

**NM2 - \_\_\_\_\_10\_\_\_\_\_**

**OCD Approved/Closed  
C-141 for the July 15,  
2022 Vadose Zone  
Release Notification**

**March 11, 2022**

## Jones, Brad, EMNRD

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**From:** Stuart Hyde <shyde@ensolum.com>  
**Sent:** Tuesday, November 8, 2022 2:54 PM  
**To:** Jones, Brad, EMNRD  
**Cc:** Devin Hencmann  
**Subject:** [EXTERNAL] Bisti Landfarm Closed C-141  
**Attachments:** nrm2019558816\_03\_11\_2022\_C-141 Closure Approval.pdf

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

Brad,

Link to C-141 incident.

[OCD Online: Imaging \(nm.gov\)](#)



**Stuart Hyde, LG**

Senior Geologist

970-903-1607

Ensolum, LLC

in f 

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	NRM2019558816
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party: Western Refining Southwest, Inc.	OGRID: N/A
Contact Name: Greg McCartney	Contact Telephone: 419-310-4888
Contact email: <a href="mailto:gimccartney@marathonpetroleum.com">gimccartney@marathonpetroleum.com</a>	Incident # (assigned by OCD)
Contact mailing address: 539 S Main Street, Room M-7081	Findlay, OH 45840

### Location of Release Source

Latitude 36.402015 Longitude -108.116614  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Bisti Landfarm	Site Type: Centralized Surface Waste Management Facility
Date Release Discovered: June 15, 2020	API# (if applicable) Landfarm Permit NM-2-0010

Unit Letter	Section	Township	Range	County
I	16	25N	12W	San Juan

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (Name: Western Refining Southwest, Inc.)

### Nature and Volume of Release

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

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

#### Cause of Release:

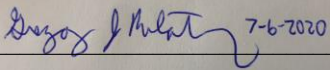
Elevated concentrations of chloride have been detected in soil at the Bisti Landfarm beneath the treatment zone at depths of approximately 4 feet below ground surface (bgs). Impacted soil (non-exempt, non-hazardous) originating from operations at pipelines, crude storage stations, and refineries waste was disposed of at the NMOCD permitted centralized surface waste management facility for remediation by landfarming between 1998 and 2004. In addition, with prior NMOCD approval, process wastewater evaporation pond sludge containing elevated chloride concentrations was brought to the landfarm in 2004. One soil sample from this waste stream was analyzed and contained a chloride concentration of 1,100 milligrams per kilogram (mg/kg). Regular vadose zone monitoring at the landfarm facility has indicated that chloride is present in subsurface soils.

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<p>Was this a major release as defined by 19.15.29.7(A) NMAC?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>If YES, for what reason(s) does the responsible party consider this a major release?</p>
<p>If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?</p>	

## Initial Response

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

<p><input checked="" type="checkbox"/> The source of the release has been stopped.</p> <p><input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment.</p> <p><input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.</p> <p><input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.</p>	
<p>If all the actions described above have <u>not</u> been undertaken, explain why:</p>    	
<p>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.</p>	
<p>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.</p>	
<p>Printed Name: <u>Greg McCartney</u></p> <p>Signature:  <u>7-6-2020</u></p> <p>email: <u><a href="mailto:gjmccartney@marathonpetroleum.com">gjmccartney@marathonpetroleum.com</a></u></p>	<p>Title: <u>Senior Environmental Professional</u></p> <p>Date: <u>7/6/2020</u></p> <p>Telephone: <u>419-310-4888</u></p>
<p><b><u>OCD Only</u></b></p> <p>Received by: _____ Date: _____</p>	



State of New Mexico  
Oil Conservation Division

Incident ID	NRM2019558816
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**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?	<u>&gt;200</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.**

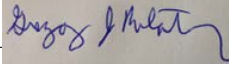
- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile 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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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: Greg McCartney Title: Senior Environmental Professional  
Signature:  Date: 10/29/2020  
email: gjmccartney@marathonpetroleum.com Telephone: 419-310-4888

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

State of New Mexico  
Oil Conservation Division

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## Remediation Plan

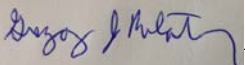
**Remediation Plan Checklist:** *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only:** *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Greg McCartney Title: Senior Environmental Professional  
Signature:  Date: 10/29/2020  
email: gjmccartney@marathonpetroleum.com Telephone: 419-310-4888

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

State of New Mexico  
Oil Conservation Division

Incident ID	NRM2019558816
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## Closure

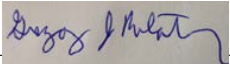
The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled 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: Greg McCartney Title: Senior Environmental Professional

Signature:  Date: 10/29/2020

email: gjmccartney@marathonpetroleum.com Telephone: 419-310-4888

### OCD Only

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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

Closure Approved by: Nelson Velez Date: 03/11/2022

Printed Name: Nelson Velez Title: Environmental Specialist - Adv



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# ***SITE CHARACTERIZATION REPORT AND VARIANCE REQUEST***

**BISTI LANDFARM  
711 PERMIT NM-02-0010  
SAN JUAN COUNTY, NEW MEXICO**

**OCTOBER 2020**

**Prepared for:**

**WESTERN REFINING SOUTHWEST, INC.  
111 County Road 4990  
Bloomfield, New Mexico 87413**

**Prepared by:**

**LT ENVIRONMENTAL, INC.  
848 East Second Avenue  
Durango, Colorado 81301  
970.385.1096**

## SITE CHARACTERIZATION REPORT AND VARIANCE REQUEST

BISTI LANDFARM  
SAN JUAN COUNTY, NEW MEXICO

Project Number: 029520002  
NMOCD Incident Number: NRM2019558816

Prepared by:

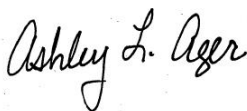


Stuart Hyde, L.G.  
LTE Project Geologist

October 29, 2020

Date

Reviewed by:



Ashley Ager, PG LTE  
Senior Geologist

October 29, 2020

Date

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## 1.0 INTRODUCTION

On behalf of Western Refining Southwest, Inc. (Western), LT Environmental (LTE) has prepared this *Site Characterization Report and Variance Request* for the Bisti Landfarm 711 Permit NM-02-0010 (Site). Specifically, total petroleum hydrocarbons (TPH) and chloride were detected in vadose zone monitoring soil samples at concentrations above background and/or laboratory practical quantitation limits (PQLs) during the first quarter monitoring event in March 2020. These conditions are defined as a “release” of TPH and chloride in the regulations governing surface waste management facilities (19.15.36 [Part 36] of the New Mexico Administrative Code [NMAC]). In response and as recommended by the New Mexico Oil Conservation Division (NMOCD), a Form C-141 (*Release Notification*) was prepared by LTE and submitted to the Aztec, New Mexico NMOCD District 1 office on June 15, 2020. The vadose zone release will therefore be addressed under the criteria set forth in 19.15.29 NMAC (Part 29).

Based on the definition of a release in Part 36 and soil sampling results conducted as part of vadose zone monitoring requirements, several releases have occurred at the Site between 2015 and 2020. In an effort to address all potential releases under Part 29, Western conducted drilling activities to vertically and laterally delineate soil impacts at the Site. This report summarizes historical monitoring sampling results and recent delineation sampling results, and evaluates appropriate constituents of concern (COCs) and applicable standards. Based on site characterization information and anticipated imminent reclamation, a variance that is equally protective of public health and environment is proposed to address the presence of TPH and chloride in soils at the Site.

### 1.1 SITE DESCRIPTION AND HISTORY

The Site occupies approximately 28 acres in Section 16, Township 25 North, Range 12 West in San Juan County, New Mexico (Figure 1). In addition, the Site/landfarm is located on a 640 acre parcel of land which is privately owned by Western Refining Southwest, Inc. In 1998, Giant Industries, Arizona (Giant) permitted the Site as a surface waste management facility through the NMOCD under former Rule 711. Petroleum hydrocarbon impacted soil was originally disposed of at the Site in three treatment cells depending on the origin of the soil: the API Cell, Crude Cell, and Cell 1. The Crude Cell is further divided into four source zones containing material originating from Pettigrew, East Line, Bisti, and West Line.

In 2007, the NMOCD promulgated new rules (Part 36) pertaining to surface waste management facilities and required compliance with the new transitional provisions. Western acquired the Site from Giant in June 2007, however, no new cells or lifts had been added to the landfarm since 2004, prior to Western’s purchase of the property. Cell 1 is no longer tilled or monitored based on a letter dated March 8, 2004, from the NMOCD to Giant stating Cell 1 was approved for discontinued maintenance. Western has continued to monitor and maintain the API Cell and the Crude Cell using the Rule 711 and provisional requirements of Part 36. TPH and chloride were detected during the March 2020 landfarm monitoring event in vadose zone soils at concentrations determined to be a release. After discussions with the NMOCD, Western submitted a Form C-141 *Release Notification* on July 6, 2020. The Form C-141 was submitted for the release discovered in March 2020, as well as historical releases identified at the Site between 2015 and 2020. Western initiated a subsurface investigation to delineate the chloride and TPH based on Part 29, which required multiple site visits. To complete the investigation and provide this report, Western requested and NMOCD granted a 45-day extension to the original report deadline of September 14, 2020 (approval attached as Appendix A).

## 2.0 SITE CHARACTERIZATION AND CLOSURE CRITERIA

As part of the site investigation, LTE assessed local geology/hydrogeology and nearby sensitive receptors according to 19.15.29.11 NMAC. This information is further discussed below.

