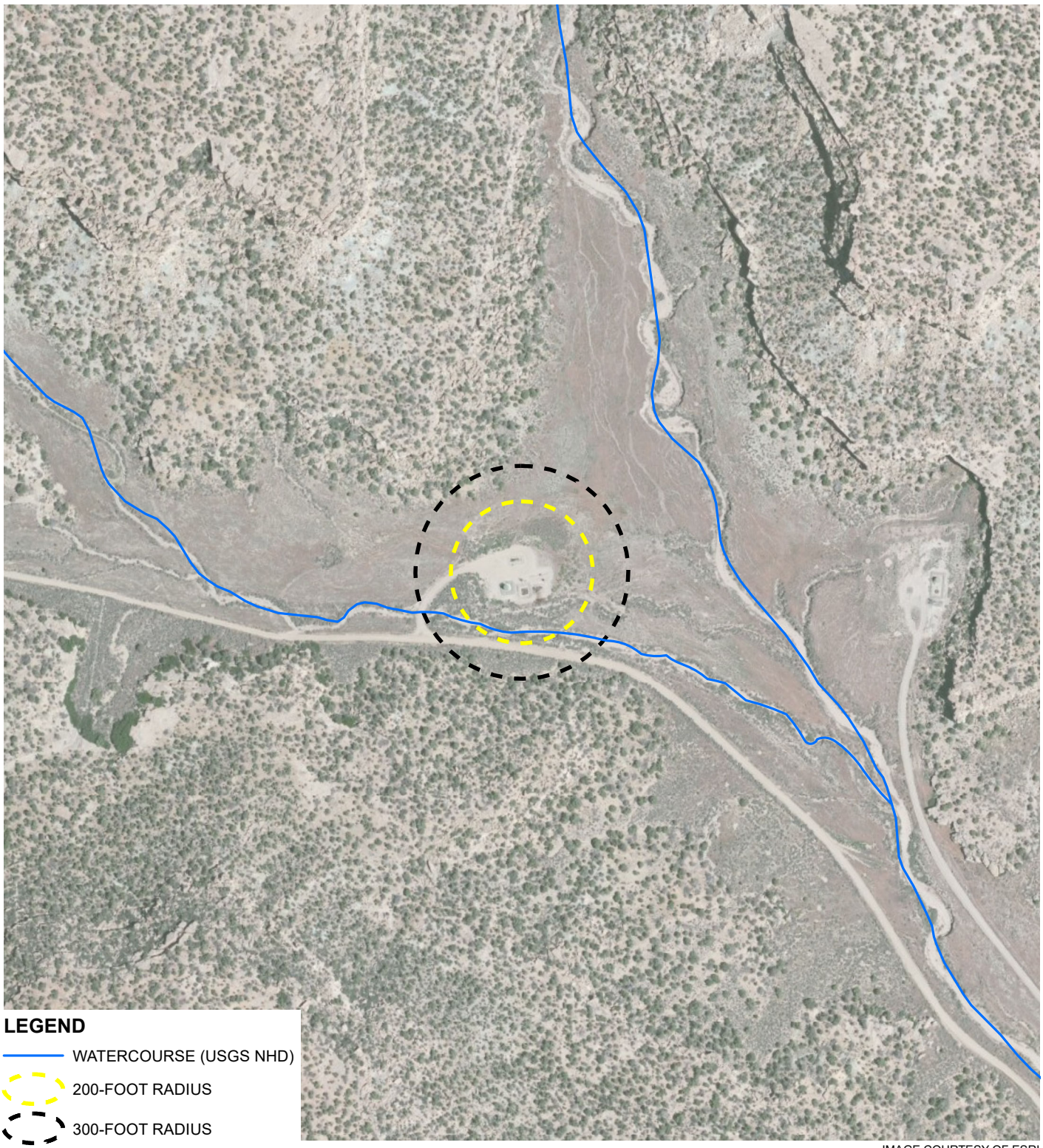
DTW: DEPTH TO WATER
ELEV: APPROXIMATE ELEVATION IN FEET ABOVE MEAN SEA LEVEL
NM OSE: NEW MEXICO OFFICE OF THE STATE ENGINEER
': FEET

0 2,000 4,000
Feet

N

FIGURE 2
SITE RECEPTOR MAP
HOWELL G COM 300
SENW SEC 6-T30N-R8W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017821022_HOWELL G COM 300\017821022_FIG02_HOWELL_G COM 300_RECEPTOR_2021.mxd



LEGEND

- WATERCOURSE (USGS NHD)
- 200-FOOT RADIUS
- 300-FOOT RADIUS

IMAGE COURTESY OF ESRI

NOTE:
ACCORDING TO 19.15.2 NMAC A WATERCOURSE MEANS A RIVER, CREEK, ARROYO, CANYON, DRAW, OR WASH OR OTHER CHANNEL HAVING DEFINITE BANKS AND BED WITH VISIBLE EVIDENCE OF OCCASIONAL FLOW OF WATER.

THERE ARE NO SINKHOLES, LAKEBEDS OR PLAYA LAKES WITHIN THE BOUNDARIES OF THIS MAP USING MAPPED DATA FROM THE USFS NWI AND USGS.

