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	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Hilcorp Energy	OGRID: 319687
Contact Name: Lindsay Dumas	Contact Telephone: 832-839-4585
Contact email: Ldumas@hilcorp.com	Incident # *(assigned by OCD)* historic release – never assigned
Contact mailing address: 1111 Travis St. Houston, TX 77002	

Location of Release Source

Latitude 36.491581 Longitude -107.22384
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Jicarilla A Ridge	Site Type: Compressor Station
Date Release Discovered: 8/14/12	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
L	23	026N	0004W	Rio Arriba

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)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☒ Condensate	Volume Released (bbls) Unknown	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
Discovered during below grade tank closure activities.

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State of New Mexico
Oil Conservation Division

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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: Lindsay Dumas Title: Environmental Specialist
Signature: Lindsay Dumas Date: 3/3/20
email: LDumas@hilcorp.com Telephone: 832-839-4585

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

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?	100 (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.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
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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: Lindsay Dumas Title: Environmental Specialist

Signature: Lindsay Dumas Date: 3/3/20

email: LDumas@hilcorp.com Telephone: 832-839-4585

OCD Only

Received by: _____ Date: _____

Form C-141
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State of New Mexico
Oil Conservation Division

Incident ID	
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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: Lindsay Dumas Title: Environmental Specialist

Signature: Lindsay Dumas Date: 3/3/20

email: LDumas@hilcorp.com Telephone: 832-839-4585

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: _____ Date: _____

Printed Name: _____ Title: _____

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

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

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company **ConocoPhillips Company**	Contact **Lisa Hunter**
Address **3401 E. 30th St., Farmington, NM 87402**	Telephone No. **505-258-1607**
Facility Name **Jicarilla A Ridge Lateral**	Facility Type **Lateral**

Surface Owner **Jicarilla Tribe**	Mineral Owner **Jicarilla Tribe**	API No. n/a

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	**23**	**026N**	**004W**					**Rio Arriba**

Latitude 36.47001 Longitude -107.22734

NATURE OF RELEASE

Type of Release **Production Fluids**	Volume of Release **Unknown**	Volume Recovered **>500 yds Soil / 3,218 lbs hydrocarbon removed via SVE**
Source of Release **Below Grade Tank**	Date and Hour of Occurrence **8/14/2012**	Date and Hour of Discovery **8/14/2012**
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? **N/A**	
By Whom?	Date and Hour **N/A**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

If a Watercourse was Impacted, Describe Fully.* **N/A**

Describe Cause of Problem and Remedial Action Taken.* Discovered during Below Grade Tank Closure Activities. The below grade tank sample results were above regulatory standard by USEPA method 418.1 for TPH confirming a release. Excavation was required based on Jicarilla Apache Nation Oil & Gas Administration (JANOGA) soil remediation action levels. The excavation was 25'x38'x15' and 492 yds^3 of soil was transported to a third party land farm. Confirmation sampling occurred and analytical results exceeded the regulatory standards set forth by JANOGA. On November 16, 2012 Dixon Sandoval, JANOGA, approved the proposed soil vapor extraction system work plan as a proactive means of remediation. Approval from Brandon Powell, NMOCD, was received on August 20, 2012 based on pending JANOGA approval

Describe Area Affected and Cleanup Action Taken.* Soil Vapor Extraction system was installed and activated August, 2013 and ran with an approximate 80% run time to May, 2015. A total of 4 passive air inlet wells and 2 extraction wells were installed with at depths of **44ft**. Samples of vapors were collected throughout run time. Post remediation confirmation soil samples were collected July, 2015 (see attached report and lab results) from each boring at similar intervals to 2012 samples. No groundwater was encountered at any time. Comparing samples from 2012, there is a 99.9% reduction of benzene, 99.9% reduction of BTEX, & 89% reduction of TPH concentrations, and 3,218 lbs of hydrocarbons have been removed as well. Two samples, 27-28 ft (SB-3) and 30-31 ft (SB-7) were above JANOGA action levels. **SVE unit turned back on and concentrating air flow to SVE wells. COPC will resample in late Spring/early Summer 2017.**

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature:	OIL CONSERVATION DIVISION	
Printed Name: **Lisa Hunter**	Approved by Environmental Specialist:	
Title: **Field Environmental Specialist**	Approval Date:	Expiration Date:
E-mail Address: **lisa.hunter@cop.com**	Conditions of Approval:	Attached ☐
Date **December 29, 2016** Phone: **505-258-1607**		

Attach Additional Sheets If Necessary

Lindsay Dumas

From: Hobson Sandoval <hsandoval2012@gmail.com>
Sent: Wednesday, April 24, 2019 1:10 PM
To: Lindsay Dumas
Subject: [EXTERNAL] Request to remove SVE from A Ridge Compressor

Recently, I had sent an approval through my cell phone, but I guess that did not go through. I had read the recent lab report which showed a tremendous reduction of contaminants. Only one area, about 30 feet deep had a value of 277 ppm, but the area below is clean. So. I imagine that area with the 277 ppm will decrease through natural attenuation.

So, this email is to tell you that the Jicarilla Apache Environmental Protection Office (EPO) approves your request to remove the SVE.

Lindsay Dumas

From: Lindsay Dumas
Sent: Tuesday, March 26, 2019 3:00 PM
To: 'Hobson Sandoval'; 'rodvelarde@jicarillaoga.com'; cory.smith@state.nm.us; Jason Sandoval (jasonsandoval@jicarillaoga.com)
Cc: Elizabeth McNally (emcnally@animasenvironmental.com)
Subject: RE: [EXTERNAL] Re: Jicarilla A Ridge SVE - Request for Site Closure
Attachments: Soil Confirmation Report 021819 Final.pdf

Hobson – Please find attached Hilcorp's Report covering the further sampling event on 1/31/19. Hilcorp would like to schedule a meeting on April 9th or 10th to review the information and discuss consideration of no further action status for this project.

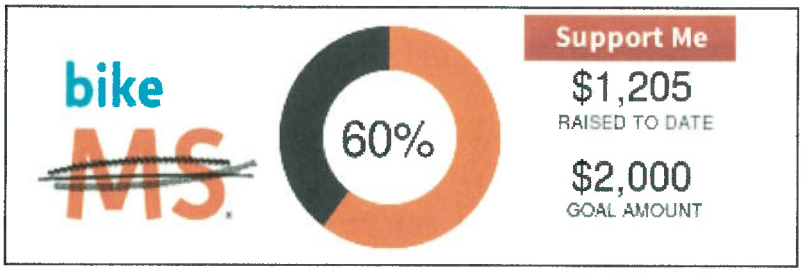
Also, I have placed a hard copy in the mail to you at the following address...

Environmental Protection Office
Jicarilla Apache Tribe
Attn: Hobson Sandoval
P.O. Box 507
Dulce, NM 87528

All - Please let me know your availability for a meeting on April 9th or 10th. If anyone else would like a hard copy placed in the mail, please respond with the mailing address.

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159



From: Lindsay Dumas
Sent: Friday, January 25, 2019 3:49 PM
To: 'Hobson Sandoval' ; 'rodvelarde@jicarillaoga.com' ; cory.smith@state.nm.us; Jason Sandoval (jasonsandoval@jicarillaoga.com)
Subject: RE: [EXTERNAL] Re: Jicarilla A Ridge SVE - Request for Site Closure

All – At the 1-9-19 meeting with Hobson and Jason, it was decided that Hilcorp would gather samples near SB-3 and SB-7. This work is scheduled for 1/31/19 beginning at 9AM. Please let me know if you have any questions or concerns. Thank you!

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Lindsay Dumas
Sent: Tuesday, January 8, 2019 3:59 PM
To: 'Hobson Sandoval' <hsandoval2012@gmail.com>; 'rodvelarde@jicarillaoga.com' <rodvelarde@jicarillaoga.com>; cory.smith@state.nm.us
Subject: RE: [EXTERNAL] Re: Jicarilla A Ridge SVE - Request for Site Closure

All – We will meet in Dulce at the Oil & Gas Conference Room at 2pm tomorrow (1-9-18). Please let me know if you plan to attend or if you would like to call in. Thank you!

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Lindsay Dumas
Sent: Friday, January 4, 2019 10:54 AM
To: 'Hobson Sandoval' <hsandoval2012@gmail.com>; 'rodvelarde@jicarillaoga.com' <rodvelarde@jicarillaoga.com>; Corey Smith <cory.smith@state.nm.us>
Subject: RE: [EXTERNAL] Re: Jicarilla A Ridge SVE - Request for Site Closure

Would everyone be available Wednesday at 2PM to discuss this project?