### 2.1 GEOLOGY AND HYDROGEOLOGY

Based on United States Geological Survey (USGS) geologic mapping, the Site is located within the Tertiary Nacimiento Formation. In the report titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico* (Stone, Lyford, Frenzel, Mizell, & Padgett, 1983), the Nacimiento Formation is characterized by interbedded black carbonaceous mudstones and white, coarse grained sandstones. This formation ranges in thickness from 418 to 2,232 feet. The Nacimiento Formation overlies the Ojo Alamo sandstone formation, which is the shallowest water bearing unit beneath the Site (Stone et. al., 1983 and Kernodle, 1996).

### 2.2 SITE RECEPTORS

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) Geographic Information System (GIS) maps, New Mexico Office of the State Engineer (NMOSE) database, and aerial photographs as well as site specific observations. Applicable receptors for the Site include the following:

- **Groundwater:** Groundwater at the Site is estimated to be greater than 100 feet, as described in the original Rule 711 Permit (NM-02-0010) and approved by the NMOCD. The closest water well is located approximately 3.2 miles east of the Site (SJ-00079) and is screened at depths between 1,927 and 2,550 feet below ground surface (bgs) in the Cliff House and Allison formations. This well was installed by Shell Oil Company in 1957 for drilling and production operations of nearby oil wells. The next closest water well is a livestock well located 3.3 miles northeast (SJ-01716) with a reported depth-to-water of 210 feet bgs. Figure 2 presents water well locations near the Site.

Additionally, a tributary to the ephemeral West Fork of Gallegos Canyon is located approximately 2,000 lateral feet from the Site and is approximately 160 vertical feet lower in elevation than the Site.

- **Wellhead Protection Area:** As shown on Figure 2, no wellhead protection areas are located within a half mile of the Site.
- **Significant Watercourse:** There are no continuously flowing or other significant watercourses located within 300 feet of the Site (Figure 3).
- **Lakebed, Sinkhole, or Playa Lake:** There are no lakebeds, sinkholes, or playa lakes located within 200 feet of the Site (Figure 2 and Figure 3).
- **Occupied Permanent Residence or Structures:** As shown on Figure 3, there are no occupied permanent residences, schools, hospitals, institutions, and/or churches located within 300 feet of the Site (field verified by LTE personnel in September 2020).

- **Domestic/Stock Springs, Private Water Wells, and Other Freshwater Springs or Water Wells:** The Site is not located within 500 feet of a spring or private, domestic fresh water well and is not located within 1,000 feet of any other fresh water well or spring (Figure 2).
- **Incorporated Municipal Boundaries or Defined Municipal Fresh Water Well Field:** The Site is not located within an incorporated municipal boundary or defined municipal fresh water well field (Figure 3).
- **Wetland:** No wetlands are located within 300 feet of the Site according to the United States Fish and Wildlife Service National Wetland Inventory (Figure 3).
- **Subsurface Mine:** No active or abandoned subsurface mines are present in the vicinity of the Site according to the New Mexico Energy, Minerals, and Natural Resources Department (NM EMNRD) and the Energy Information Administration. This information was confirmed with Mr. Mike Thompson of the NM EMNRD in September 2020.
- **Unstable Area:** The Site is located within the Nacimiento geologic formation, which is not associated with karst geologic features. No faults or seismic activity are present within the Site vicinity. As such, unstable areas, as defined in 19.15.2 NMAC, are not located in the vicinity of the Site based on USGS geologic maps.
- **100-Year Floodplain:** The Site is located within an “area of minimal flood hazard, Zone X” according to the FEMA map number 35039C0875D, and is not located within the 100-year floodplain or a floodway (river channel or watercourse and adjacent land area reserved to discharge base flood without cumulatively increasing the water surface elevation more than a designated height) as shown on Figure 4.

## 2.3 CLOSURE CRITERIA

Based on the site characterization information presented above, groundwater is present at depths greater than 100 feet and no sensitive receptors are present within the radii presented in 19.15.29.11 NMAC. As such, Table 1 Closure Criteria (19.15.29.12[E] NMAC) applicable at the Site are as follows:

- Chloride: 20,000 milligrams per kilogram (mg/kg);
- TPH (Gasoline Range Organics [GRO] + Diesel Range Organics [DRO] + Motor Oil Range Organics [MRO]): 2,500 mg/kg;
- GRO+DRO: 1,000 mg/kg;
- Total BTEX (benzene, toluene, ethylbenzene, and xylenes): 50 mg/kg; and
- Benzene: 10 mg/kg.

According to 19.15.29.13.D NMAC, reclamation of areas no longer in use must contain a minimum of four feet of non-waste containing, uncontaminated, earthen material. This is defined in Part 29 as soil containing less than 600 mg/kg of chloride. There is no specific reference to TPH in the reclamation requirements. However, the NMOCD's *Procedures for Implementation of the Spill Rule*, dated September 6, 2019, interprets uncontaminated material to include TPH concentrations less than 100 mg/kg.

### 3.0 HISTORICAL SITE SAMPLING AND RESULTS

Petroleum hydrocarbon impacted soil was originally treated by landfarming at the Site in three treatment cells. Cells were divided based on the origin of the incoming soil: the API Cell, Crude Cell, and Cell 1. The Crude Cell is further divided into four source zones containing material originating from Pettigrew (located within the API Cell), East Line, Bisti, and West Line source areas. These boundaries are shown on Figure 5.

Historical sampling at the Site has followed protocols for monitoring presented in the original surface waste management facility permit issued under Rule 711, as well as the updated regulations in Part 36. The following monitoring requirements have been conducted in accordance with Rule 711 and Part 36:

- **Rule 711:**
  - Quarterly collection of one discrete sample from each treatment cell/source area, collected in vadose zone soil, for laboratory analyses of TPH-GRO, TPH-DRO, and BTEX compounds (benzene, toluene, ethylbenzene, and xylenes).
  - Annual collection of one discrete sample from each treatment cell/source area, collected in vadose zone soil, for laboratory analysis of major cations/anions (chloride, sulfate, alkalinity, bicarbonate, carbonate, calcium, manganese, potassium, and sodium) and heavy metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury).
- **Part 36:**
  - Semi-annual collection of one composite sample from each treatment cell, collected within treatment zone soil, for TPH, DRO+GRO, and chloride.
  - Semi-annual collection of four discrete samples from each treatment cell/source area, collected in vadose zone soil, for TPH, DRO+GRO, BTEX, and chloride.
  - Collection of four discrete samples from each treatment cell/source area every five years, collected from vadose zone soil for the additional metals arsenic, barium, cadmium, chromium, lead, selenium, silver, uranium, copper, iron, manganese, mercury, and zinc.

Samples collected from the treatment zone are compared to Treatment Zone Closure Performance Standards in Part 36 to monitor attenuation of contaminants and the potential for additional lifts and/or landfarm closure. Samples collected in the vadose zone are compared to site background concentrations and/or laboratory PQLs. If concentrations detected in vadose zone samples exceed the respective site background concentrations or PQL, further sampling and assessment is required to confirm if a release has occurred at the Site as defined in Part 36. During the March 2020 release re-sampling event, vadose zone soil samples were collected and analyzed for constituents listed in the New Mexico Water Quality Control Commission (NMWQCC) regulations, 20.6.2.3103 NMAC, including volatile organic compounds (VOCs by EPA Method 8260), benzo(a)pyrene, polychlorinated biphenyls (PCBs), cyanide, and radiochemistry.

The sections below summarize historical results obtained under vadose monitoring requirements in Part 36 between 2015 and 2020 at the Site in order to describe the release. Since a release can only occur in the vadose zone in Part 36, treatment zone monitoring results are not discussed.

### 3.1 BACKGROUND CONCENTRATIONS

In accordance with Part 711, one “background” soil sample was collected at the Site prior to the construction of the landfarm. This original background sample was collected in March 1998 and analyzed for a limited list of constituents required by Part 711. One additional “background” samples was collected in September 2015 and analyzed for additional constituents as requested by the NMOCD. Background concentrations are summarized in Table 1.

### 3.2 VADOSE ZONE CHLORIDE RESULTS

Based on historical data, chloride has been detected in the vadose zone monitoring samples collected from 4 feet below the naturally occurring ground surface (below treated soil) above the site background concentration of 50 mg/kg, as well as the most stringent standard in Part 29 of 600 mg/kg. Figure 6A presents historical vadose zone sampling locations and associated chloride concentration ranges detected at the Site. Elevated chloride concentrations are primarily located within the API Cell and the Pettigrew source area of the Crude Cell (also located within the boundary of the API Cell). Tables 2 and 3 summarize historical vadose zone analytical results collected during ongoing monitoring events for the API and Crude Cells, respectively.

### 3.3 VADOSE ZONE TPH AND BTEX RESULTS

Based on historical data, TPH also has been detected in vadose zone monitoring samples (collected from 4 feet below the naturally occurring ground surface) above the site background concentration of 20 mg/kg, as well as the most stringent standard in Part 29 of 100 mg/kg. Figure 7A presents historical sampling locations and summarizes TPH concentration ranges detected at the Site. Elevated TPH concentrations are located within the East Line and West Line source areas of the Crude Cell. BTEX has not been detected above laboratory reporting limits in any vadose zone samples collected from either the Crude or API Cells at the Site. Tables 2 and 3 summarize historical vadose zone analytical results collected during ongoing monitoring events for the API and Crude Cells, respectively.

### 3.4 VADOSE ZONE CATIONS/ANIONS AND METALS CONSTITUENTS

During annual monitoring events, five-year monitoring events, and release re-sampling events, cations/anions and metals constituents were analyzed in vadose zone soils at the Site. Constituent concentrations were compared to site background concentrations to assess whether a “release” had occurred. Tables 2 and 3 summarize historical vadose zone analytical results collected during ongoing monitoring events for the API and Crude Cells, respectively.