NHD: NATIONAL HYDROGRAPHY DATASET
NMAC: NEW MEXICO ADMINISTRATIVE CODE
NM OSE: NEW MEXICO OFFICE OF THE STATE ENGINEER
USGS: UNITED STATES GEOLOGICAL SURVEY

0 400 800
Feet

N

FIGURE 3
PROXIMITY TO WATERCOURSE, LAKEBED, SINKHOLE, OR PLAYA LAKE
HOWELL G COM 300
SENW SEC 6-T30N-R8W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017821022_HOWELL G COM 300\017821022_FIG03_HOWELL_G COM 300_WATERCOURSE PROX_2021.mxd

IMAGE COURTESY OF ESRI

LEGEND

- SOIL BORING
- CLOSURE SAMPLING LOCATION

0 30 60

Feet

N

FIGURE 4
BOREHOLE AND CLOSURE SAMPLING LOCATIONS
HOWELL G COM 300
SENW SEC 6-T30N-R8W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017821022_HOWELL G COM 300\017821022_FIG04_HOWELL_G COM 300_BH_LOC_2021.mxd

TABLES

Table 1
Soil Delineation Analtyical Results

Howell G Com 300
San Juan County, New Mexico
Hilcorp Energy Company

Sample ID	Sample Date	Sample Depth (feet)	PID (ppm)	Chloride (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-MRO (mg/kg)	TPH (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)			--	**600**	**10**	NE	NE	NE	**50**	NE	NE	NE	**100**
BH01@6"	6/25/2021	0.5	87.5	<60	<0.023	<0.046	<0.046	<0.092	<0.092	<4.6	<9.9	<49	<49
BH01@2'	6/25/2021	2	94.5	--	--	--	--	--	--	--	--	--	--
BH01@4'	6/25/2021	4	75.5	--	--	--	--	--	--	--	--	--	--
BH01@6'	6/25/2021	6	102.1	<60	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.8	<49	<49
BH01@8'	6/25/2021	8	99.0	<61	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.7	<48	<48
BH02@6"	6/25/2021	0.5	99.1	<60	<0.021	<0.042	<0.042	<0.084	<0.084	<4.2	<9.6	<48	<48
BH02@2'	6/25/2021	2	186.2	--	--	--	--	--	--	--	--	--	--
BH02@4'	6/25/2021	4	213.6	--	--	--	--	--	--	--	--	--	--
BH02@6'	6/25/2021	6	188.5	--	--	--	--	--	--	--	--	--	--
BH02@8'	6/25/2021	8	270.9	--	--	--	--	--	--	--	--	--	--
BH02@10'	6/25/2021	10	305.3	<59	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.1	<46	<46
BH02@12'	6/25/2021	12	281.2	<60	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.5	<47	<47
BH03@2'	6/30/2021	2	0.2	<60	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.6	<48	<48
BH03@4'	6/30/2021	4	0.2	--	--	--	--	--	--	--	--	--	--
BH03@6'	6/30/2021	6	0.1	--	--	--	--	--	--	--	--	--	--
BH03@8'	6/30/2021	8	0.1	<60	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.4	<47	<47
BH04@6"	6/30/2021	0.5	0.1	--	--	--	--	--	--	--	--	--	--
BH04@2'	6/30/2021	2	0.3	<60	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<10	64	64
BH04@4'	6/30/2021	4	0.1	--	--	--	--	--	--	--	--	--	--
BH04@6'	6/30/2021	6	0.0	--	--	--	--	--	--	--	--	--	--
BH04@8'	6/30/2021	8	0.0	<60	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.2	<46	<46

Notes:
mg/kg - milligrams per kilograms
DRO - diesel range organics
GRO - gasoline range organics
MRO - motor oil range organics
PID - photoionization detector
ppm - parts per million
TPH- total petroleum hydrocarbons
-- - sample not collected for laboratory analysis
< indicates result is less than the stated laboratory method practical quantitation limit
BOLD and highlighted indicates results exceed NMOCD Table 1 closure criteria

Table 2
Soil Composite Confirmation Sample Analtyical Results

Howell G Com 300
San Juan County, New Mexico
Hilcorp Energy Company

Sample ID	Sample Date	Sample Depth (feet)	PID (ppm)	Chloride (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-MRO (mg/kg)	TPH (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)			--	**600**	**10**	NE	NE	NE	**50**	NE	NE	NE	**100**
FS01	6/30/2021	0 - 3 inches	0.7	<60	<0.023	<0.046	<0.046	<0.092	<0.092	<4.6	14	170	**184**
FS01B (1)	7/13/2021	10 - 12 inches	8.4	<60	<0.023	<0.047	<0.047	<0.093	<0.093	<4.7	<9.7	<48	<48
FS02	6/30/2021	0 - 3 inches	0.4	<60	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.6	60	60
FS03	6/30/2021	0 - 3 inches	0.3	<60	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.1	<45	<45

Notes:
mg/kg - milligrams per kilograms
DRO - diesel range organics
GRO - gasoline range organics
MRO - motor oil range organics
PID - photoionization detector
ppm - parts per million
TPH- total petroleum hydrocarbons
(1) - soil from this area subsequently removed and excavation floor resampled
< indicates result is less than the stated laboratory method practical quantitation limit
BOLD and highlighted indicates results exceed NMOCD Table 1 closure criteria

PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG		
HILCORP ENERGY COMPANY	HOWELL G COM 300 SAN JUAN COUNTY, NEW MEXICO	TE017821022

Photo No.	Date
1	6/25/2021

Boring BH01, looking west-southwest.