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585

Mobile: 281-794-9159

From: Hobson Sandoval [mailto:hsandoval2012@gmail.com]
Sent: Thursday, January 3, 2019 3:16 PM
To: Lindsay Dumas <ldumas@hilcorp.com>
Cc: Bryce Hammond <brycehammond@jicarillaoga.com>; Corey Smith <cory.smith@state.nm.us>
Subject: [EXTERNAL] Re: Jicarilla A Ridge SVE - Request for Site Closure

I'm available.

On Thu, Jan 3, 2019, 12:00 PM Lindsay Dumas <ldumas@hilcorp.com> wrote:

> Good Afternoon – I've attached a site closure request from May of 2016 for the Jicarilla A Ridge. I'd like to set up some time next week to discuss this if everyone is available. Hilcorp would like to request closure based on the July 5th sampling data, please review and let me know your availability for next week. Thank you!
>
> Kind regards,
>
> *Lindsay Dumas*
> Environmental Specialist
>
> **Hilcorp Energy – L48 West**
>
> Office: 832-839-4585
>
> Mobile: 281-794-9159

Hilcorp Energy Company's address is 1111 Travis St, Houston, TX 77002

February 18, 2019

Lindsay Dumas
Hilcorp Energy Company
9 Road 5793 Ste A
Farmington, New Mexico 87401

RE: Post Remediation Soil Confirmation Sampling Report
Jicarilla A Ridge Compressor Station
Rio Arriba County, New Mexico

Ms. Dumas:

Animas Environmental Services, LLC (AES) is pleased to provide this letter report summarizing soil confirmation sampling in January 2019 at the Hilcorp Jicarilla A Ridge Compressor Station following soil remediation conducted with soil vapor extraction (SVE) technology.

In 2012, petroleum hydrocarbon contamination was discovered during below grade tank (BGT) closure activities at the location. Soil excavation and removal was conducted to a final depth of 25 feet below ground surface (bgs). After reaching critical depths with regard to site safety, the installation of an SVE mechanical remediation system was completed in order to mitigate residual concentrations at the site.

1.0 Site Information

1.1 Location

The Jicarilla A Ridge Compressor Station is located on Jicarilla Apache Tribal Land within NW¼ SW¼, Section 23, T26N, R4W, Rio Arriba County, New Mexico. The release latitude and longitude were recorded as N36.47001 and W107.22734, respectively. A topographic site location map, based on the USGS 7.5-minute Schmitz Ranch, Rio Arriba County, New Mexico, topographic quadrangle (USGS 1963), is included as Figure 1. An aerial site map illustrating the general site layout and release location is presented as Figure 2.

1.2 Risk Ranking

The Jicarilla A Ridge Compressor Station is located on Jicarilla Apache Nation lands, and soil remediation action levels are determined by the Jicarilla Apache Nation Oil and Gas Administration (JANOGA).

604 W. Piñon St.
Farmington, NM 87401
505-564-2281
animasenvironmental.com

JANOGA action levels for soils for this site fall under the New Mexico Oil Conservation Division (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993). Per JANOGA, all locations within Jicarilla Apache Nation lands following these guidelines receive a ranking score of 20 with action levels as follows:

- 100 parts per million (ppm) volatile organic compounds (VOCs), or 10 mg/kg benzene and 50 mg/kg total benzene, toluene, ethylbenzene, and xylene (BTEX); and
- 100 mg/kg total petroleum hydrocarbons (TPH).

1.3 Surface and Groundwater

Approximately 170 feet to the west of the release area is an unnamed wash within Wild Horse Canyon. Based on elevation, topographic interpretation and previous site reconnaissance activities, depth to groundwater is estimated to be between 50 and 100 feet bgs.

1.4 Assessment and Mitigation, 2012 - 2017

1.4.1 2012 Assessment

In 2012, AES was contacted to conduct BGT closure sampling at the site for ConocoPhillips (COPC). During this sampling event, contaminant concentrations of VOCs, BTEX, and TPH exceeded action levels for BGT closures specified in New Mexico Administrative Code (NMAC) 19.15.17.13E. Based on field and laboratory data, a release was confirmed. Assessment activities included delineation of a recommended excavation area based on field results from four test holes around the release location.

1.4.2 2012 Excavation

During the week of August 12, 2012, COPC contractors excavated approximately 500 to 600 cubic yards of petroleum hydrocarbon impacted soil at the location. Excavation extents were approximately 36 feet by 28 feet by 15 feet in depth. At 15 feet bgs, laboratory analytical results for all four walls of the excavation were below JANOGA action levels; however, the base of the excavation exceeded JANOGA action levels for total BTEX and TPH.

Note that excavators working in Class C soils must slope the walls of the excavation so that for each 1 foot of trench depth, the ratio of slope measured from the trench edge at ground height must be 1 ½ to 1 (34˚). Therefore, benching the excavation was not considered a technically feasible option for Class C soils. The excavation was continued to 25 feet depth, and discrete sample SC-7 was collected. At 20 and 25 feet bgs, the walls of the excavation were unstable and slumping, and the excavation was halted because of imminent unsafe conditions.

1.4.3 2012 Geoprobe Investigation

Two additional soil borings were installed, SB-1 (August 2012) and SB-2 (September 2012) in order to determine vertical and potential lateral extent of contamination and further assess potential remediation system possibilities.

- SB-1 was advanced downgradient of the release location, and samples were collected from 20 to 50 feet bgs. All samples returned field and analytical results below JANOGA action levels.

- SB-2 was advanced in the center of the backfilled excavation extents down to 56.5 feet bgs. Laboratory analytical results reported BTEX and total TPH concentrations above JANOGA action levels from 30 to 31.5 feet bgs.

For a complete description of site activities and recommendations for all work conducted in 2012, please refer to the *COPC Jicarilla A Ridge SVE Workplan* dated October 25, 1012.

1.4.4 Mitigation 2013 to 2015

On August 16, 2013, on behalf of COPC, AES submitted a Notice of Intent letter to Bryce Hammond of Jicarilla Apache Oil and Gas indicating that an SVE remediation unit was to be put into service on August 21, 2013. The Geotech SVE system consisted of a skid-mounted remediation system with an electric vacuum pump and 65-gallon granular activated carbon (GAC) vapor emissions polisher with four passive air inlet wells and two extraction wells (spanning two different depth intervals). The system had an estimated radius of influence of approximately 20 feet assuming an applied vacuum of 40 in-H_2O. The system ran from August 21, 2013, to May 21, 2015.

1.4.5 Confirmation Soil Sampling Results – July 2015

On July 20, 2015, post remediation sampling was conducted by AES within the extents of the former excavation (at the center and along the perimeter of excavation). Borings were advanced up to 44 feet bgs utilizing a Geoprobe with a hollow stem assembly; groundwater was not observed or encountered. Samples from each boring were collected at similar intervals to 2012 samples, and all soil samples were field screened for VOCs. Selected soil samples were submitted for confirmation laboratory analysis.

Laboratory analytical results reported concentrations of benzene and BTEX below laboratory detection limits or well below JANOGA action levels in all samples. In contrast, total TPH concentrations remained above JANOGA action levels of 100 mg/kg in two zones between two soil borings, SB-3 and SB-7.

- SB-3 (located on the southwest edge of the previously determined extent of contamination) soil samples from 27 to 28 feet bgs were above JANOGA action

levels, with 1,380 mg/kg TPH. Deeper soil samples were below laboratory detection limits.

- SB-7 soil samples from 23 to 31 feet were above JANOGA action levels, with the highest TPH reported from 30 to 31 feet bgs at 406 mg/kg. All soil samples below this interval were reported below detection limit.

1.4.6 Contaminant Mass Reductions (2015)

Based on analytical results, the minor residual areas of petroleum hydrocarbons remained at the site.

- Approximately 80 cubic yards of petroleum impacted soils calculated to remain in 2015, compared to 610 cubic yards remaining in 2012 (an 87 percent reduction in the volume of contaminated soils).
- 99.9 percent reduction of benzene, 99.8 percent reduction of BTEX, and 89 percent reduction of TPH concentrations.
- 3,218 lbs of hydrocarbons were removed from the location as a result of the SVE mechanical remediation system.