### 3.5 VADOSE ZONE RELEASE RE-SAMPLING RESULTS AND PART 29 RELEASE REPORTING

Several constituents were detected above site background concentrations in vadose zone soils during monitoring events conducted between 2015 and 2020. In response, LTE re-sampled vadose zone soils in accordance with Part 36 (19.15.36.15[E][5]). Soil samples collected during the re-sampling event were analyzed for the following constituents: TPH, BTEX, chloride, anions/cations, metals, VOCs, benzo(a)pyrene, PCBs, phenol, cyanide, and radiochemistry. Re-sampling soil analytical results collected at the Site are summarized in Table 4.

### 3.5.1 Proposed Constituents of Concern

Several constituents have been detected at the Site during historical sampling events. Of these constituents, the following have been detected above the site background concentrations: TPH, chloride, sulfate, alkalinity, bicarbonate, carbonate, fluoride, nitrate, arsenic, barium, calcium, copper, iron, magnesium, manganese, potassium, sodium, and zinc. For constituents that exceeded site background concentrations, LTE has evaluated the resultant concentrations in the following order to identify COCs proposed to be addressed under Part 29:

1. Comparison to NMOCD Table 1 Closure Criteria (19.15.29.12 NMAC);
2. Comparison to NMOCD Reclamation Standards (19.15.29.13 NMAC);
3. Regional Background Concentrations (further described below);
4. Comparison to Table 1 of 40 Code of Federal Regulations (C.F.R) 261.24(b); then
5. Comparison to the Most Conservative (lowest) New Mexico Environment Department (NMED) Soil Screening Levels presented in the *Risk Assessment Guidance for Site Investigations and Remediation Volumes I and II* (NMED, 2017, NMED, 2019).

Only chloride and TPH are included as COCs on Table 1 Closure Criteria in Part 29. Detailed review of resultant concentrations suggest arsenic, barium, calcium, copper, iron, magnesium, manganese, potassium, sodium, and zinc concentrations detected during historical sampling events are within regional background concentrations for the San Juan Basin. The values of these results are either within 10 percent (%) of the established background concentration at the Site or correspond to published regional soil conditions. Because soil treated at the landfarm originated from multiple locations in the San Juan Basin, regional background concentrations established for the San Juan Basin were used to compare soil analytical results. USGS Paper 1134-C, *Geochemical Variability of Natural Soils and Reclaimed Mine-Spoil Soils in the San Juan Basin, New Mexico* (USGS, 1981), was used to compare soil sample concentrations of inorganic constituents to regional background concentrations and further eliminated the above listed parameters as COCs.

All detected concentrations of fluoride and nitrate were below the NMED soil screening levels for both human health and ecological protection. Lastly, sulfate, alkalinity, bicarbonate, and carbonate are general soil chemistry parameters. There are no soil screening levels established for these parameters by the NMOCD (19.15.29 NMAC), EPA (C.F.R. 261.23[b]), or NMED (NMED, 2017, NMED, 2019). These constituents/parameters also have been eliminated as COCs for the Site.

Based on the evaluation of potential COCs, chloride and TPH are proposed as final COCs to address under Part 29. Chloride and TPH concentrations have exceeded the NMOCD Reclamation Standards in historical samples and have been further assessed during the delineation activities described in the following sections.



## 4.0 2020 SITE DELINEATION ACTIVITIES

Historically, vadose zone samples have been collected at a depth of 4 feet below naturally occurring ground surface (below treated soils per Part 36), which is approximately 4.5 to 5 feet below current surface grade (assuming 6 to 8 inches of treated soils). To expand on the historical vadose zone sampling results in the API and Crude Cells at the Site, Western advanced soil borings to delineate the lateral and vertical extents of chloride and TPH in soil. Vertical delineation of soil was also intended to differentiate chloride and TPH concentrations above and below 4 feet bgs in order to delineate impacts in accordance with both the NMOCD Reclamation Standards (top 4 feet) and Table 1 Closure Criteria (below 4 feet for sites where groundwater is greater than 100 feet bgs).

Western utilized a track-mounted direct-push probe rig to advance borings SB01 to SB33 and a hand auger to advance borings SB33 to SB59 at the Site. Both drilling methods were recorded using a handheld Global Positioning System (GPS) unit. Soil lithology was logged by an LTE geologist and described based on the Unified Soil Classification System (USCS) as specified in American Society for Testing and Materials (ASTM) D2488. Boring logs are attached as Appendix B. Soil was also inspected for visual staining and the presence or absence of odor. The soil was characterized by visually inspecting the soil samples, field screening the soil headspace using a photoionization detector (PID) to monitor for the presence of organic vapors, and field screening for the presence of chloride using Hach® Quantab® titrator stripes. Drilling and sampling equipment was decontaminated prior to each use. Completed borings were filled with hydrated bentonite from the total depth to ground surface.

Figures 6B and 7B present the delineation boring locations for chloride and TPH, respectively, in relation to historical results. In total, 58 borings were advanced at the Site ranging in depth from 4 to 16 feet bgs. Delineation activities and results are further described below.

### 4.1 SOIL BORING RESULTS

As stated above, soil borings were advanced to depths ranging from 4 to 16 feet bgs. In general, lithologies ranged from sandy silt/silty sand to sand. Groundwater and/or saturated soils were not encountered in any of the borings advanced during this work.

### 4.2 CHLORIDE DELINEATION ACTIVITIES

To assess historical chloride impacts, 34 borings were advanced in Pettigrew and Bisti source areas of the Crude Cell and within the API Cell at the Site. During drilling, Hach® Quantab® titrator strips were utilized to field screen for chloride in the soil and assess the necessity to advance borings deeper and/or advance additional borings for lateral delineation. Chloride field screening was performed at 1 to 2-foot intervals to the terminal boring depths. At least one soil sample was collected for analysis from each boring at a depth between 0 and 4 feet bgs that contained the highest field screening result. Generally, up to two additional soil samples were collected from each boring: one sample between 4 feet bgs and the terminal depth of the boring that contained the highest field screening results (if the boring was greater than 6 feet deep); and one at the terminal depth of the boring.

Samples were placed directly into pre-cleaned jars and labeled with location, date, time, sampler, and method of analysis and immediately placed on ice. Strict chain-of-custody procedures were followed



during transport of the samples to Hall Environmental Analysis Laboratory, Inc. (HEAL) in Albuquerque, New Mexico. Samples were analyzed for chloride by EPA Method 300.0.

#### 4.2.1 Chloride Analytical Results

Based on analytical results, chloride concentrations did not exceed the Table 1 Closure Criteria (19.15.29.12 NMAC) of 20,000 mg/kg in any soil samples collected at depths greater than 4 feet bgs. However, several soil samples collected within the top 4 feet of the landfarm surface exceeded the Reclamation Standard of 600 mg/kg. Based on these results, chloride exceedances compared to appropriate standards are confined to the top 4 feet of soil bgs.

Analytical data from this delineation event provide more refined results both laterally and vertically through discrete samples and supersede historical data collected at the Site for defining areas of impacted soil. Boring locations and laboratory analytical results indicate that full vertical and lateral delineation of chloride at the Site was achieved during this sampling event. Elevated chloride concentrations are located within the API Cell and the Pettigrew source area of the Crude Cell (also located within the boundary of the API Cell). Chloride concentrations within the top 4 feet bgs range from 620 mg/kg to 3,500 mg/kg. Based on the delineation analytical results as compared to the Reclamation Standard of 600 mg/kg, an aerial extent of approximately 19,500 square feet of soil are impacted by elevated chloride. Assuming a maximum depth of 4 feet, approximately 2,888 cubic yards of soil exceeds 600 mg/kg in the top four feet of the landfarm.

Boring locations and chloride analytical results are presented on Figure 6B. The area of chloride impacted soil is also presented on Figure 8. Chloride analytical results are presented in Table 5. Analytical laboratory reports and chain-of-custody documentation are attached as Appendix C.

### 4.3 TPH DELINEATION ACTIVITIES

To assess historical TPH impacts, 24 borings were advanced in East Line and West Line source areas of the Crude Cell at the Site. During drilling, a PID was utilized to field screen the soil headspace for volatile organic vapors related to petroleum hydrocarbons. The PID results were used to assess the necessity to advance borings deeper and/or advance additional borings for lateral delineation. TPH field screening was performed at 1 to 2-foot intervals from the ground surface to the terminal boring depths. At least one soil sample was collected for analysis from each boring at depths ranging from 0 to 4 feet bgs that contained the highest field screening result. Generally, up to two additional soil samples were collected from each boring: one sample between 4 feet bgs and the terminal depth of the boring that contained the highest field screening results (if the boring was greater than 6 feet deep); and one at the terminal depth of the boring.

Samples were placed directly into pre-cleaned jars and labeled with location, date, time, sampler, and method of analysis and immediately placed on ice. Strict chain-of-custody procedures were followed during transport of the samples to HEAL. Samples were analyzed for TPH (as GRO, DRO, and MRO) by EPA Method 8015 M/D.

#### 4.3.1 TPH Analytical Results

Based on analytical results, TPH concentrations did not exceed the Table 1 Closure Criteria (19.15.29.12 NMAC) of 2,500 mg/kg in any of the analyzed soil samples collected during the delineation sampling.

However, several soil samples collected within the top 4 feet of the landfarm surface exceeded the Reclamation Standard of 100 mg/kg. Based on these results, TPH exceedances compared to appropriate standards are confined to the top 4 feet of soil bgs and predominantly consist of MRO-, then DRO-range petroleum hydrocarbons, with no GRO-range hydrocarbon detected.