Photo No.	Date
2	6/25/2021

Boring BH02, looking east-northeast.

PHOTOGRAPHIC LOG		
HILCORP ENERGY COMPANY	HOWELL G COM 300 SAN JUAN COUNTY, NEW MEXICO	TE017821022

Photo No.	Date
3	6/30/2021

Boring BH03, looking north.

Photo No.	Date
4	6/30/2021

Boring BH04, looking north.

PHOTOGRAPHIC LOG		
HILCORP ENERGY COMPANY	HOWELL G COM 300 SAN JUAN COUNTY, NEW MEXICO	TE017821022

Photo No.	Date
5	6/30/2021

Confirmation sampling area FS01 on June 30, 2021.

Photo No.	Date
6	6/30/2021

Confirmation sampling areas FS02 and FS03 on June 30, 2021.

PHOTOGRAPHIC LOG		
HILCORP ENERGY COMPANY	HOWELL G COM 300 SAN JUAN COUNTY, NEW MEXICO	TE017821022

Photo No.	Date
7	7/13/2021

Confirmation sampling area FS01 after an additional 10 inches of soil were removed on 7/13/2021. This area was resampled with the sample identification “FS01B”.

ENCLOSURE A – BORING LOGS

N

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

BORING LOG

Boring/Well Number: BH01	Project: Howell G Com 300
Date: 6/25/2021	Project Number: TE017821022
Logged By: Stuart Hyde	Drilled By: Stuart Hyde
Elevation:	Detector: PID
Drilling Method: Hand Auger	Sampling Method: Grab

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks
	Dry	87.5	None	BH01@6"	0			SM	0 - 6": SILTY SAND with gravel, light brown, dry, no odor, no staining
					1				6" - 5.5': SILTY SAND, fine to medium grained, brown, moist, no odor, no staining
	Moist	94.5	None		2				
					3				
	Moist	75.5	None		4			SM	
					5				
	Moist	102.1	None	BH01@6'	6			SM	5.5' - 8': SILTY SAND, very fine to fine grained, brown, moist, no odor, no staining
					7				
	Moist	99.0	None	BH01@8'	8				
					9				Boring abandoned at 8 feet
					10				
					11				
					12				
					13				
					14				
					15				

N

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

BORING LOG

Boring/Well Number: BH02	Project: Howell G Com 300
Date: 6/25/2021	Project Number: TE017821022
Logged By: Stuart Hyde	Drilled By: Stuart Hyde
Elevation:	Detector: PID
Drilling Method: Hand Auger	Sampling Method: Grab

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks
	Dry	99.1	None	BH02@6"	0			SM	0 - 6": SILTY SAND with gravel, light brown, dry, no odor, no staining
					1				6" - 5': SILTY SAND, fine to medium grained, brown, moist, no odor, no staining
	Moist	186.2	None		2				
					3			SM	
	Moist	213.6	None		4				
					5				
	Moist	188.5	None		6			SM	5' - 9': SILTY SAND, very fine to fine grained, brown, moist, no odor, no staining
					7				
	Moist	270.9	None		8				
					9				
	Moist	305.3		BH02@10'	10			SP	9' - 12': SAND, medium grained, well sorted, brown, moist, no odor, no staining
					11				
	Moist	281.2		BH02@12'	12				
					13				Hand auger refusal at 12 feet
					14				
					15				

N

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

BORING LOG

Boring/Well Number: BH03	Project: Howell G Com 300
Date: 6/30/2021	Project Number: TE017821022
Logged By: Stuart Hyde	Drilled By: Stuart Hyde
Elevation:	Detector: PID
Drilling Method: Hand Auger	Sampling Method: Grab

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks
	Dry		None		0			SM	0 - 1': SILTY SAND, few gravel, light brown, dry, no odor, no staining
					1				
	Moist	0.2	None	BH03@2'	2			SM	1 - 3': SILTY SAND, fine to medium grained, brown, moist, no odor, no staining
					3				
	Moist	0.2	None		4			SP	3' - 7': SAND, fine to medium grained, well sorted, brown, moist, no odor, no staining
					5				
	Moist	0.1	None		6				
					7				
	Moist	0.1	None	BH03@8'	8			SM	7' - 8': SILTY SAND, fine to medium grained, brown, moist, no odor, no staining
					9				Boring abandoned at 8 feet
					10				
					11				
					12				
					13				
					14				
					15				

N

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

BORING LOG

Boring/Well Number: BH04	Project: Howell G Com 300
Date: 6/30/2021	Project Number: TE017821022
Logged By: Stuart Hyde	Drilled By: Stuart Hyde
Elevation:	Detector: PID
Drilling Method: Hand Auger	Sampling Method: Grab