For a complete description of site activities and recommendations for all work conducted in 2015, please refer to the *Post Remediation Soil Confirmation Sampling Report* dated January 28, 2016.

1.4.7 2016 Remediation Optimization

Based on the results of the 2015 confirmation soil sampling, the SVE system was reactivated with optimization measures implemented, including:

- Closing off of passive air intake biovent wells, V-1 and V-4;
- Converting biovent wells V-2 and V-3 into active SVE wells by connecting these wells to the SVE vacuum pump; and
- Continuing vacuum extraction through SVE-1.

The modified system ran its final operations from September 2016 through August 2017. Figure 3 shows the layout of the modified system and its operational notes.

2.0 Confirmation Soil Sampling Results – January 2019

Hilcorp and AES met with JANOGA in January 2019 to discuss site status. Subsequent to the meeting, additional post remediation sampling was conducted by AES on January 31, 2019, at the locations of 2015 sampling which showed concentrations above JANOGA action levels. AES collected five soil samples from two soil borings (SB-8 and SB-9) which were advanced to 32 feet and 28 feet bgs, respectively, utilizing a Mobile B-55 hollow stem auger

drilling rig. Samples from each boring were collected at similar intervals to previous samples, and all soil samples were field screened for VOCs. Selected soil samples were then submitted for confirmation laboratory analysis. Soil sample locations and results are included on Figure 4.

2.1 Field Sampling - Volatile Organic Compounds

Portions of SB-8 and SB-9 were utilized for field screening of VOC vapors with a photo-ionization detector (PID) organic vapor meter (OVM). Before beginning field screening, the PID-OVM was first calibrated with 100 parts per million (ppm) isobutylene gas.

2.2 Laboratory Analyses

All soil samples collected for laboratory analysis were placed into a new, clean, laboratory-supplied containers, which were then labeled, placed on ice, and logged onto a sample chain of custody record. The samples were maintained on ice until delivery to the analytical laboratory, Pace Analytical (Pace), in Mount Juliet, Tennessee. All soil samples were laboratory analyzed for:

- BTEX per U.S. Environmental Protection Agency (USEPA) Method 8021B; and
- TPH (as gasoline range organics (GRO) and diesel range organics (DRO)) per USEPA Method 8015.

2.3 Confirmation Field and Laboratory Analytical Results

For the January 2019 confirmation sampling, field screening readings for VOCs via OVM ranged from 0.2 ppm in SB-8 at 25 feet bgs up to 93.8 ppm in SB-8 at 30 feet bgs. Field sampling results are presented on Figure 4.

Laboratory analytical results for benzene were reported below detection limits in SB-8 at 25 feet bgs and 32 feet bgs, and up to 0.000822 mg/kg in SB-8 at 30 feet bgs. Total BTEX concentrations ranged from less than 0.0075 mg/kg in SB-8 at 25 feet bgs and 32 feet bgs, up to 0.00816 mg/kg in SB-8 at 30 feet bgs. Total TPH concentrations were reported at less than 4.1 mg/kg in SB-8 at 32 feet bgs and SB-9 at 28 feet bgs, up to 277.2 mg/kg in SB-8 at 30 feet bgs. Laboratory analytical results are summarized in Table 1 and included on Figure 4. An updated geological cross section is included as Figure 5. The laboratory analytical report is attached.

Table 1. Soil Laboratory Analytical Results – Benzene, Total BTEX, and TPH
Jicarilla A Ridge Compressor Closure Sampling, January 2019

Sample ID	Date Sampled	Depth (ft)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH – GRO (mg/kg)	TPH – DRO (mg/kg)
*JANOGA Action Level**			*10*	*50*	*100*	
SB-8	1/31/19	25	<0.0005	<0.0075	<0.100	19.1
		30	0.000822	0.00816	**0.167**	**277**
		32	<0.0005	<0.0075	<0.100	<4.0
SB-9	1/31/19	28	0.000677	0.00768	<0.100	<4.0

*Site action level determined by JANOGA (Ref. NMOCD ranking score of 20 per NMOCD Guidelines for Remediation of Leaks, Spills, and Releases (August 1993)).

3.0 Conclusions and Recommendations

Remedial efforts completed at the Jicarilla A Ridge compressor site based on the 2012 release include:

1. Excavation and removal of source soils in 2012;
2. Installation of SB-1 and SB-2/SVE-1 in September 2012;
3. Installation and operations of an SVE system from 2013 to 2015;
4. Soil confirmation sampling (SB-3 through SB-7) in July 2015;
5. Optimization of SVE operations from September 2016 to August 2017; and
6. Final soil confirmation sampling (SB-8 and SB-9) in January 2019.

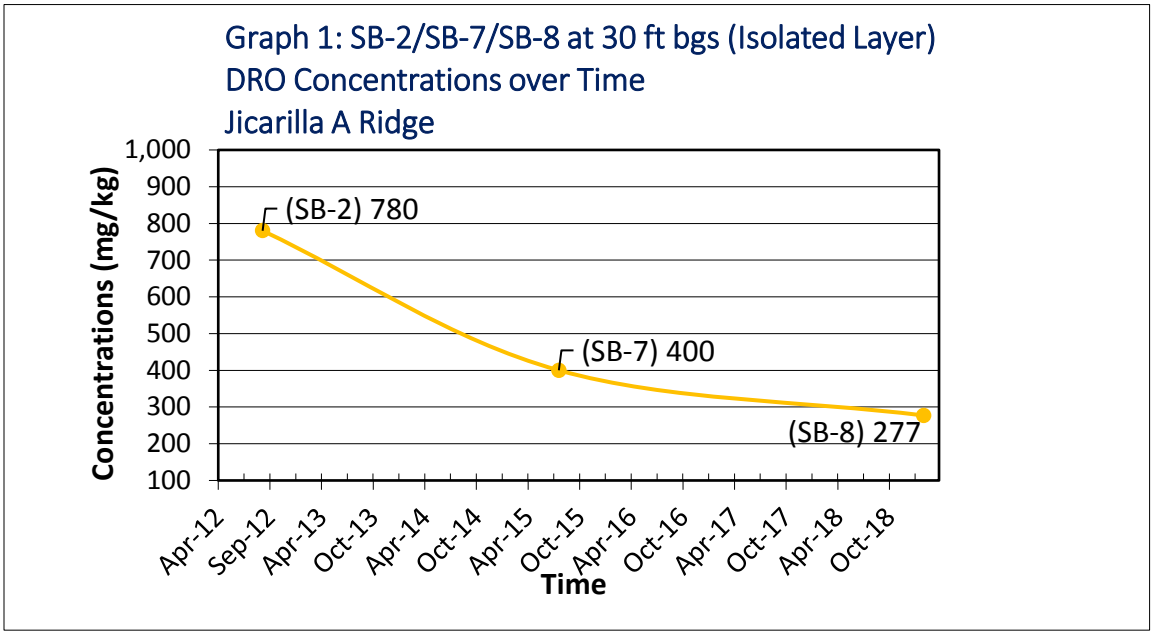
Laboratory analytical results from January 2019 showed benzene and total BTEX concentrations below laboratory detection limits or well below JANOGA action levels in all samples analyzed. Total TPH concentrations (as DRO) remained above JANOGA action levels of 100 mg/kg in one interval in SB-8 at 30 ft bgs, with 277 mg/kg TPH. However, laboratory analytical results collected immediately below this interval, at 32 ft bgs in SB-8 showed TPH concentrations below laboratory detection limits.

3.1 Reduction of Remaining Petroleum Hydrocarbon Contaminants

SB-2/SVE-1, SB-7 and SB-8 are all located in the center of the previously existing containment berm and show slightly elevated DRO concentration above the JANOGA action level in a thin isolated layer at about 30 ft bgs. Analytical results from these three borings show:

- **SB-2 (2012)** at 30 ft bgs show initial (*pre-remediation*) concentrations of 193 mg/kg total BTEX, 2900 mg/kg TPH-GRO and 780 mg/kg TPH-DRO;
- **SB-7 (2015)** at 30 ft bgs had 6.1 mg/kg TPH-GRO and 400 mg/kg TPH-DRO; and
- **SB-8 (2019)** at 30 ft bgs had 277 mg/kg TPH-DRO.

Total BTEX and TPH-GRO concentrations were successfully mitigated through SVE and bioventing operations. However, although concentrations decreased, TPH-DRO remains slightly above the JANOGA action level.