Boring locations and laboratory analytical results indicated that full vertical and lateral delineation of TPH at the Site was achieved during this sampling event. Elevated TPH concentrations are primarily located within the East Line source area, with a small area of elevated TPH located in the West Line source area, both located within the Crude Cell. As with chloride, analytical data from this delineation event provides more refined results and supersede historical data for defining areas of impacted soil. TPH concentrations within the top 4 feet of soil range between 114 and 1,000 mg/kg. Based on the delineation analytical results as compared to the Reclamation Standard, an aerial extent of approximately 14,500 square feet of soil are impacted by elevated TPH. Assuming a maximum depth of 4 feet, approximately 2,148 cubic yards of soil contain TPH exceeding 100 mg/kg.

Boring locations and TPH analytical results are summarized on Figure 7B. The area of TPH impacted soil is also presented on Figure 9. TPH analytical results are presented in Table 6. Analytical laboratory reports and chain-of-custody documentation also are attached as Appendix C.

#### 4.4 SITE DELINEATION CONCLUSIONS

As presented above, chloride and TPH impacts have been fully delineated at the Site. Chloride and TPH concentrations are below Table 1 Closure Criteria. Concentrations exceeding the Reclamation Standards exist in the top 4 feet of soil. Figure 10 presents the impacted areas as compared to the entire landfarm boundary.

## 5.0 VARIANCE REQUEST

This Site presents an unusual circumstance, with one NMOCD regulation (Part 36) assigning a release at the landfarm due to concentrations exceeding background concentrations and/or laboratory PQLs from samples collected in the vadose zone beneath a landfarm. These elevated concentrations are to be addressed by another regulation (Part 29), under which the Closure Criteria requiring remediation are met. However, Part 29 includes an additional requirement that no waste containing, uncontaminated material exist in the top four feet of a release location for reclamation. Part 29 defines waste-containing, uncontaminated material as containing less than 600 mg/kg chloride and the NMOCD has suggested a TPH standard of 100 mg/kg apply to further define uncontaminated material. At this location, the NMOCD permitted a landfarm for waste to be treated at the ground surface. Typically, Treatment Zone Closure Performance Standards defined in Part 36 are used to determine if a permitted landfarm can proceed with closure and reclamation and the Reclamation Standards in Part 29 would not apply at all. Based on historical treatment zone monitoring conducted at the Site, the treated soil is in compliance with Part 36 Treatment Zone Closure Performance Standards. See the attached Graphic 1 for a visual representation of the conflict between Part 29 and Part 36 standards.

No soil has been accepted at the landfarm in 16 years and Western's ultimate goal is to close the landfarm. Before that can be accomplished, Western must address the historical vadose zone releases (as defined by Part 36) and receive closure of those releases from NMOCD under Part 29. Once that is completed, Western intends to proceed with closure of the landfarm, which includes extensive reclamation requirements specific to landfarms in Part 36.

Western has attempted in this report to transition the vadose zone release(s) to Part 29 by establishing appropriate COCs and delineating those COCs both vertically and laterally. The result is identification of soil that contains TPH and chloride concentrations that meet Part 29 Table 1 Closure Criteria but do not meet the Reclamation Standards for the top four feet of areas that are specifically *no longer in use*.

Based on continued maintenance and monitoring of the landfarm until final closure under Part 36 is achieved, a review of potential receptors located at and near the Site, and the type and extent of delineated impacts, Western requests a variance to the Reclamation Standards in Part 29 on the basis that application of Table 1 Closure Criteria and Part 36 reclamation requirements are equally or better protective of public health and environment. Western specifically requests, under Part 29, to apply Table 1 Closure Criteria for sites where groundwater is greater than 100 feet bgs to the entire vertical section of the Site. These criteria would apply to all soils below ground surface and include the following constituent concentrations: 20,000 mg/kg chloride, 2,500 mg/kg TPH, 1,000 mg/kg GRO+DRO, 50 mg/kg BTEX, and 10 mg/kg benzene.

The variance request is equally protective of fresh water, public health, and the environment for the following reasons:

- As presented in Section 2.2., the standards assigned are protective of the identified nearby potential receptors that would be exposed to the residual TPH and chloride concentrations that remain;

- Twenty-two (22) years of empirical data collected through ongoing landfarm monitoring, plus more recent delineation data, provide evidence that elevated concentrations of TPH and chloride are not migrating offsite and have not migrated vertically below 6 feet bgs;
- The source of the release is not active and no new source material has been added to the Site since 2004;
- Chloride is not toxic to humans or wildlife, and is generally regulated for protection of vegetation and groundwater quality;
- TPH concentrations detected at the Site predominantly consist of MRO range petroleum hydrocarbons that are immobile and less toxic to human and ecological receptors than lighter-range hydrocarbons. The hydrocarbon signature is characteristic of historically impacted soil that is undergoing attenuation with only the most stable hydrocarbon constituents remaining.
- The hydrocarbon concentrations are compliant with two other existing standards in New Mexico, both of which were established for the protection of public health and environment:
  - The hydrocarbon concentrations detected in Part 36 treatment zone monitoring samples are compliant with Part 36 Treatment Zone Closure Performance Standards.
  - Hydrocarbon concentrations in delineation and vadose zone monitoring samples are in compliance with soil screening levels for residential human-health and ecological exposures, as presented in Table 6-1 of the NMED *Risk Assessment Guidance for Site Investigations and Remediation*, Volumes I and II, also established for the protection of public health and environment.
- According to NMOCD's Guidelines for Part 29, the purpose of the reclamation standard is reclamation of all areas disturbed by the remediation and closure with a primary purpose of re-establishing vegetative growth.
  - The Reclamation Standard attempts to reduce chloride concentrations in the soil root zone (the A and B horizons of the soil profile). Based on field screening and analytical results, the majority of elevated chloride concentrations present at the Site are located at depths greater than 3 feet bgs. According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the Site is located within the Doak-Sheppard-Shiprock soil profiles (Appendix D). According to the NRCS, only the Doak soil profile consists of both A and B soil horizons (plant root zones) up to depths of 41 inches bgs. The Sheppard and Shiprock soil types only consist of A horizons up to 3 inches with no B horizon. Based on this information, reclaimed vegetation at the Site will likely not be affected by elevated chloride concentrations present at depths below 3 feet bgs;
  - Western will ultimately apply Part 36 reclamation requirements, which achieve the same reclamation purpose and are more extensive than Part 29. Specifically, Part 36 requires that "Re-vegetation...shall consist of establishment of a vegetative cover equal to seventy percent of the native perennial vegetative cover (unimpacted by overgrazing, fire, or other intrusion damaging to native vegetation) or scientifically documented ecological description consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintenance of that cover through two successive growing seasons."

- Western will be required to continue vadose zone monitoring throughout the Part 36 closure activities. Any potential evidence of migration or elevated impacts will be documented and addressed.
- The NMOCD will not release Western's financial assurance for the landfarm until "the operator has successfully re-vegetated the site" and has met the revegetation requirement.

Based on the arguments presented above, LTE and Western believe that the residual TPH and chloride concentrations remaining at the Site do not pose a risk to fresh water, human health, or the environment. Leaving them in place is equally protective of public health and environment, except potentially for revegetation. However, landfarm closure under Part 36 will require adherence to similar reclamation requirements and extensive monitoring to ensure revegetation is successful.

To further this argument, LTE has conducted an informal evaluation of alternative remedial approaches should the Reclamation Standard in Part 29 be enforced. There are few remedial technologies effective in remediating chloride and TPH as primarily MRO and DRO. The most effective remedial method is excavation and disposal at a landfarm/landfill ("dig-and-haul"), which has its own negative environmental and social consequences from increased greenhouse gases, additional heavy truck traffic, and decreased landfill capacity. Industry accepted tools and methods have been created to evaluate unforeseen impacts of alternative remediation technologies. To evaluate the excavation scenarios, we utilized SiteWise™ which was developed by Battelle and the US Navy.

To remove chloride impacts to 4 feet bgs, approximately 2,888 cubic yards of soil would be removed and transported 32 miles for disposal. This would be the addition of 288 heavy trucks making roundtrips from the site to the landfill, which can cause increased dust, noise, traffic, and safety concerns. In addition, the remediation method would contribute 75.8 metric tons of carbon dioxide (CO<sub>2</sub>) equivalent greenhouse gases (GHGs). This amount of GHGs is equivalent to driving a passenger vehicle 189,444 miles.

To remove TPH impacts to 4 feet bgs, approximately 2,148 cubic yards of soil would be removed and transported for disposal. This would be an additional 214 heavy trucks making round trips. In addition, the remedy would contribute 57.1 metric tons of CO<sub>2</sub> equivalent GHGs, which is equivalent to driving a passenger vehicle 142,576 miles.

The chloride and TPH areas do not overlap and if the variance is not granted and dig-and-haul is required, then the total cumulative GHGs emitted in the process would be 132.9 metric tons, which is equivalent to a passenger car driving 332,020 miles. It appears that approach would be more harmful to public health and the environment under consideration of cumulative impact.

Alternatively, the Site can be remediated utilizing native plants for phytoremediation. However, if implemented prior to landfarm closure/post-closure activities under Part 36, a remediation approach using phytoremediation would require significant time, water, and ultimately delay final reclamation of the landfarm under Part 36. Alternatively, phytoremediation can be applied during closure/post-closure reclamation of the landfarm under Part 36, if necessary, and would achieve reclamation goals on a faster timeline by allowing landfarm closure and reclamation to proceed concurrently with remediation.

## 6.0 CLOSURE REQUEST

The primary purpose of the Bisti Landfarm has been to remediate petroleum contaminated soil originating from release sites in the San Juan Basin. To this end, the landfarm has successfully remediated TPH and BTEX concentrations to below the Treatment Zone Closure Performance Standards presented in 19.15.36.15 NMAC based on monitoring required in Part 36. However, vadose zone monitoring requirements in Part 36 have identified releases based on comparison of detected concentrations to background results and laboratory PQLs. Based on conversations with NMOCD, the releases must be addressed under Part 29. Site characterization and delineation results indicate the COCs are chloride and TPH and that the concentrations present at the Site meet Table 1 Closure Criteria, but are not compliant with Reclamation Standards applicable to the top four feet of areas to be reclaimed after remediation.