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks
	Dry	0.1	None		0			SM	0 - 1': SILTY SAND, few gravel, light brown, dry, no odor, no staining
					1				
	Moist	0.3	None	BH04@2'	2			SM	1 - 3': SILTY SAND, fine to medium grained, brown, moist, no odor, no staining
					3				
	Moist	0.1	None		4			SP	3' - 7': SAND, fine to medium grained, well sorted, brown, moist, no odor, no staining
					5				
	Moist	0.0	None		6				
					7				
	Moist	0.0	None	BH04@8'	8			SM	7' - 8': SILTY SAND, fine to medium grained, brown, moist, no odor, no staining
					9				Boring abandoned at 8 feet
					10				
					11				
					12				
					13				
					14				
					15				

ENCLOSURE B – LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 01, 2021

Mitch Killough
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Howell GCom 300 OrderNo.: 2106E31

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/26/2021 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2106E31**
Date Reported: **7/1/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** BH01@6'
Project: Howell GCom 300 **Collection Date:** 6/25/2021 11:40:00 AM
Lab ID: 2106E31-001 **Matrix:** MEOH (SOIL) **Received Date:** 6/26/2021 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	6/27/2021 5:53:24 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/27/2021 5:53:24 AM
Surr: DNOP	96.4	70-130		%Rec	1	6/27/2021 5:53:24 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	2.8		mg/Kg	1	6/27/2021 3:00:00 AM
Surr: BFB	92.1	70-130		%Rec	1	6/27/2021 3:00:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.014		mg/Kg	1	6/27/2021 3:00:00 AM
Toluene	ND	0.028		mg/Kg	1	6/27/2021 3:00:00 AM
Ethylbenzene	ND	0.028		mg/Kg	1	6/27/2021 3:00:00 AM
Xylenes, Total	ND	0.055		mg/Kg	1	6/27/2021 3:00:00 AM
Surr: 4-Bromofluorobenzene	88.7	70-130		%Rec	1	6/27/2021 3:00:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	6/27/2021 9:02:53 PM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2106E31**
Date Reported: **7/1/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** BH01@8'
Project: Howell GCom 300 **Collection Date:** 6/25/2021 11:45:00 AM
Lab ID: 2106E31-002 **Matrix:** MEOH (SOIL) **Received Date:** 6/26/2021 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/27/2021 6:17:08 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/27/2021 6:17:08 AM
Surr: DNOP	94.7	70-130		%Rec	1	6/27/2021 6:17:08 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	3.4		mg/Kg	1	6/27/2021 3:19:00 AM
Surr: BFB	90.0	70-130		%Rec	1	6/27/2021 3:19:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.017		mg/Kg	1	6/27/2021 3:19:00 AM
Toluene	ND	0.034		mg/Kg	1	6/27/2021 3:19:00 AM
Ethylbenzene	ND	0.034		mg/Kg	1	6/27/2021 3:19:00 AM
Xylenes, Total	ND	0.068		mg/Kg	1	6/27/2021 3:19:00 AM
Surr: 4-Bromofluorobenzene	88.1	70-130		%Rec	1	6/27/2021 3:19:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	61		mg/Kg	20	6/27/2021 9:40:07 PM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2106E31**
Date Reported: **7/1/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** BH02@10'
Project: Howell GCom 300 **Collection Date:** 6/25/2021 11:30:00 AM
Lab ID: 2106E31-003 **Matrix:** MEOH (SOIL) **Received Date:** 6/26/2021 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	6/27/2021 6:40:48 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/27/2021 6:40:48 AM
Surr: DNOP	94.7	70-130		%Rec	1	6/27/2021 6:40:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	3.2		mg/Kg	1	6/27/2021 3:39:00 AM
Surr: BFB	88.8	70-130		%Rec	1	6/27/2021 3:39:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.016		mg/Kg	1	6/27/2021 3:39:00 AM
Toluene	ND	0.032		mg/Kg	1	6/27/2021 3:39:00 AM
Ethylbenzene	ND	0.032		mg/Kg	1	6/27/2021 3:39:00 AM
Xylenes, Total	ND	0.064		mg/Kg	1	6/27/2021 3:39:00 AM
Surr: 4-Bromofluorobenzene	88.6	70-130		%Rec	1	6/27/2021 3:39:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	59		mg/Kg	20	6/27/2021 10:17:22 PM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2106E31**
Date Reported: **7/1/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** BH02@12'
Project: Howell GCom 300 **Collection Date:** 6/25/2021 11:35:00 AM
Lab ID: 2106E31-004 **Matrix:** MEOH (SOIL) **Received Date:** 6/26/2021 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/27/2021 7:04:27 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/27/2021 7:04:27 AM
Surr: DNOP	96.5	70-130		%Rec	1	6/27/2021 7:04:27 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	6/27/2021 3:59:00 AM
Surr: BFB	93.3	70-130		%Rec	1	6/27/2021 3:59:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.022		mg/Kg	1	6/27/2021 3:59:00 AM
Toluene	ND	0.045		mg/Kg	1	6/27/2021 3:59:00 AM
Ethylbenzene	ND	0.045		mg/Kg	1	6/27/2021 3:59:00 AM
Xylenes, Total	ND	0.089		mg/Kg	1	6/27/2021 3:59:00 AM
Surr: 4-Bromofluorobenzene	89.7	70-130		%Rec	1	6/27/2021 3:59:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	6/27/2021 10:29:47 PM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106E31**
01-Jul-21