The deeper intervals in SB-7 at 35 to 36 ft, 39 to 40 ft, and 43 to 44 ft bgs; and in SB-8 at 32 ft bgs have been shown to be below laboratory detection limits for benzene, total BTEX, and TPH-GRO and TPH-DRO in 2015 and 2019. Therefore, AES believes this thin isolated interval is residual only, and not connected above with a source area and does not extend further in a vertical direction. The contaminants in this residual interval are decreasing with time, are less likely to be mobile than TPH-GRO, and do not appear to have migrated vertically (as evidenced by the clean zones below).

3.2 Recommendations

Due to the attenuating concentrations and lack of vertical migration potential of residual contaminants at 30 ft bgs in SB-8 and the presence of clean intervals below 30 ft in SB-8, and due to low risk to human health or the environment, AES recommends this site be eligible for consideration of No Further Action status.

If you have any questions regarding site conditions or this report, please do not hesitate to contact Elizabeth McNally at (505) 564-2281.

Sincerely,

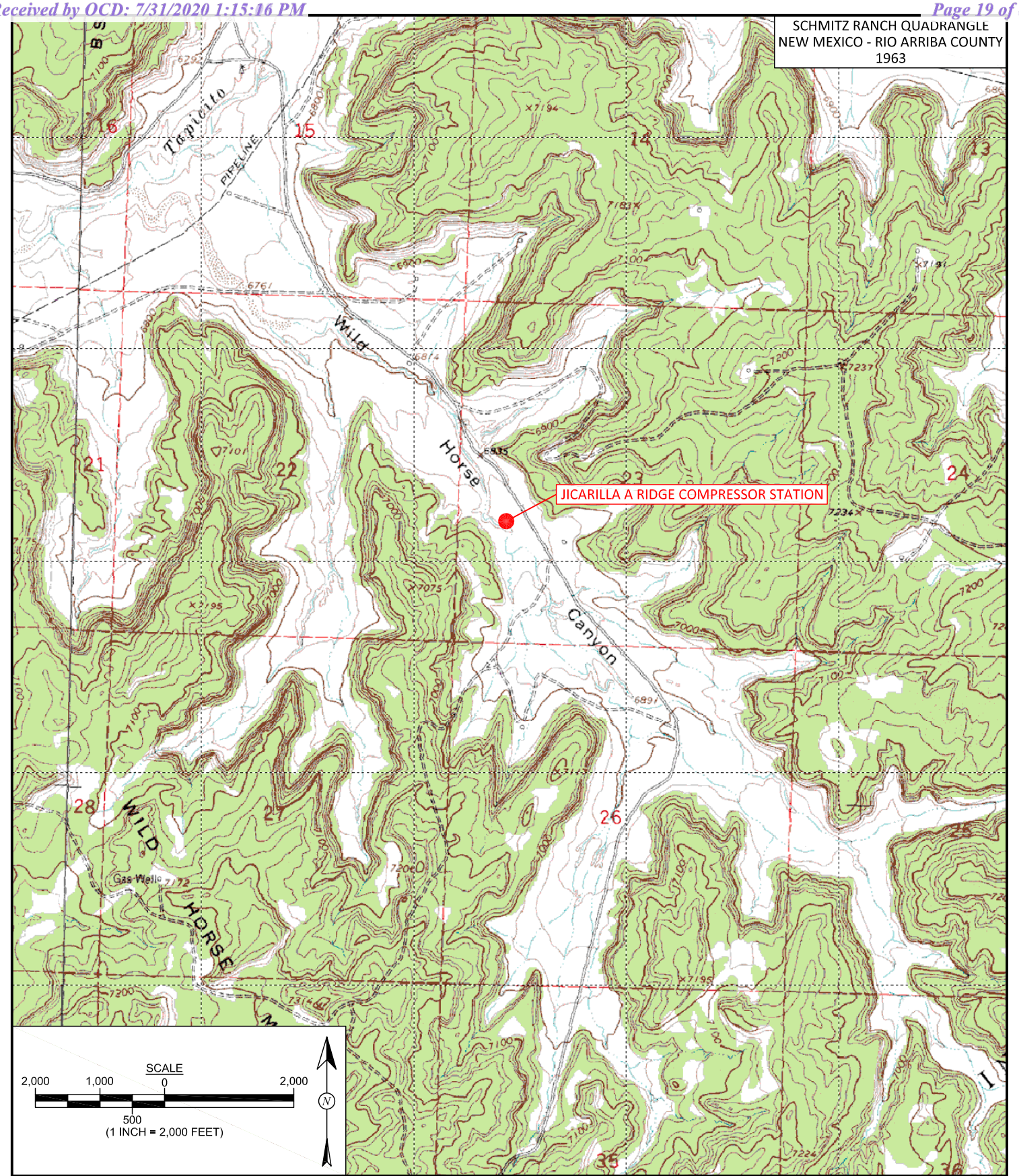
David J. Reese
Environmental Scientist

Elizabeth McNally, P.E.

Attachments

Figure 1. Topographic Site Location Map
Figure 2. Aerial Site Map, January 2019
Figure 3. Optimized Remedial Operations 2016
Figure 4. Geoprobe Sample Locations and Results, January 2019
Figure 5. Geologic Cross Section and TPH Results, January 2019
Soil Boring Logs – SB-8 and SB-9
Pace Analytical Report L1066282

\\SVRMAIN2\Shared\2019 Client Projects\Hilcorp\Jicarilla A Ridge\Report\Soil Confirmation Report 021819 DR3 EM2.docx



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REVISIONS BY: C. Lameman	**DATE REVISED:** February 18, 2019
CHECKED BY: E. McNally	**DATE CHECKED:** February 18, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** February 18, 2019

FIGURE 1

TOPOGRAPHIC SITE LOCATION MAP
HILCORP
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734

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CHECKED BY: E. McNally	**DATE CHECKED:** February 18, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** February 18, 2019

FIGURE 2

AERIAL SITE MAP
HILCORP
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734

FIGURE 3

OPTIMIZED REMEDIAL OPERATIONS 2016
HILCORP
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734

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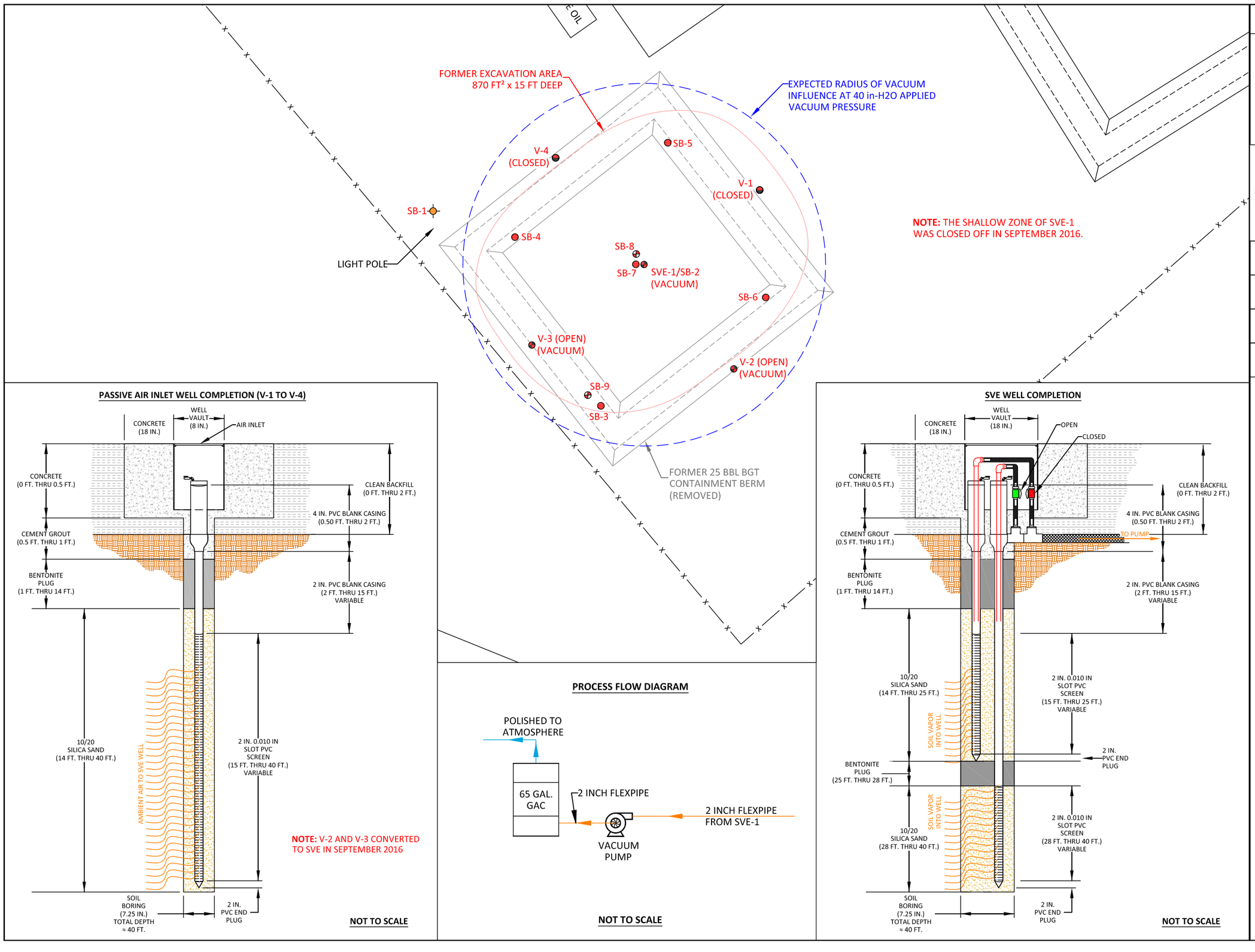
E. McNally	February 15, 2019