Based on the arguments presented in Section 5.0, LTE and Western respectfully request a variance to the Reclamation Standard in Part 29. The variance includes applying Table 1 Closure Criteria to the entire vertical section of soil and reclaiming the Site under Part 36 requirements. Based on site conditions and concentrations compliant with other New Mexico environmental standards, LTE and Western do not believe the residual concentrations of chloride and TPH pose an elevated risk to fresh water, human health, or the environment. In addition, the landfarm closure and post-closure reclamation and monitoring requirements under Part 36 will ensure that the requested variance offers equal or better protection to groundwater and vegetation and that the Site will ultimately be reclaimed properly.

As such, Western requests NMOCD approval that no further action is required at the Site to remediate residual chloride and TPH concentrations under Part 29.

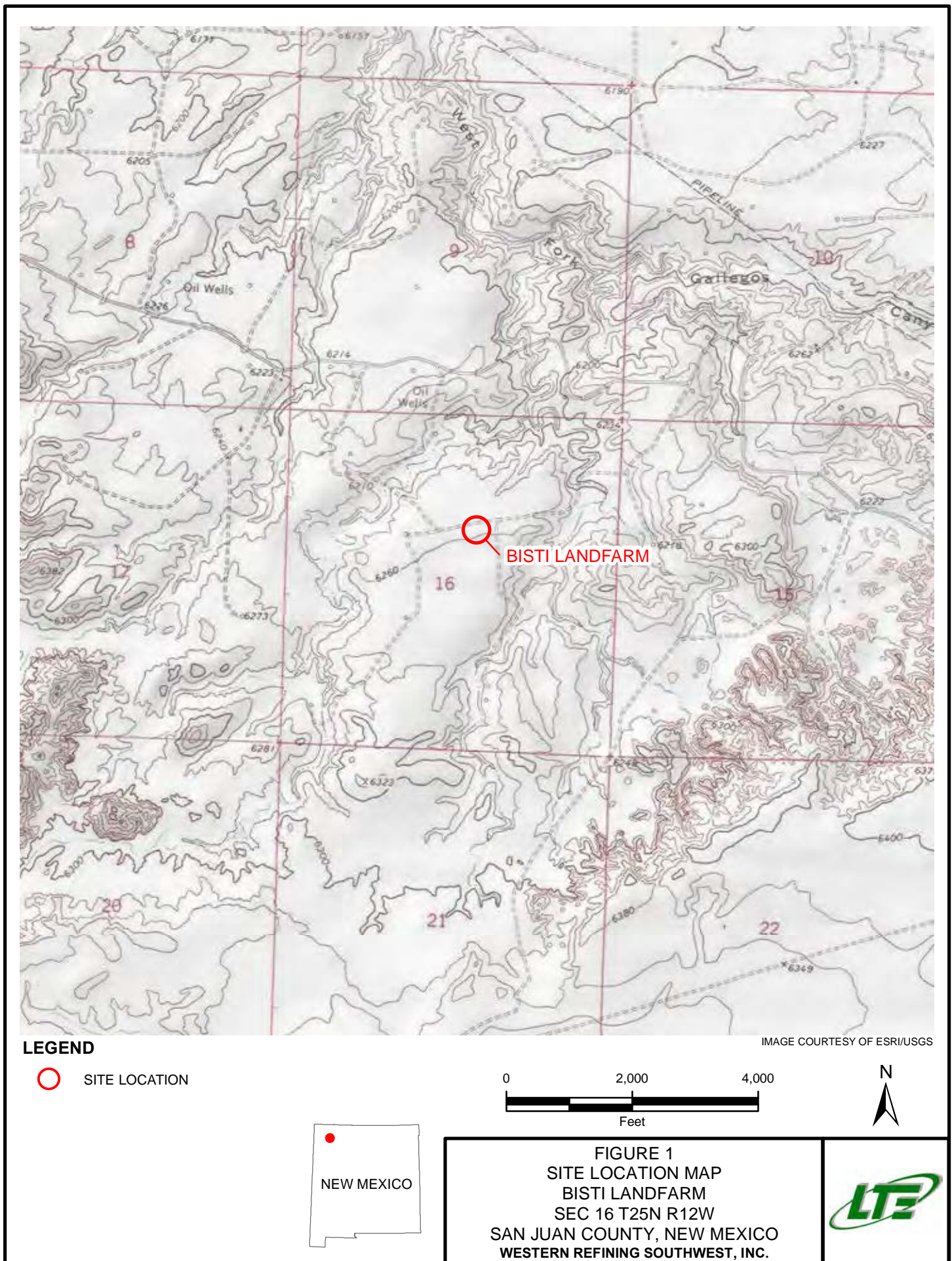
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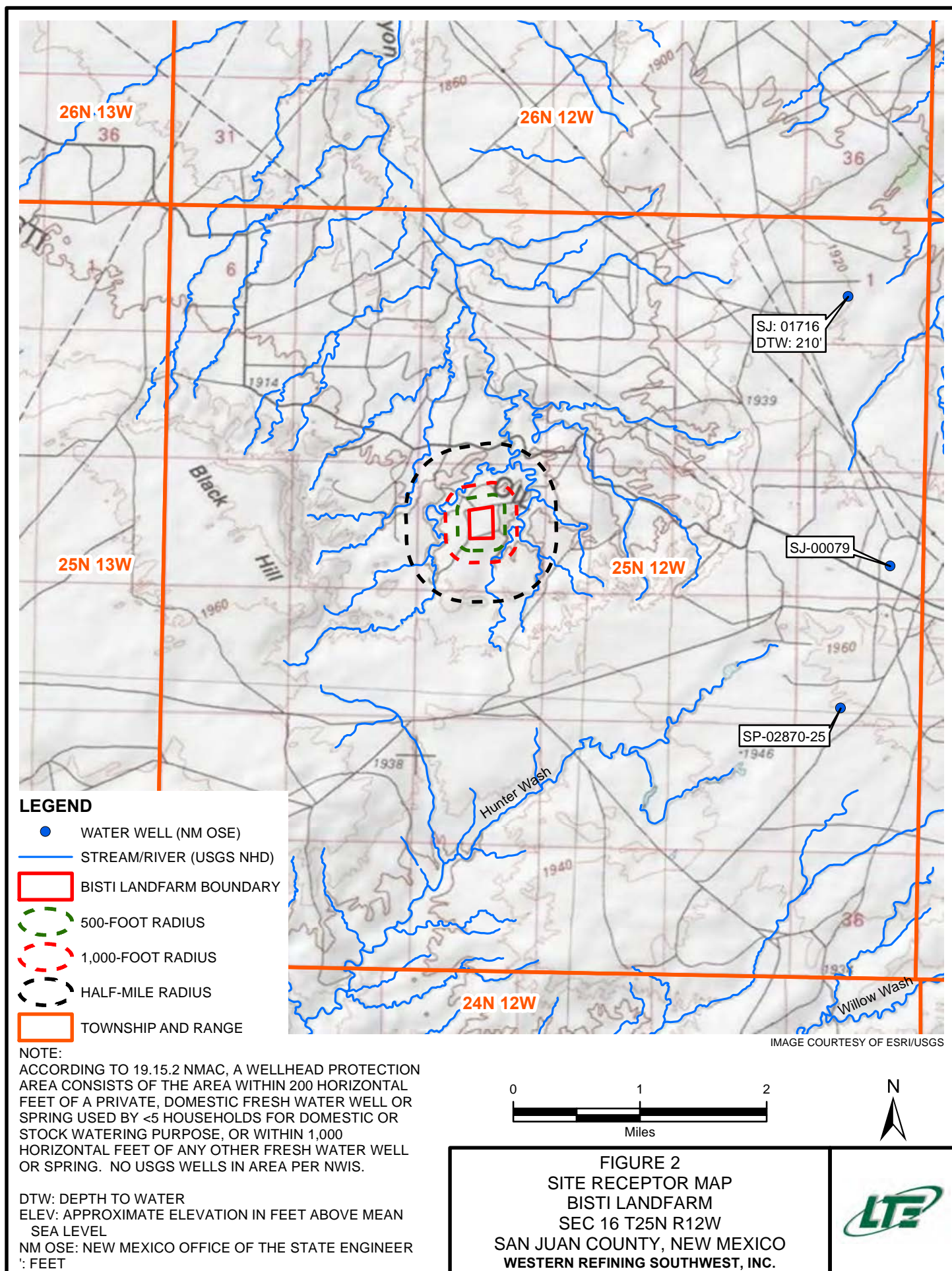
FIGURES