Client: HILCORP ENERGY
Project: Howell GCom 300

Sample ID: **MB-60954**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **60954**	RunNo: **79396**							
Prep Date: **6/27/2021**	Analysis Date: **6/27/2021**	SeqNo: **2790557**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-60954**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **60954**	RunNo: **79396**							
Prep Date: **6/27/2021**	Analysis Date: **6/27/2021**	SeqNo: **2790558**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	90.6	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106E31**
01-Jul-21

Client: HILCORP ENERGY
Project: Howell GCom 300

Sample ID: **MB-60948**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **60948**	RunNo: **79239**
Prep Date: **6/26/2021**	Analysis Date: **6/27/2021**	SeqNo: **2789545** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.2	70	130			

Sample ID: **LCS-60948**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **60948**	RunNo: **79239**
Prep Date: **6/26/2021**	Analysis Date: **6/27/2021**	SeqNo: **2789547** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.4	68.9	141			
Surr: DNOP	4.6		5.000		92.2	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106E31**
01-Jul-21

Client: HILCORP ENERGY
Project: Howell GCom 300

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **R79390** RunNo: **79390**
Prep Date: Analysis Date: **6/26/2021** SeqNo: **2790201** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		96.8	70	130			

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **R79390** RunNo: **79390**
Prep Date: Analysis Date: **6/26/2021** SeqNo: **2790203** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	103	78.6	131			
Surr: BFB	1200		1000		115	70	130			

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **R79390** RunNo: **79390**
Prep Date: Analysis Date: **6/26/2021** SeqNo: **2790204** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.3	78.6	131			
Surr: BFB	1200		1000		117	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2106E31**

01-Jul-21

Client: HILCORP ENERGY

Project: Howell GCom 300

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **R79390** RunNo: **79390**

Prep Date: Analysis Date: **6/26/2021** SeqNo: **2790838** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		96.3	70	130			

Sample ID: **100ng btex lcs** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **R79390** RunNo: **79390**

Prep Date: Analysis Date: **6/26/2021** SeqNo: **2790854** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	111	80	120			
Toluene	1.1	0.050	1.000	0	113	80	120			
Ethylbenzene	1.2	0.050	1.000	0	115	80	120			
Xylenes, Total	3.5	0.10	3.000	0	117	80	120			
Surr: 4-Bromofluorobenzene	0.97		1.000		96.8	70	130			

Sample ID: **100ng btex lcs** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **R79390** RunNo: **79390**

Prep Date: Analysis Date: **6/26/2021** SeqNo: **2790857** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	106	80	120			
Toluene	1.1	0.050	1.000	0	107	80	120			
Ethylbenzene	1.1	0.050	1.000	0	109	80	120			
Xylenes, Total	3.3	0.10	3.000	0	110	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		99.9	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **HILCORP ENERGY** Work Order Number: **2106E31** RcptNo: 1

Received By: **Juan Rojas** **6/26/2021 8:30:00 AM**

Completed By: **Cheyenne Cason** **6/26/2021 9:30:45 AM**

Reviewed By: JR 6/26/21

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: DAD 6.26.21

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	0.7	Good				
2	0.1	Good				

Chain-of-Custody Record

Client: Hilcorp Energy

Mailing Address: 1111 Travis St
Houston TX

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: Need by 6/28/2021 — Midday
☐ Standard ☒ Rush Same Day

Project Name: Howell Glom 300

Project #:

Project Manager: Stuart Hyde
Stuart.hyde@hilcorp.com

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 0.9-0.2=0.7 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	0.3-0.2=0.1 HEAL No. 2106E31	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/25	1140	S	BH01@6'	1 4oz jar	—	001	X	X					X			
	1145		BH01@8'			002	X	X					X			
	1130		BH02@10'			003	X	X					X			
	1135		BH02@12'			004	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6/25	1620	Natasha Hyde		courier	6/26/21	8:30

Remarks:

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 08, 2021

Mitch Killough
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX

RE: Howell GC 300 OrderNo.: 2107029

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 9 sample(s) on 7/1/2021 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FS01
Project: Howell GC 300
Collection Date: 6/30/2021 10:45:00 AM
Lab ID: 2107029-001 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	14	9.6		mg/Kg	1	7/6/2021 11:10:08 AM
Motor Oil Range Organics (MRO)	170	48		mg/Kg	1	7/6/2021 11:10:08 AM
Surr: DNOP	102	70-130		%Rec	1	7/6/2021 11:10:08 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 9:12:32 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.023		mg/Kg	1	7/3/2021 6:24:05 AM
Toluene	ND	0.046		mg/Kg	1	7/3/2021 6:24:05 AM
Ethylbenzene	ND	0.046		mg/Kg	1	7/3/2021 6:24:05 AM
Xylenes, Total	ND	0.092		mg/Kg	1	7/3/2021 6:24:05 AM
Surr: 1,2-Dichloroethane-d4	98.6	70-130		%Rec	1	7/3/2021 6:24:05 AM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	7/3/2021 6:24:05 AM
Surr: Dibromofluoromethane	93.6	70-130		%Rec	1	7/3/2021 6:24:05 AM
Surr: Toluene-d8	101	70-130		%Rec	1	7/3/2021 6:24:05 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/3/2021 6:24:05 AM
Surr: BFB	103	70-130		%Rec	1	7/3/2021 6:24:05 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FS02
Project: Howell GC 300
Collection Date: 6/30/2021 10:50:00 AM
Lab ID: 2107029-002 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/6/2021 11:45:55 AM
Motor Oil Range Organics (MRO)	60	48		mg/Kg	1	7/6/2021 11:45:55 AM
Surr: DNOP	102	70-130		%Rec	1	7/6/2021 11:45:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 9:24:57 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024		mg/Kg	1	7/3/2021 6:52:41 AM
Toluene	ND	0.048		mg/Kg	1	7/3/2021 6:52:41 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/3/2021 6:52:41 AM
Xylenes, Total	ND	0.096		mg/Kg	1	7/3/2021 6:52:41 AM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	7/3/2021 6:52:41 AM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	7/3/2021 6:52:41 AM
Surr: Dibromofluoromethane	98.6	70-130		%Rec	1	7/3/2021 6:52:41 AM
Surr: Toluene-d8	93.3	70-130		%Rec	1	7/3/2021 6:52:41 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/3/2021 6:52:41 AM
Surr: BFB	97.4	70-130		%Rec	1	7/3/2021 6:52:41 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FS03
Project: Howell GC 300
Collection Date: 6/30/2021 10:55:00 AM
Lab ID: 2107029-003 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	7/6/2021 11:57:55 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/6/2021 11:57:55 AM
Surr: DNOP	99.9	70-130		%Rec	1	7/6/2021 11:57:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 9:37:23 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024		mg/Kg	1	7/3/2021 7:21:13 AM
Toluene	ND	0.049		mg/Kg	1	7/3/2021 7:21:13 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/3/2021 7:21:13 AM
Xylenes, Total	ND	0.098		mg/Kg	1	7/3/2021 7:21:13 AM
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	7/3/2021 7:21:13 AM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	7/3/2021 7:21:13 AM
Surr: Dibromofluoromethane	98.1	70-130		%Rec	1	7/3/2021 7:21:13 AM
Surr: Toluene-d8	96.7	70-130		%Rec	1	7/3/2021 7:21:13 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/3/2021 7:21:13 AM
Surr: BFB	104	70-130		%Rec	1	7/3/2021 7:21:13 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** BH01@6"
Project: Howell GC 300 **Collection Date:** 6/30/2021 11:00:00 AM
Lab ID: 2107029-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/1/2021 12:14:42 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/1/2021 12:14:42 PM
Surr: DNOP	102	70-130		%Rec	1	7/1/2021 12:14:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/1/2021 1:30:09 PM
Surr: BFB	98.2	70-130		%Rec	1	7/1/2021 1:30:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	7/1/2021 1:30:09 PM
Toluene	ND	0.046		mg/Kg	1	7/1/2021 1:30:09 PM
Ethylbenzene	ND	0.046		mg/Kg	1	7/1/2021 1:30:09 PM
Xylenes, Total	ND	0.092		mg/Kg	1	7/1/2021 1:30:09 PM
Surr: 4-Bromofluorobenzene	99.9	70-130		%Rec	1	7/1/2021 1:30:09 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/2/2021 8:05:50 AM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** BH02@6"
Project: Howell GC 300 **Collection Date:** 6/30/2021 11:15:00 AM
Lab ID: 2107029-005 **Matrix:** MEOH (SOIL) **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/1/2021 12:26:46 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/1/2021 12:26:46 PM
Surr: DNOP	96.9	70-130		%Rec	1	7/1/2021 12:26:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.2		mg/Kg	1	7/1/2021 1:53:45 PM
Surr: BFB	97.2	70-130		%Rec	1	7/1/2021 1:53:45 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.021		mg/Kg	1	7/1/2021 1:53:45 PM
Toluene	ND	0.042		mg/Kg	1	7/1/2021 1:53:45 PM
Ethylbenzene	ND	0.042		mg/Kg	1	7/1/2021 1:53:45 PM
Xylenes, Total	ND	0.084		mg/Kg	1	7/1/2021 1:53:45 PM
Surr: 4-Bromofluorobenzene	97.9	70-130		%Rec	1	7/1/2021 1:53:45 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/2/2021 8:18:14 AM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH03@2'
Project: Howell GC 300
Collection Date: 6/30/2021 11:30:00 AM
Lab ID: 2107029-006 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/6/2021 12:09:48 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/6/2021 12:09:48 PM
Surr: DNOP	101	70-130		%Rec	1	7/6/2021 12:09:48 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 9:49:47 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/3/2021 7:49:43 AM
Toluene	ND	0.049		mg/Kg	1	7/3/2021 7:49:43 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/3/2021 7:49:43 AM
Xylenes, Total	ND	0.098		mg/Kg	1	7/3/2021 7:49:43 AM
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	7/3/2021 7:49:43 AM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	7/3/2021 7:49:43 AM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	7/3/2021 7:49:43 AM
Surr: Toluene-d8	101	70-130		%Rec	1	7/3/2021 7:49:43 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/3/2021 7:49:43 AM
Surr: BFB	104	70-130		%Rec	1	7/3/2021 7:49:43 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH03@8'
Project: Howell GC 300
Collection Date: 6/30/2021 11:40:00 AM
Lab ID: 2107029-007 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/6/2021 12:21:49 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/6/2021 12:21:49 PM
Surr: DNOP	98.9	70-130		%Rec	1	7/6/2021 12:21:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 10:02:12 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024		mg/Kg	1	7/3/2021 8:18:19 AM
Toluene	ND	0.048		mg/Kg	1	7/3/2021 8:18:19 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/3/2021 8:18:19 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/3/2021 8:18:19 AM
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	7/3/2021 8:18:19 AM
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	7/3/2021 8:18:19 AM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	7/3/2021 8:18:19 AM
Surr: Toluene-d8	93.1	70-130		%Rec	1	7/3/2021 8:18:19 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/3/2021 8:18:19 AM
Surr: BFB	98.4	70-130		%Rec	1	7/3/2021 8:18:19 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH04@2'
Project: Howell GC 300
Collection Date: 6/30/2021 12:10:00 PM
Lab ID: 2107029-008 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/6/2021 12:33:55 PM
Motor Oil Range Organics (MRO)	64	50		mg/Kg	1	7/6/2021 12:33:55 PM
Surr: DNOP	100	70-130		%Rec	1	7/6/2021 12:33:55 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 10:39:25 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/3/2021 8:46:57 AM
Toluene	ND	0.050		mg/Kg	1	7/3/2021 8:46:57 AM
Ethylbenzene	ND	0.050		mg/Kg	1	7/3/2021 8:46:57 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/3/2021 8:46:57 AM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	7/3/2021 8:46:57 AM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	7/3/2021 8:46:57 AM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	7/3/2021 8:46:57 AM
Surr: Toluene-d8	96.5	70-130		%Rec	1	7/3/2021 8:46:57 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/3/2021 8:46:57 AM
Surr: BFB	96.5	70-130		%Rec	1	7/3/2021 8:46:57 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107029**
Date Reported: **7/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH04@8'
Project: Howell GC 300
Collection Date: 6/30/2021 12:20:00 PM
Lab ID: 2107029-009 **Matrix:** SOIL **Received Date:** 7/1/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	7/6/2021 12:45:57 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/6/2021 12:45:57 PM
Surr: DNOP	101	70-130		%Rec	1	7/6/2021 12:45:57 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/6/2021 11:16:40 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024		mg/Kg	1	7/3/2021 9:15:36 AM
Toluene	ND	0.049		mg/Kg	1	7/3/2021 9:15:36 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/3/2021 9:15:36 AM
Xylenes, Total	ND	0.098		mg/Kg	1	7/3/2021 9:15:36 AM
Surr: 1,2-Dichloroethane-d4	98.1	70-130		%Rec	1	7/3/2021 9:15:36 AM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	7/3/2021 9:15:36 AM
Surr: Dibromofluoromethane	100	70-130		%Rec	1	7/3/2021 9:15:36 AM
Surr: Toluene-d8	94.1	70-130		%Rec	1	7/3/2021 9:15:36 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/3/2021 9:15:36 AM
Surr: BFB	99.9	70-130		%Rec	1	7/3/2021 9:15:36 AM