PASSIVE AIR INLET WELL COMPLETION (V-1 TO V-4)

NOTE: V-2 AND V-3 CONVERTED TO SVE IN SEPTEMBER 2016

NOT TO SCALE

PROCESS FLOW DIAGRAM

NOT TO SCALE

SVE WELL COMPLETION

NOT TO SCALE

LEGEND

- VENT WELL
- SVE WELL
- SOIL BORING LOCATION (2012)
- SOIL BORING LOCATION (2015)
- SOIL BORING LOCATION (2019)

NOTE: BASED ON THE RESULTS OF THE 2015 CONFIRMATION SOIL SAMPLING, THE SVE SYSTEM WAS REACTIVATED WITH OPTIMIZATION MEASURES, INCLUDING:

- CLOSING OFF OF PASSIVE AIR INTAKE BIOVENT WELLS, V-1 AND V-4;
- CONVERTING BIOVENT WELLS V-2 AND V-3 INTO ACTIVE SVE WELLS BY CONNECTING THESE WELLS TO THE SVE VACUUM PUMP; AND
- CONTINUING VACUUM EXTRACTION THROUGH SVE-1.

THE MODIFIED SYSTEM RAN ITS FINAL OPERATIONS FROM SEPTEMBER 2016 THROUGH AUGUST 2017. FIGURE 3 SHOWS THE LAYOUT OF THE MODIFIED SYSTEM AND ITS OPERATIONAL NOTES.

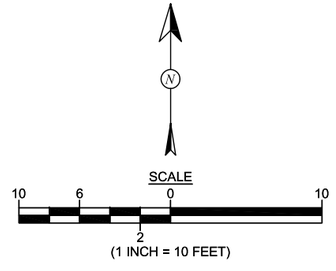


FIGURE 4

SOIL BORING SAMPLE LOCATIONS AND RESULTS
HILCORP
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734

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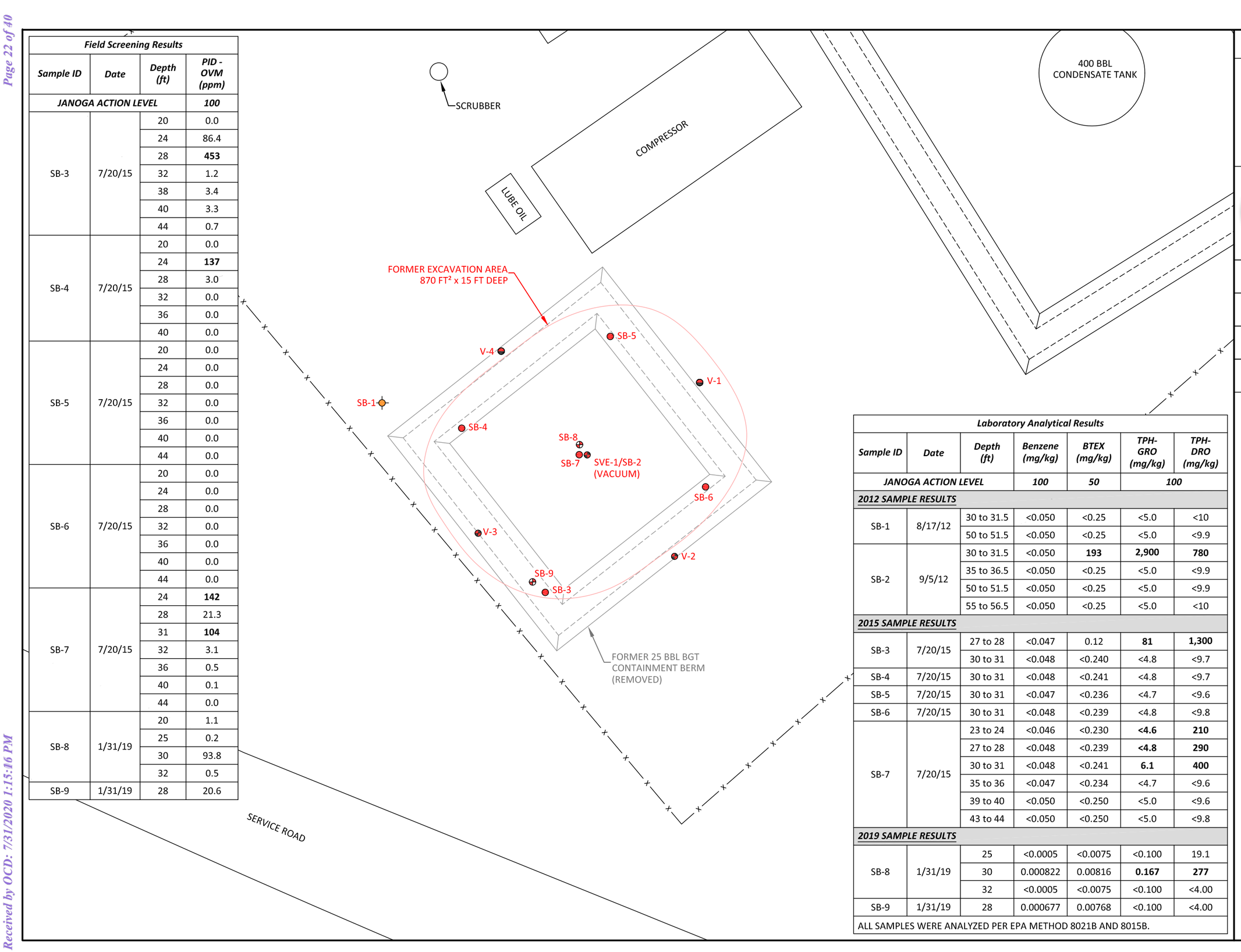
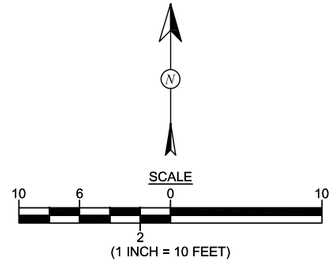
CHECKED BY:	**DATE CHECKED:**
E. McNally	February 15, 2019
APPROVED BY:	**DATE APPROVED:**
E. McNally	February 15, 2019