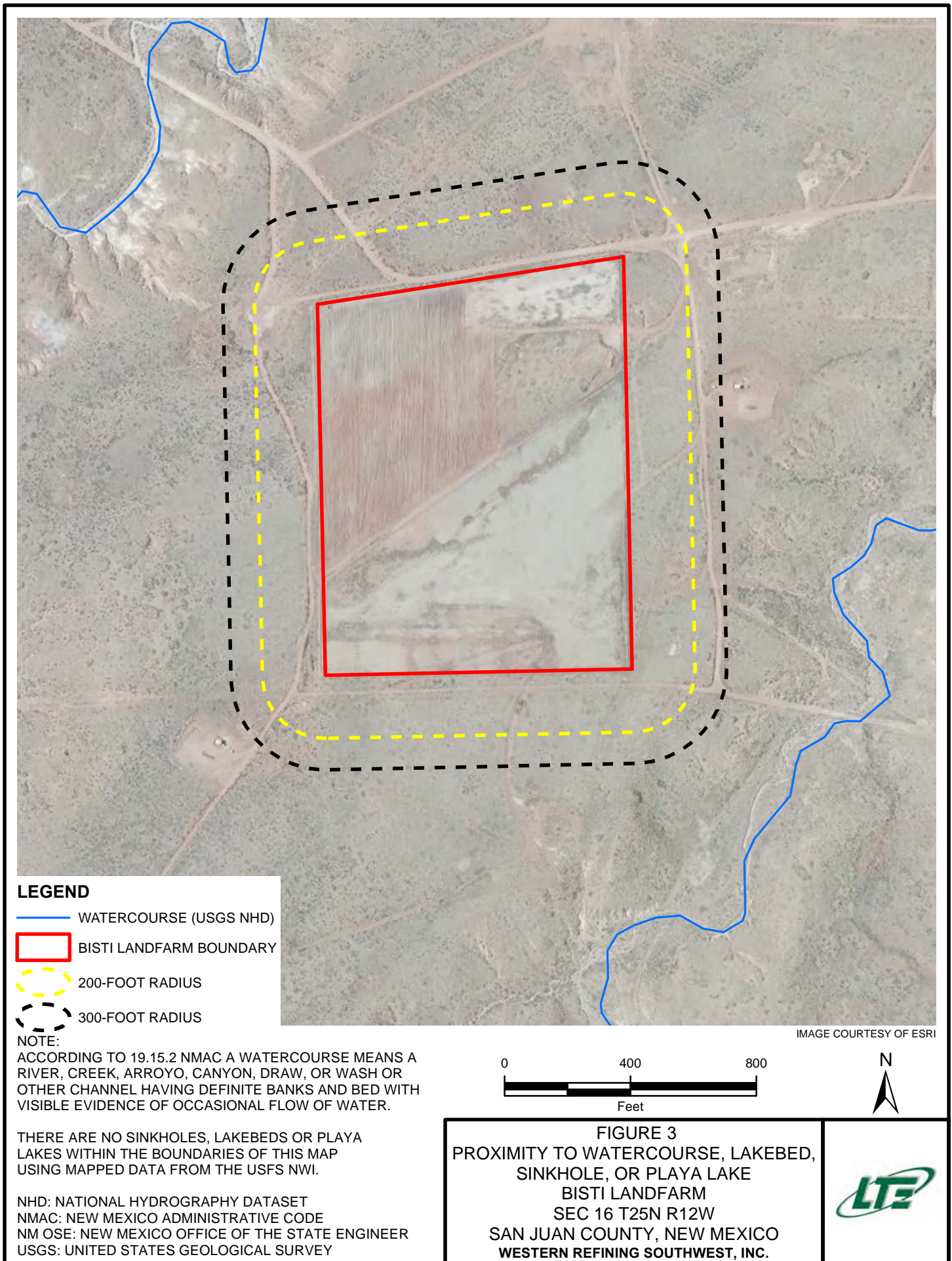




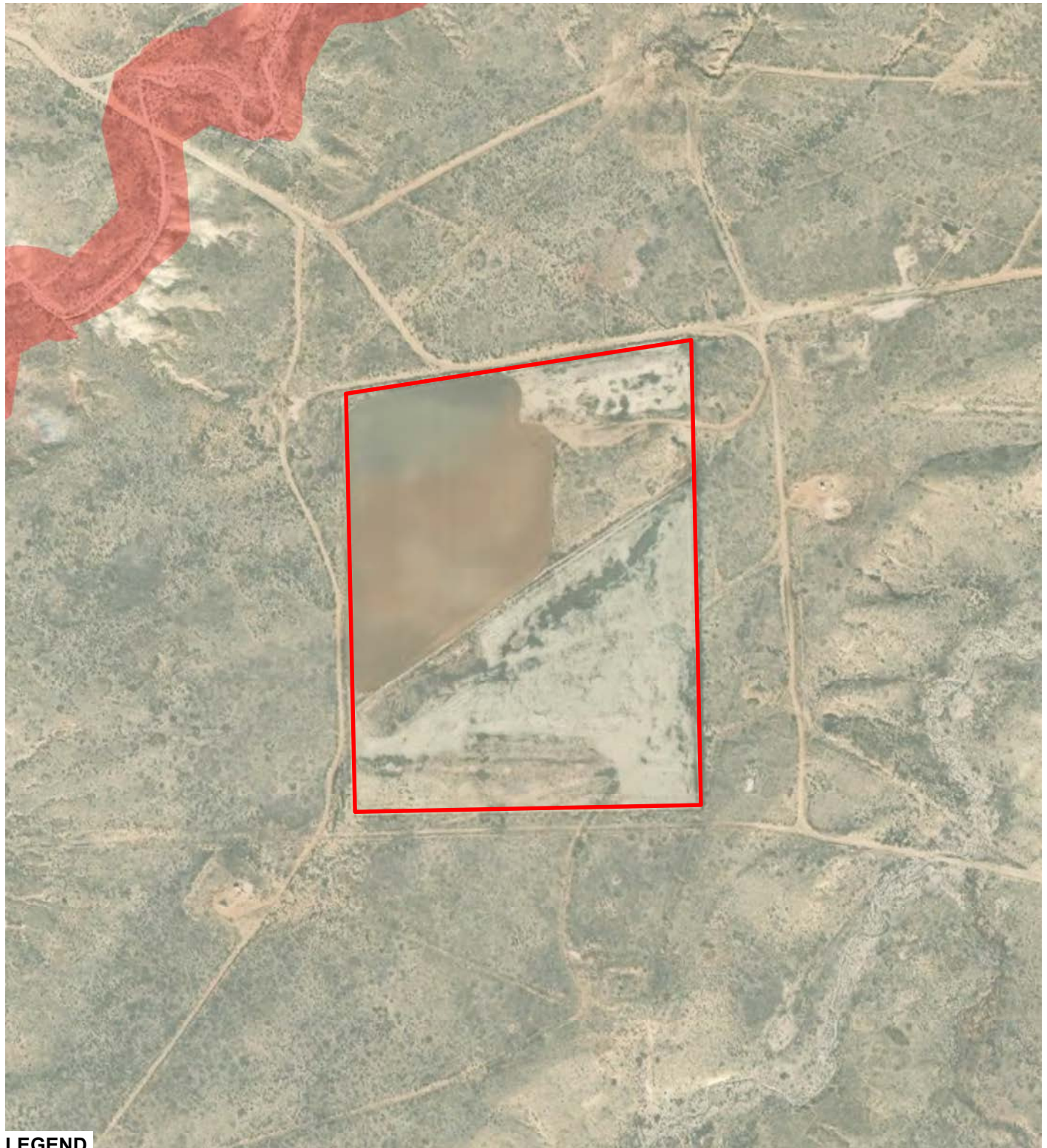










**LEGEND****FEMA FLOOD ZONE CLASSIFICATION**

FLOODWAY

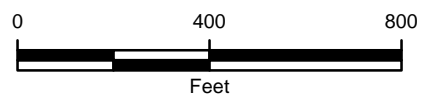
NO SCREEN INDICATES ZONE X,  
AREA OF MINIMAL FLOOD HAZARD

BISTI LANDFARM BOUNDARY

**NOTE:**SITE IS WITHIN AN AREA OF MINIMAL  
FLOOD HAZARD DEFINED BY THE FEDERAL  
EMERGENCY MANAGEMENT AGENCY (FEMA).

SOURCE: FEMA FLOOD MAP NUMBER 35045C1666/ZONE X

IMAGE COURTESY OF ESRI



**FIGURE 4**  
**PROXIMITY TO 100-YEAR FLOODPLAIN**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**





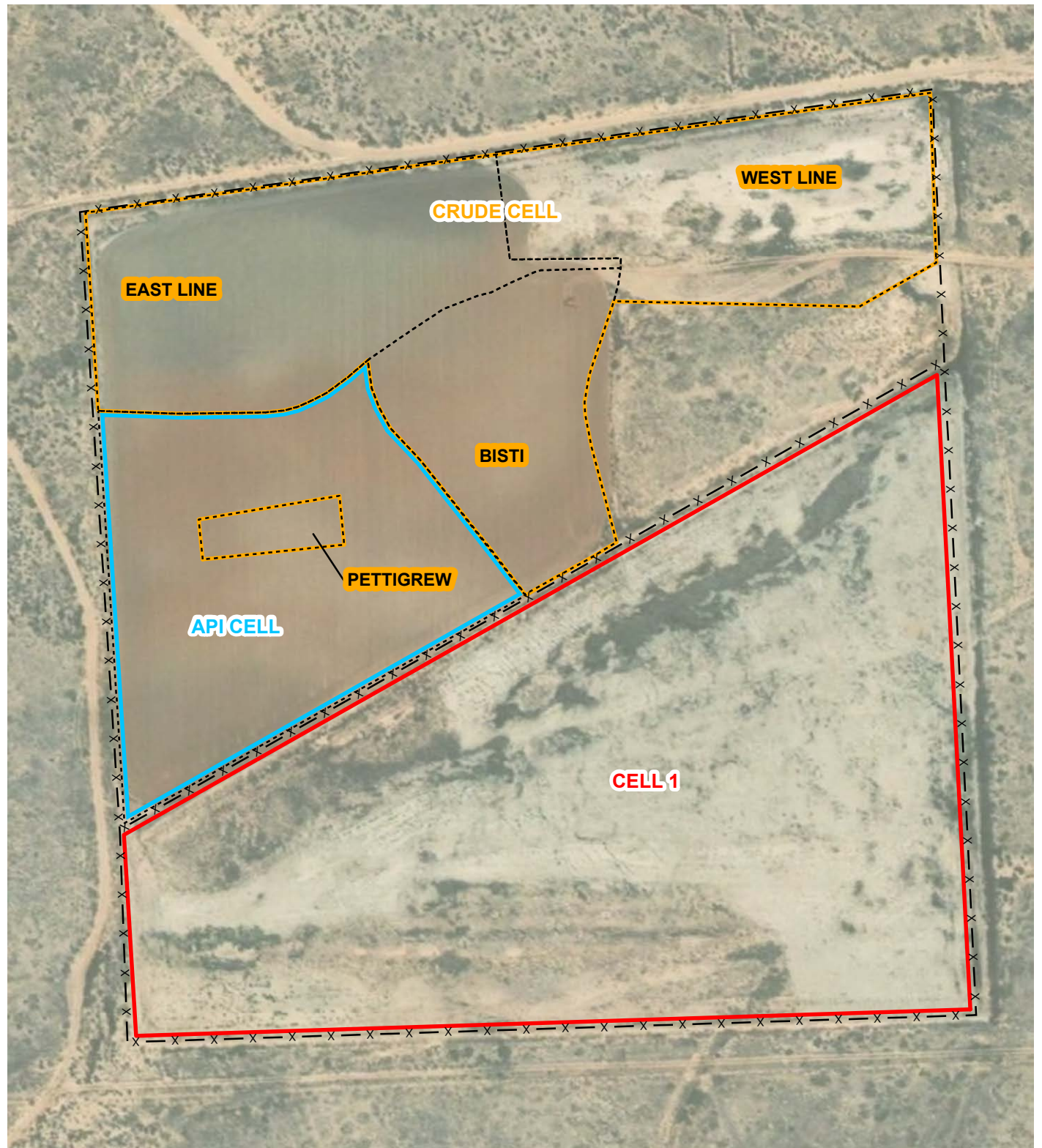
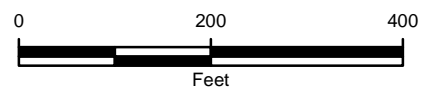
**LEGEND**

IMAGE COURTESY OF ESRI

- x — x FENCE