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2107029**

08-Jul-21

Client: HILCORP ENERGY

Project: Howell GC 300

Sample ID: **MB-61088**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **61088**	RunNo: **79537**							
Prep Date: **7/1/2021**	Analysis Date: **7/2/2021**	SeqNo: **2798047**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-61088**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **61088**	RunNo: **79537**							
Prep Date: **7/1/2021**	Analysis Date: **7/2/2021**	SeqNo: **2798048**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.8	90	110			

Sample ID: **MB-61134**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **61134**	RunNo: **79587**							
Prep Date: **7/6/2021**	Analysis Date: **7/6/2021**	SeqNo: **2799423**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-61134**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **61134**	RunNo: **79587**							
Prep Date: **7/6/2021**	Analysis Date: **7/6/2021**	SeqNo: **2799424**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	99.0	90	110			

Sample ID: **MB-61148**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **61148**	RunNo: **79587**							
Prep Date: **7/6/2021**	Analysis Date: **7/6/2021**	SeqNo: **2799455**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-61148**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **61148**	RunNo: **79587**							
Prep Date: **7/6/2021**	Analysis Date: **7/6/2021**	SeqNo: **2799456**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.8	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2107029**

08-Jul-21

Client: HILCORP ENERGY

Project: Howell GC 300

Sample ID: **MB-61118** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **61118** RunNo: **79594**

Prep Date: **7/3/2021** Analysis Date: **7/6/2021** SeqNo: **2799172** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	70	130			

Sample ID: **LCS-61118** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **61118** RunNo: **79594**

Prep Date: **7/3/2021** Analysis Date: **7/6/2021** SeqNo: **2799173** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.7	68.9	141			
Surr: DNOP	5.2		5.000		104	70	130			

Sample ID: **2107029-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **FS01** Batch ID: **61118** RunNo: **79594**

Prep Date: **7/3/2021** Analysis Date: **7/6/2021** SeqNo: **2799174** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	36	8.7	43.55	14.00	50.7	15	184			
Surr: DNOP	4.7		4.355		109	70	130			

Sample ID: **2107029-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **FS01** Batch ID: **61118** RunNo: **79594**

Prep Date: **7/3/2021** Analysis Date: **7/6/2021** SeqNo: **2799175** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	39	8.8	44.01	14.00	56.0	15	184	6.87	23.9	
Surr: DNOP	4.9		4.401		112	70	130	0	0	