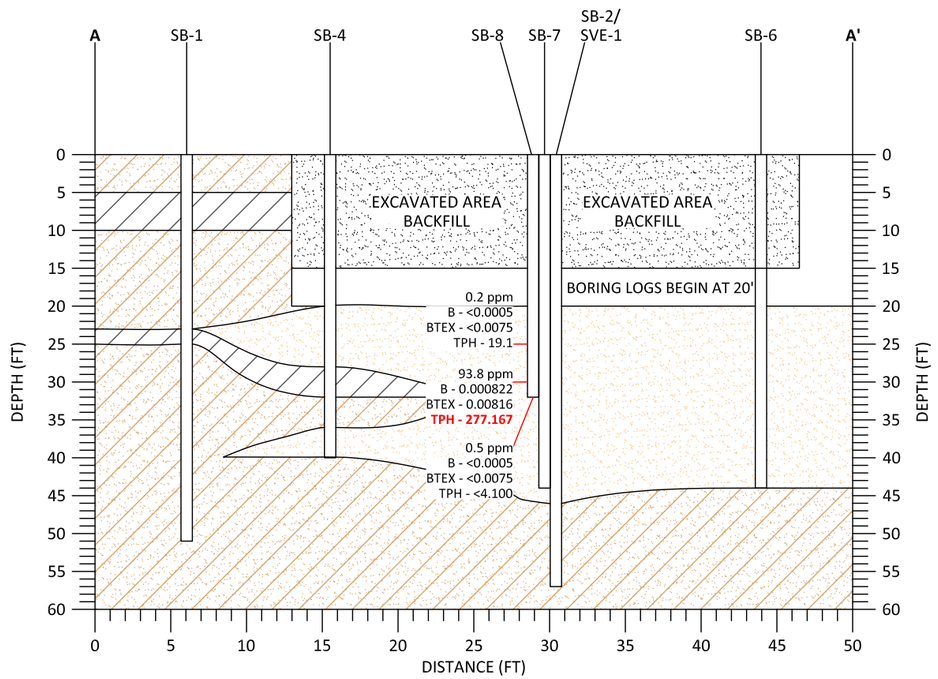
LEGEND
- VENT WELL
- SVE WELL
- SOIL BORING LOCATION (2012)
- SOIL BORING LOCATION (2015)
- SOIL BORING LOCATION (2019)

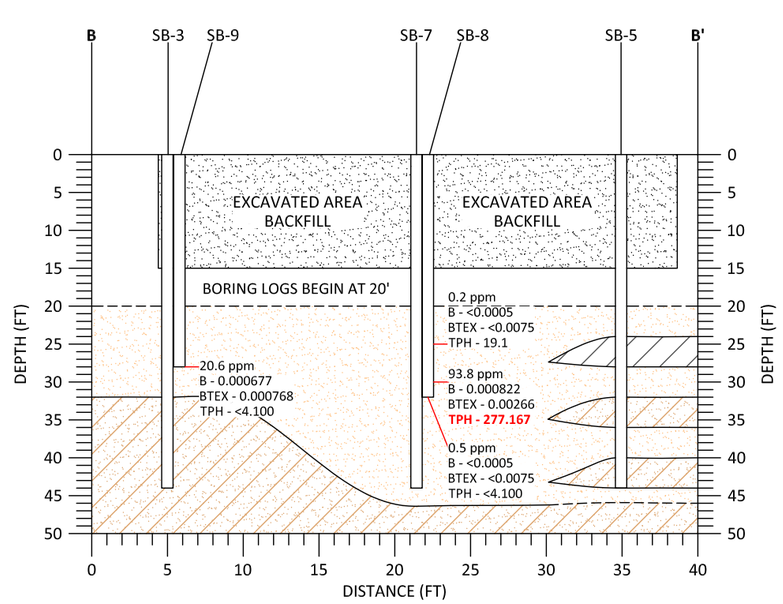


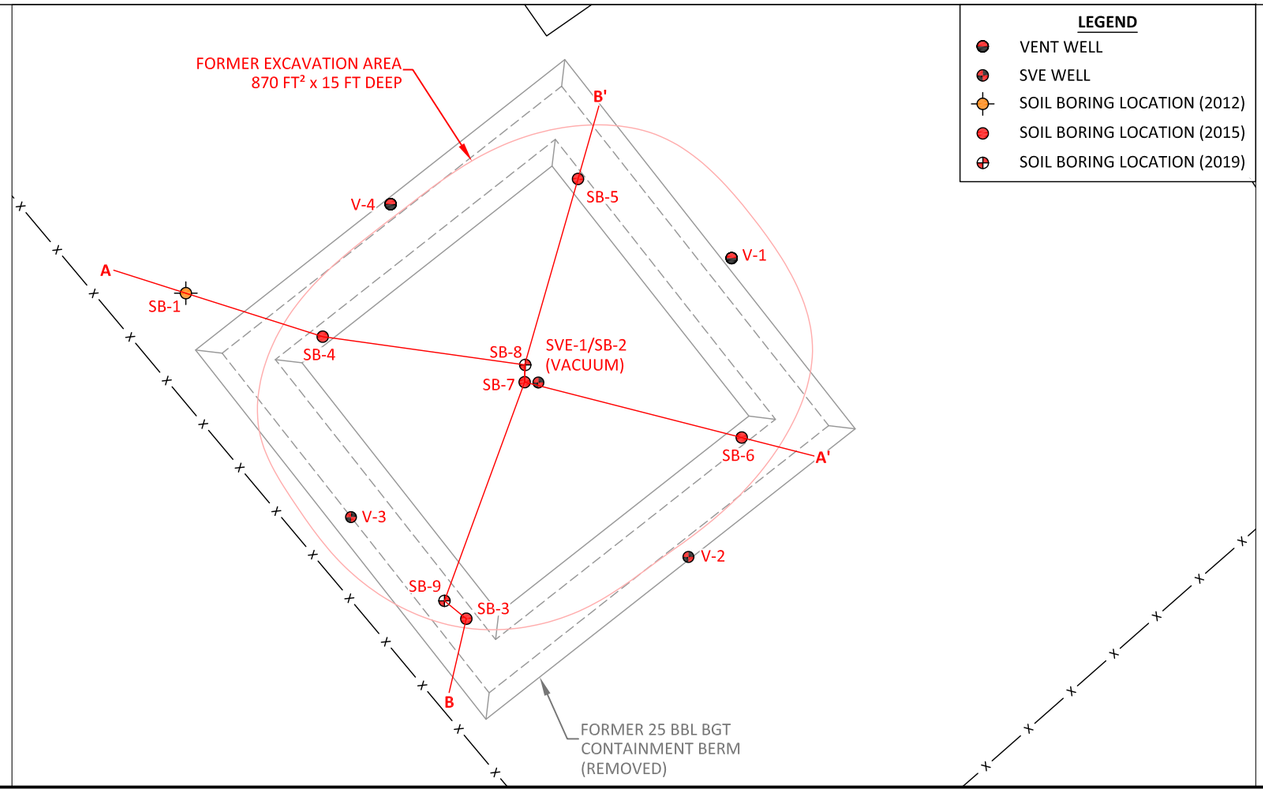
Field Screening Results			
Sample ID	**Date**	**Depth (ft)**	**PID - OVM (ppm)**
JANOGA ACTION LEVEL			***100***
SB-3	7/20/15	20	0.0
		24	86.4
		28	**453**
		32	1.2
		38	3.4
		40	3.3
		44	0.7
SB-4	7/20/15	20	0.0
		24	**137**
		28	3.0
		32	0.0
		36	0.0
		40	0.0
SB-5	7/20/15	20	0.0
		24	0.0
		28	0.0
		32	0.0
		36	0.0
		40	0.0
		44	0.0
SB-6	7/20/15	20	0.0
		24	0.0
		28	0.0
		32	0.0
		36	0.0
		40	0.0
		44	0.0
SB-7	7/20/15	24	**142**
		28	21.3
		31	**104**
		32	3.1
		36	0.5
		40	0.1
		44	0.0
SB-8	1/31/19	20	1.1
		25	0.2
		30	93.8
		32	0.5
SB-9	1/31/19	28	20.6

Laboratory Analytical Results						
Sample ID	**Date**	**Depth (ft)**	**Benzene (mg/kg)**	**BTEX (mg/kg)**	**TPH-GRO (mg/kg)**	**TPH-DRO (mg/kg)**
JANOGA ACTION LEVEL			***100***	***50***	***100***	
2012 SAMPLE RESULTS						
SB-1	8/17/12	30 to 31.5	<0.050	<0.25	<5.0	<10
		50 to 51.5	<0.050	<0.25	<5.0	<9.9
SB-2	9/5/12	30 to 31.5	<0.050	**193**	**2,900**	**780**
		35 to 36.5	<0.050	<0.25	<5.0	<9.9
		50 to 51.5	<0.050	<0.25	<5.0	<9.9
		55 to 56.5	<0.050	<0.25	<5.0	<10
2015 SAMPLE RESULTS						
SB-3	7/20/15	27 to 28	<0.047	0.12	**81**	**1,300**
		30 to 31	<0.048	<0.240	<4.8	<9.7
SB-4	7/20/15	30 to 31	<0.048	<0.241	<4.8	<9.7
SB-5	7/20/15	30 to 31	<0.047	<0.236	<4.7	<9.6
SB-6	7/20/15	30 to 31	<0.048	<0.239	<4.8	<9.8
SB-7	7/20/15	23 to 24	<0.046	<0.230	**<4.6**	**210**
		27 to 28	<0.048	<0.239	**<4.8**	**290**
		30 to 31	<0.048	<0.241	**6.1**	**400**
		35 to 36	<0.047	<0.234	<4.7	<9.6
		39 to 40	<0.050	<0.250	<5.0	<9.6
		43 to 44	<0.050	<0.250	<5.0	<9.8
2019 SAMPLE RESULTS						
SB-8	1/31/19	25	<0.0005	<0.0075	<0.100	19.1
		30	0.000822	0.00816	**0.167**	**277**
		32	<0.0005	<0.0075	<0.100	<4.00
SB-9	1/31/19	28	0.000677	0.00768	<0.100	<4.00
ALL SAMPLES WERE ANALYZED PER EPA METHOD 8021B AND 8015B.						