- APPROXIMATE SOURCE IDENTITY BOUNDARY
- CELL 1 BOUNDARY
- API CELL BOUNDARY
- CRUDE CELL BOUNDARY

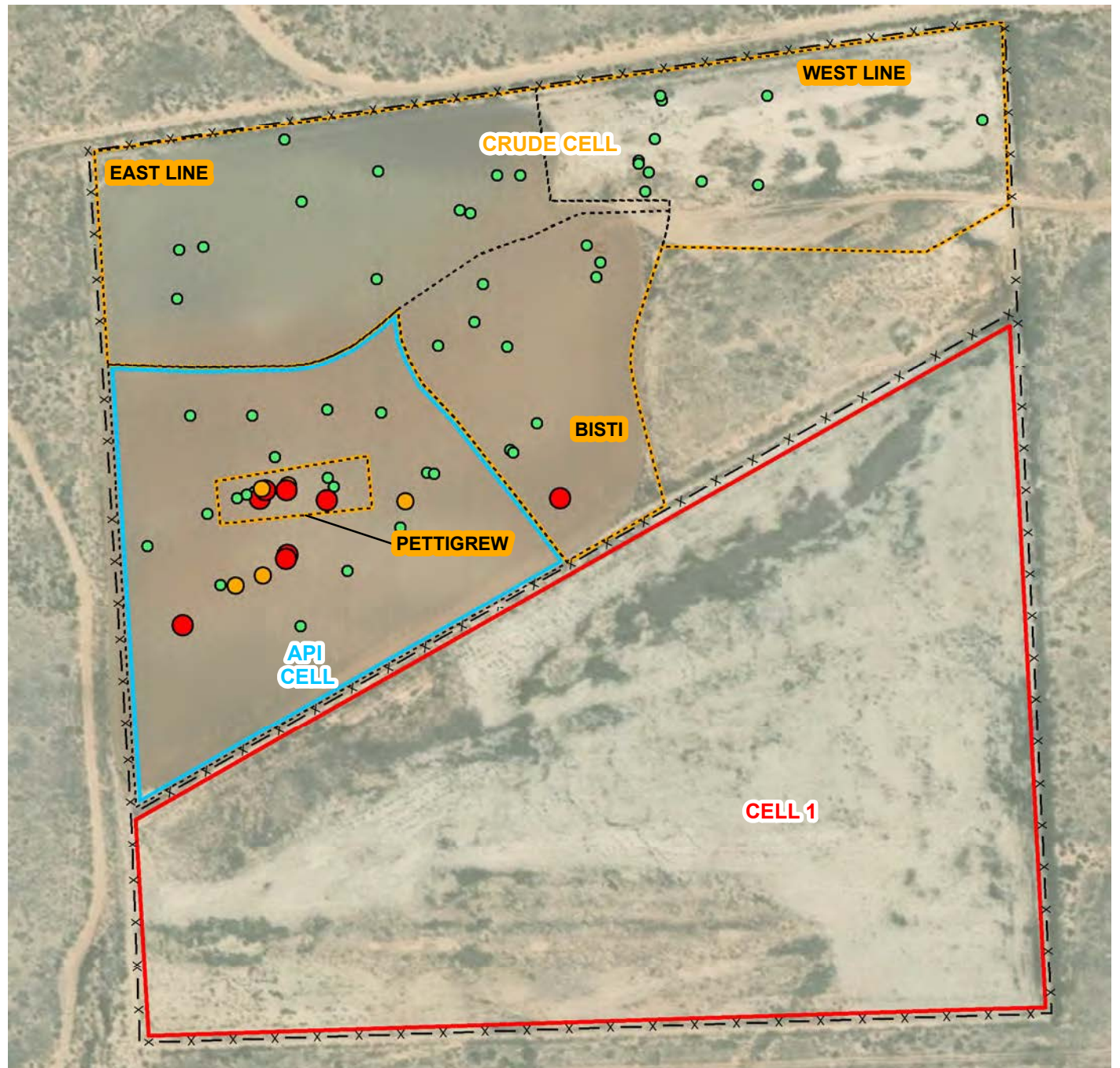


**FIGURE 5**  
**SITE MAP**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**



P:\Western Refining\GIS\MXD\029518008\_BISTI\_LANDFARM\029518008\_BISTI\_FIG02\_SITE\_2018.mxd



**LEGEND****HISTORICAL VADOSE ZONE CHLORIDE CONCENTRATION**

- <600 mg/kg
  - 600-1,000 mg/kg
  - 1,000+ mg/kg
- mg/kg: MILLIGRAMS PER KILOGRAM

x — x FENCE

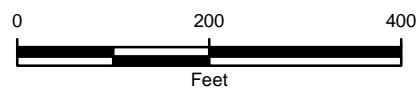
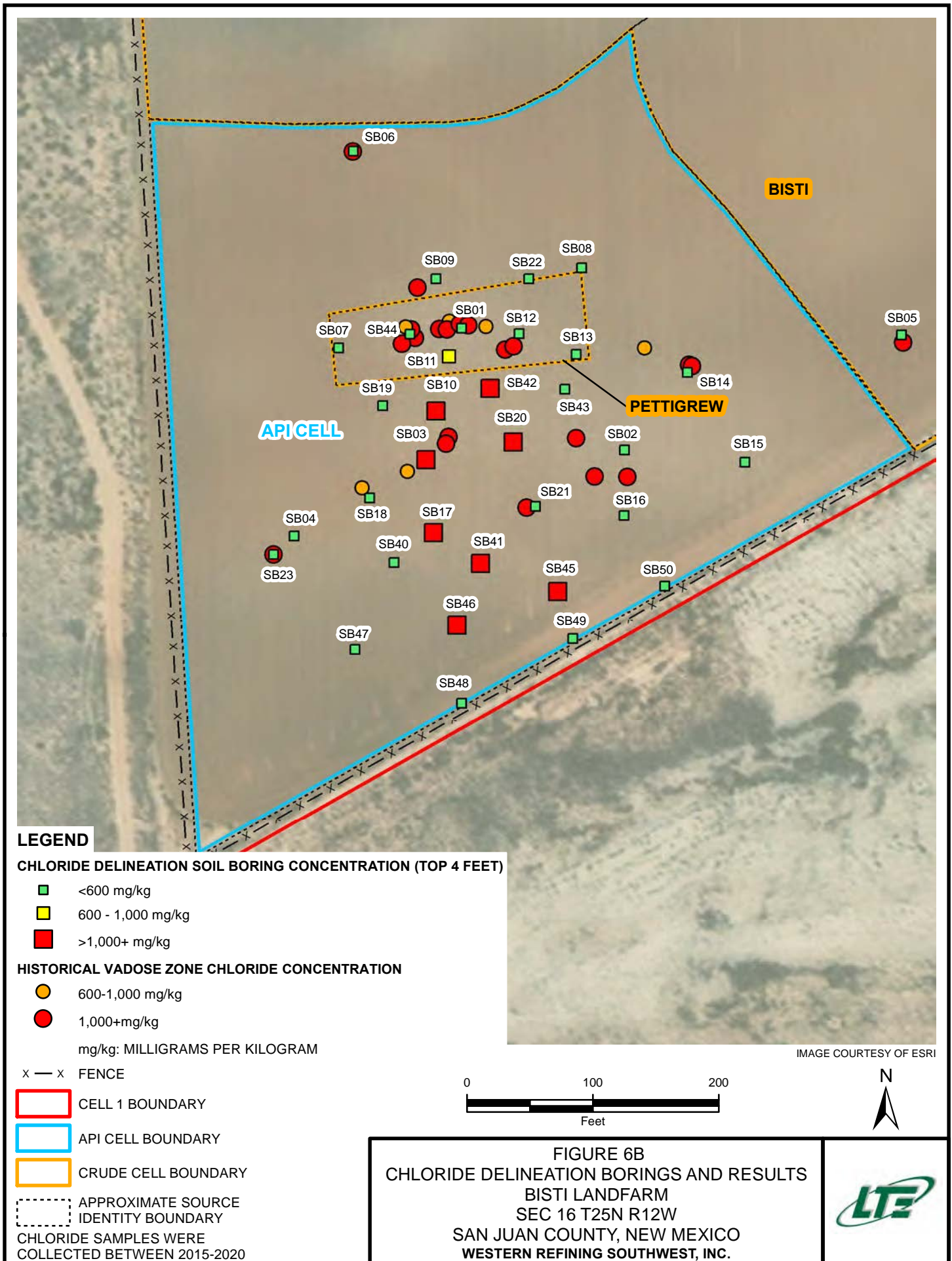
  CELL 1 BOUNDARY  API CELL BOUNDARY  CRUDE CELL BOUNDARY  APPROXIMATE SOURCE  
IDENTITY BOUNDARYCHLORIDE SAMPLES WERE  
COLLECTED BETWEEN 2015-2020