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2107029**

08-Jul-21

Client: HILCORP ENERGY

Project: Howell GC 300

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G79512**	RunNo: **79512**
Prep Date:	Analysis Date: **7/1/2021**	SeqNo: **2796109** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.7	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G79512**	RunNo: **79512**
Prep Date:	Analysis Date: **7/1/2021**	SeqNo: **2796110** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.4	78.6	131			
Surr: BFB	1100		1000		115	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2107029**
08-Jul-21

Client: HILCORP ENERGY
Project: Howell GC 300

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **B79512**	RunNo: **79512**
Prep Date:	Analysis Date: **7/1/2021**	SeqNo: **2796149** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		95.6	70	130			

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **B79512**	RunNo: **79512**
Prep Date:	Analysis Date: **7/1/2021**	SeqNo: **2796150** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	97.4	80	120			
Toluene	1.0	0.050	1.000	0	99.5	80	120			
Ethylbenzene	0.99	0.050	1.000	0	99.4	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.1	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		97.6	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2107029**
08-Jul-21

Client: HILCORP ENERGY
Project: Howell GC 300

Sample ID: **lcs-61095** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **61095** RunNo: **79552**
Prep Date: **7/1/2021** Analysis Date: **7/2/2021** SeqNo: **2797540** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	96.6	70	130			
Toluene	0.95	0.050	1.000	0	95.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		97.3	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		93.9	70	130			
Surr: Toluene-d8	0.47		0.5000		94.9	70	130			

Sample ID: **mb-61095** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **61095** RunNo: **79552**
Prep Date: **7/1/2021** Analysis Date: **7/2/2021** SeqNo: **2797541** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.6	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		101	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: Toluene-d8	0.50		0.5000		101	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2107029**

08-Jul-21

Client: HILCORP ENERGY

Project: Howell GC 300

Sample ID: **lcs-61095**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **61095**	RunNo: **79552**
Prep Date: **7/1/2021**	Analysis Date: **7/2/2021**	SeqNo: **2797545** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	87.4	70	130			
Surr: BFB	510		500.0		101	70	130			

Sample ID: **mb-61095**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **61095**	RunNo: **79552**
Prep Date: **7/1/2021**	Analysis Date: **7/2/2021**	SeqNo: **2797546** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	490		500.0		97.9	70	130			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Hilcorp Energy** Work Order Number: **2107029** RcptNo: 1

Received By: **Sean Livingston** **7/1/2021 8:40:00 AM** Sean Livingston

Completed By: **Sean Livingston** **7/1/2021 10:11:05 AM** Sean Livingston

Reviewed By: JR 7/1/21

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 ☐
   Samples not frozen.
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: T.C. 7.1.21

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	2.1	Good				
2	-1.9	Good				
3	4.1	Good				

Chain-of-Custody Record

Client: Hilcorp

Mailing Address: 1111 Travis St, Houston

Phone #: 281-851-2338

email or Fax#: mkillough@hilcorp.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☒ EDD (Type) Excel

Turn-Around Time:
☒ Standard ☒ Rush See remarks

Project Name: Howell GC 300

Project #: ~~6000~~ 60003045 CW

Project Manager: Stuart Hyde
Stuart.hyde@wsp

Sampler: S Hyde

On Ice: ☑ Yes ☐ No

# of Coolers: 3

Cooler Temp(including CF): 2.1+0=2.1 -1.9+0=1.9 4.1+0=4.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2107029	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)					
6/30/21	1045	S	FS01	1-4oz		001	X	X					X								
	1050		FS02			002	X	X					X								
	1055		FS03			003	X	X					X								
	1100		BH01@6"			004	X	X					X				RUSH	Next D			
	1115		BH02@6"			005	X	X					X				RUSH	Next D			
	1130		BH03@2'			006	X	X					X					7/2/2			
	1140		BH03@8'			007	X	X					X								
	1210		BH04@2'			008	X	X					X								
	1220		BH04@8'			009	X	X					X								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6/30/21	1237		Chad Wat		6/30/21	1237
6/30/21	1803		Sca	courier	7/1/21	8:40

Remarks: Not frozen Sca 7/1/21
Rush < BH01@6" Next Day TAT (Fri, July 2nd)
BH02@6"
All others standard TAT

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.

Analytical Report
Lab Order **2107650**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FS01B
Project: Howell GC 300
Collection Date: 7/13/2021 10:30:00 AM
Lab ID: 2107650-001 **Matrix:** SOIL **Received Date:** 7/14/2021 9:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/15/2021 10:04:27 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/15/2021 10:04:27 PM
Surr: DNOP	74.7	70-130		%Rec	1	7/15/2021 10:04:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/15/2021 8:55:44 AM
Surr: BFB	96.8	70-130		%Rec	1	7/15/2021 8:55:44 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	7/15/2021 8:55:44 AM
Toluene	ND	0.047		mg/Kg	1	7/15/2021 8:55:44 AM
Ethylbenzene	ND	0.047		mg/Kg	1	7/15/2021 8:55:44 AM
Xylenes, Total	ND	0.093		mg/Kg	1	7/15/2021 8:55:44 AM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	7/15/2021 8:55:44 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	7/16/2021 9:00:00 AM

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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

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 37152

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 37152
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	None	1/24/2022