LEGEND

- VENT WELL
- SVE WELL
- SOIL BORING LOCATION (2012)
- SOIL BORING LOCATION (2015)
- SOIL BORING LOCATION (2019)

FIGURE 5

GEOLOGIC CROSS SECTION
HILCORP
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734

animas environmental services
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DRAWN BY:	DATE DRAWN:
C. Lameman	February 15, 2019
REVISIONS BY:	**DATE REVISED:**
C. Lameman	February 15, 2019
CHECKED BY:	**DATE CHECKED:**
E. McNally	February 15, 2019
APPROVED BY:	**DATE APPROVED:**
E. McNally	February 15, 2019

LEGEND

- SAND
- CLAYEY SAND
- CLAY

NOTE: ALL LABORATORY ANALYTICAL RESULTS REPORTED IN mg/kg.

SCALE
10 6 0 10
2
(1 INCH = 10 FEET)

SOIL BORING LOG

Animas Environmental Services
604 W. Piñon St., Farmington, NM 87401
Tel. (505) 564-2281 animasenvironmental.com

Soil Boring No: 8
Monitor Well No: —
Project:
Client: Hilcorp
Location: Jicarilla A Ridge
Driller: GeoMat - Fernando Enriquez & Matt Rockett
Drilling Method: H.S.A and continuous
Depth to Water (ft): — Time Recorded: 11:05 - 12:31

Date: 1-31-19
Latitude/Longitude:
Datum:
Elevation:
Logged by: O. Lamerman
Total Depth (ft): 32

Depth (ft)	Sample Interval	Sample Type (SPT, Grab, etc)	Sample Time	Blow Count (per 3x6" intervals)	Soil Description TYPE, density/consistency, color, grain size, moisture, other (i.e. odor, staining)	USCS Symbol	OVM (ppm)	OVM Time	MW Schematic and Description
					Backfill				
20	20	Grab	11:47	—	20 to 25': Sand Very loose, Tan-Brown, ~~MG~~ Medium to Coarse Grain, Moist, non-plastic, noncohesive, No Odor, No Staining	SP	1.1	12:04	
25	25	Grab	11:48	—		SP	0.2	12:05	
25					25 to 26': Loose Sand, Brown, Fine Grain, Moist non-plastic, noncohesive, No Odor, No Staining	SP			
30	30	Grab	12:02	—	26 to 30': Loose Sand, TanBrown, Medium to Coarse Grain, Moist, non-plastic, noncohesive, Slight odor, no staining	SP	93.8	12:18	
30					30-31.5': ~~Sand~~ Sand, Loose, TanBrown, Medium to Coarse Grain, Moist, non-plastic, noncohesive no odor, no staining.	SP			
32	32	Grab	12:16	—	31.5'-32': Loose Sand, ~~Tan~~ Brown-Red, Medium to Coarse Grain, Moist, non-plastic, noncohesive, no odor, no stain.	SP	0.5	12:31	
					Total Depth @ 32 feet.				

August 3, 2015

SOIL BORING LOG

Animas Environmental Services
604 W. Piñon St., Farmington, NM 87401
Tel. (505) 564-2281 animasenvironmental.com

Soil Boring No: 9
Monitor Well No: —
Project: —
Client: HilCorp
Location: Jicarilla A Ridge
Driller: GeoMat - Fernando Enriquez & Matt Crockette
Drilling Method: H.S.A.
Depth to Water (ft): —
Time Recorded: 9:45 - 10:59

Date: 1-31-19
Latitude/Longitude:
Datum:
Elevation:
Logged by: C. Laverman
Total Depth (ft): 28

Depth (ft)	Sample Interval	Sample Type (SPT, Grab, etc)	Sample Time	Blow Count (per 3x6" intervals)	Soil Description TYPE, density/consistency, color, grain size, moisture, other (i.e. odor, staining)	USCS Symbol	OVM (ppm)	OVM Time	MW Schematic and Description
					Sample Collection @ 28				
	28	Grab	10:41	3,5,6	Sand Loose, Brown, Medium to Coarse Grained, moist, non-plastic, noncohesive, No Odor No Staining	SP	20.6	10:59	
					Total Depth @ 28'				

August 3, 2015

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 07, 2019

HilCorp-Farmington, NM

Sample Delivery Group:	L1066282
Samples Received:	02/02/2019
Project Number:	
Description:	Hilcorp Jicarilla A Ridge

Report To: Lindsay Dumas
382 Road 3100
Aztec, NM 87401

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

SB-8 @ 25' L1066282-01 Solid

Collected by: Corwin Lameman
Collected date/time: 01/31/19 11:48
Received date/time: 02/02/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1232612	1	02/05/19 13:33	02/05/19 15:42	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1232180	1	02/04/19 07:46	02/04/19 15:51	KME

SB-8 @ 30' L1066282-02 Solid

Collected by: Corwin Lameman
Collected date/time: 01/31/19 12:02
Received date/time: 02/02/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1232612	1	02/05/19 13:33	02/05/19 16:03	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1232180	1	02/04/19 07:46	02/04/19 16:07	KME

SB-8 @ 32' L1066282-03 Solid

Collected by: Corwin Lameman
Collected date/time: 01/31/19 12:16
Received date/time: 02/02/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1232612	1	02/05/19 13:33	02/05/19 16:25	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1232180	1	02/04/19 07:46	02/04/19 15:17	KME

SB-9 @ 28' L1066282-04 Solid

Collected by: Corwin Lameman
Collected date/time: 01/31/19 10:41
Received date/time: 02/02/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1232612	1	02/05/19 13:33	02/05/19 16:47	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1232180	1	02/04/19 07:46	02/04/19 15:34	KME

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	02/05/2019 15:42	WG1232612
Toluene	ND		0.00500	1	02/05/2019 15:42	WG1232612
Ethylbenzene	ND		0.000500	1	02/05/2019 15:42	WG1232612
Total Xylene	ND		0.00150	1	02/05/2019 15:42	WG1232612
TPH (GC/FID) Low Fraction	ND		0.100	1	02/05/2019 15:42	WG1232612
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*02/05/2019 15:42*	WG1232612
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*72.0-128*		*02/05/2019 15:42*	WG1232612

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	19.1		4.00	1	02/04/2019 15:51	WG1232180
C28-C40 Oil Range	30.3		4.00	1	02/04/2019 15:51	WG1232180
(S) o-Terphenyl	*69.4*		*18.0-148*		*02/04/2019 15:51*	WG1232180

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000822		0.000500	1	02/05/2019 16:03	WG1232612
Toluene	ND		0.00500	1	02/05/2019 16:03	WG1232612
Ethylbenzene	ND		0.000500	1	02/05/2019 16:03	WG1232612
Total Xylene	0.00184	B	0.00150	1	02/05/2019 16:03	WG1232612
TPH (GC/FID) Low Fraction	0.167		0.100	1	02/05/2019 16:03	WG1232612
(S) a,a,a-Trifluorotoluene(FID)	*99.7*		*77.0-120*		*02/05/2019 16:03*	WG1232612
(S) a,a,a-Trifluorotoluene(PID)	*93.1*		*72.0-128*		*02/05/2019 16:03*	WG1232612

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	277		4.00	1	02/04/2019 16:07	WG1232180
C28-C40 Oil Range	189		4.00	1	02/04/2019 16:07	WG1232180
(S) o-Terphenyl	*111*		*18.0-148*		*02/04/2019 16:07*	WG1232180

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	02/05/2019 16:25	WG1232612
Toluene	ND		0.00500	1	02/05/2019 16:25	WG1232612
Ethylbenzene	ND		0.000500	1	02/05/2019 16:25	WG1232612
Total Xylene	ND		0.00150	1	02/05/2019 16:25	WG1232612
TPH (GC/FID) Low Fraction	ND		0.100	1	02/05/2019 16:25	WG1232612
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*02/05/2019 16:25*	WG1232612
(S) a,a,a-Trifluorotoluene(PID)	*93.9*		*72.0-128*		*02/05/2019 16:25*	WG1232612

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	02/04/2019 15:17	WG1232180
C28-C40 Oil Range	ND		4.00	1	02/04/2019 15:17	WG1232180
(S) o-Terphenyl	*62.5*		*18.0-148*		*02/04/2019 15:17*	WG1232180

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000677		0.000500	1	02/05/2019 16:47	WG1232612
Toluene	ND		0.00500	1	02/05/2019 16:47	WG1232612
Ethylbenzene	ND		0.000500	1	02/05/2019 16:47	WG1232612
Total Xylene	ND	J6	0.00150	1	02/05/2019 16:47	WG1232612
TPH (GC/FID) Low Fraction	ND	J3	0.100	1	02/05/2019 16:47	WG1232612
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*02/05/2019 16:47*	WG1232612
(S) a,a,a-Trifluorotoluene(PID)	*92.8*		*72.0-128*		*02/05/2019 16:47*	WG1232612

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	02/04/2019 15:34	WG1232180
C28-C40 Oil Range	ND		4.00	1	02/04/2019 15:34	WG1232180
(S) o-Terphenyl	*67.9*		*18.0-148*		*02/04/2019 15:34*	WG1232180

Method Blank (MB)

(MB) R3381374-4 02/05/19 11:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000710	J	0.000150	0.00500
Ethylbenzene	0.000151	J	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*104*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*97.7*			*72.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3381374-1 02/05/19 09:19 • (LCSD) R3381374-2 02/05/19 09:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0466	0.0466	93.3	93.1	76.0-121			0.133	20
Toluene	0.0500	0.0466	0.0463	93.2	92.7	80.0-120			0.535	20
Ethylbenzene	0.0500	0.0469	0.0465	93.8	93.0	80.0-124			0.922	20
Total Xylene	0.150	0.138	0.136	91.9	90.5	37.0-160			1.54	20
(S) a,a,a-Trifluorotoluene(FID)				*104*	*106*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*103*	*104*	*72.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3381374-5 02/05/19 11:52 • (LCSD) R3381374-3 02/05/19 10:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.21	6.23	113	113	72.0-127			0.228	20
(S) a,a,a-Trifluorotoluene(FID)				*101*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*112*	*112*	*72.0-128*				

L1066282-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1066282-04 02/05/19 16:47 • (MS) R3381374-6 02/05/19 18:14 • (MSD) R3381374-7 02/05/19 18:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.000677	0.0371	0.0429	72.8	84.4	1	10.0-155			14.6	32
Toluene	0.0500	ND	0.0345	0.0420	67.9	82.9	1	10.0-160			19.6	34
Ethylbenzene	0.0500	ND	0.0316	0.0405	63.0	80.8	1	10.0-160			24.7	32
Total Xylene	0.150	ND	0.0925	0.119	61.7	79.5	1	10.0-160	J6		25.3	32
(S) a,a,a-Trifluorotoluene(FID)					*100*	*101*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*98.4*	*98.9*		*72.0-128*				

L1066282-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1066282-04 02/05/19 16:47 • (MS) R3381374-8 02/05/19 18:58 • (MSD) R3381374-9 02/05/19 19:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	3.11	2.20	56.6	40.1	1	10.0-151		J3	34.2	28
(S) a,a,a-Trifluorotoluene(FID)					*101*	*101*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*103*	*102*		*72.0-128*				

Method Blank (MB)

(MB) R3381180-1 02/04/19 14:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*62.0*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3381180-2 02/04/19 14:44 • (LCSD) R3381180-3 02/04/19 15:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Extractable Petroleum Hydrocarbon	50.0	29.0	27.2	58.0	54.4	50.0-150			6.41	20
C10-C28 Diesel Range	50.0	30.6	28.4	61.2	56.8	50.0-150			7.46	20
(S) o-Terphenyl				*72.5*	*68.9*	*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

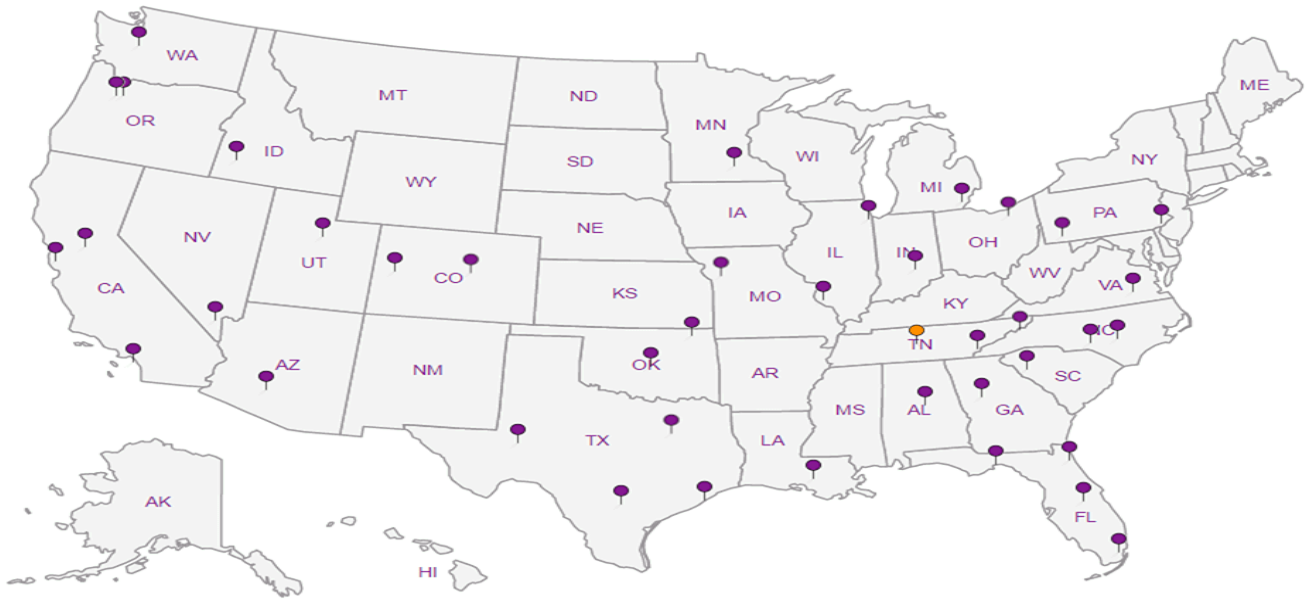
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Billing Information: **Bill to Hilcorp - CALL LINDSAY DUMAS**

Report to: **Lindsay Dumas**

Email To: **ldumas@hilcorp.com**

Project Description: **Hilcorp Jicarilla A Ridge**

City/State Collected: **New Mexico**

Phone: **832-839-4585** Fax:

Client Project #

Lab Project #

Collected by (print): **Corwin Lameman**

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
X Three Day

Quote #

Date Results Needed: **February 6, 2019**

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX - 8021	TPH (GRO/DRO) - 8015	Remarks	Sample # (lab only)
SB-8 @ 25 feet	Grab	SS	25	1/31/19	11:48	2	X	X		-01
SB-8 @ 30 feet	Grab	SS	30	1/31/19	12:02	2	X	X		02
SB-8 @ 32 feet	Grab	SS	32	1/31/19	12:16	2	X	X		03
SB-9 @ 28 feet	Grab	SS	28	1/31/19	10:41	2	X	X		04

Chain of Custody Page 1 of 1

ESC LAB SCIENCES

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1066282

Tab E184

Acct.

Template:

Prelogin:

TSR:

PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
Email results to Elizabeth McNally - emcnally@animasenvironmental.com

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__UPS __FedEx __Courier __ _____

Tracking # 7305 8947 5113

Sample Receipt Checklist
COC Seal Present/Intact: __NP Y __N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2-1-19	12:00	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / (No) HCL / MeoH TBR

Temp: 0.7+0.2 °C Bottles Received: 8 4oz

Date: 2/2/19 Time: 0830

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 9472
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Closure accepted for the record based on Jicarilla EPO approval.	3/7/2023