IMAGE COURTESY OF ESRI

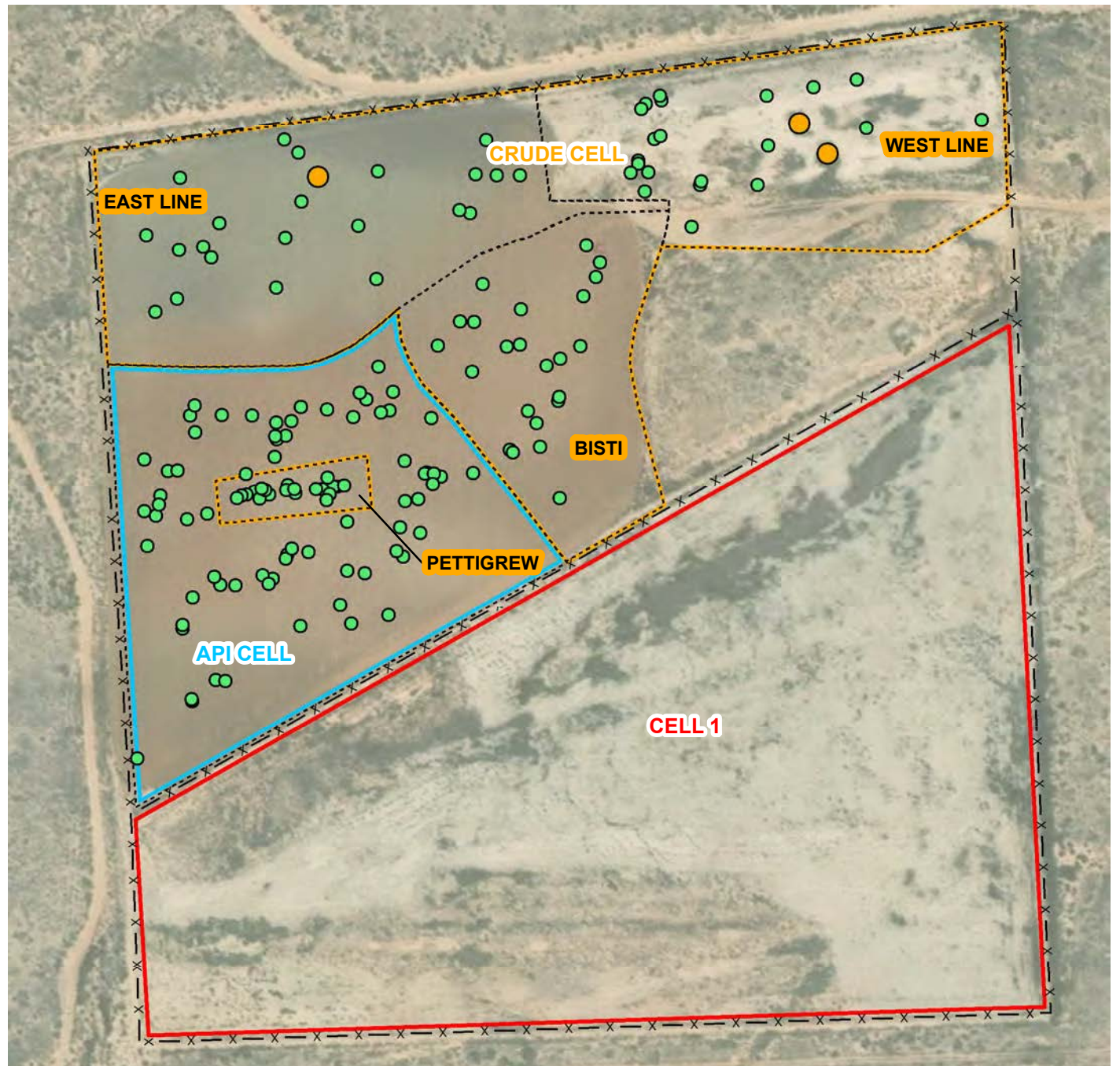


**FIGURE 6A**  
**HISTORICAL VADOSE ZONE CHLORIDE RESULTS**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**







**LEGEND****HISTORICAL VADOSE ZONE TPH CONCENTRATION**

● <100 mg/kg

● >100 mg/kg

mg/kg: MILLIGRAMS PER KILOGRAM

TPH: TOTAL PETROLEUM HYDROCARBONS

x — x FENCE

--- APPROXIMATE SOURCE  
IDENTITY BOUNDARY

CELL 1 BOUNDARY

API CELL BOUNDARY

CRUDE CELL BOUNDARY

TPH SAMPLES WERE  
COLLECTED BETWEEN 2015-2020

0 200 400  
Feet

IMAGE COURTESY OF ESRI

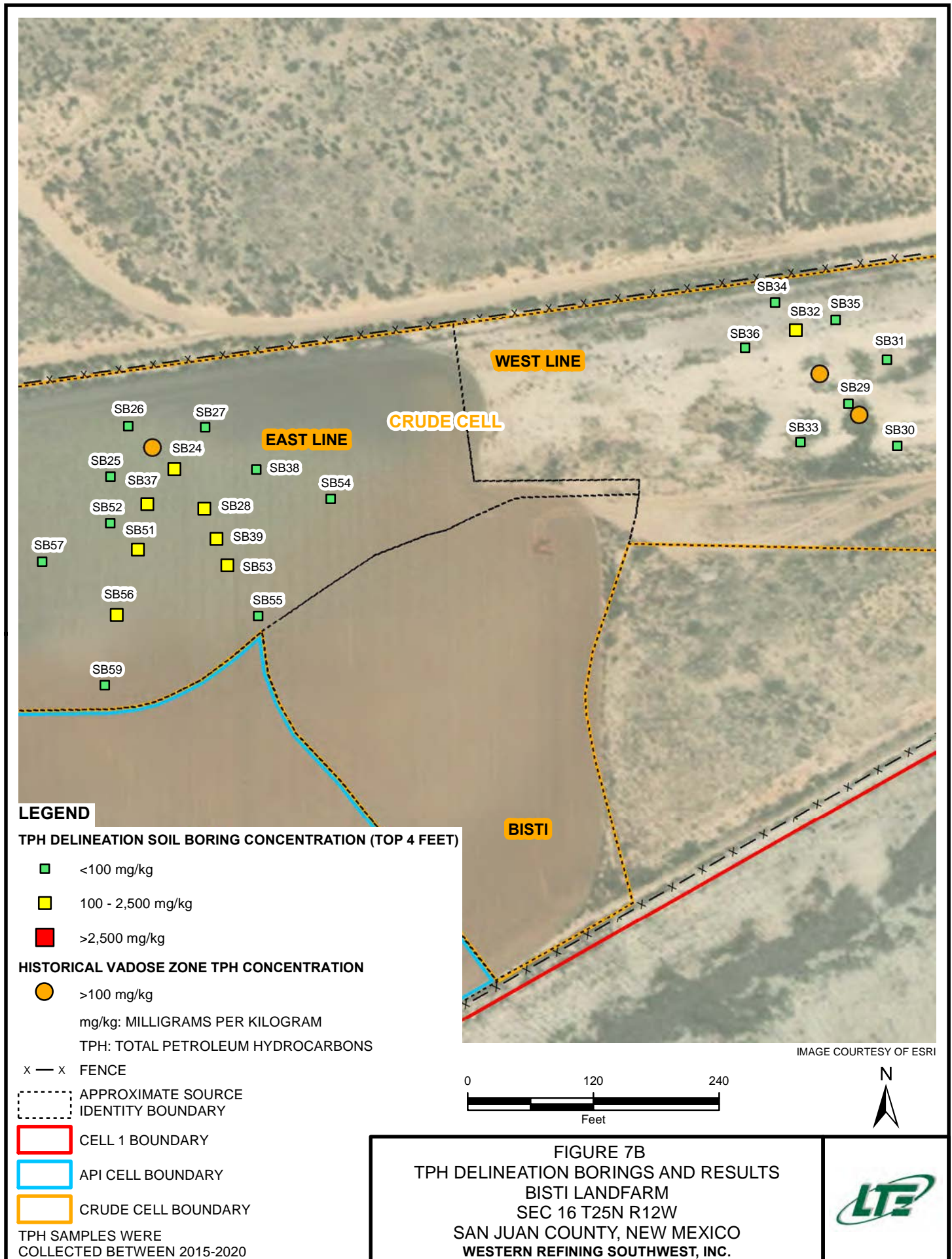


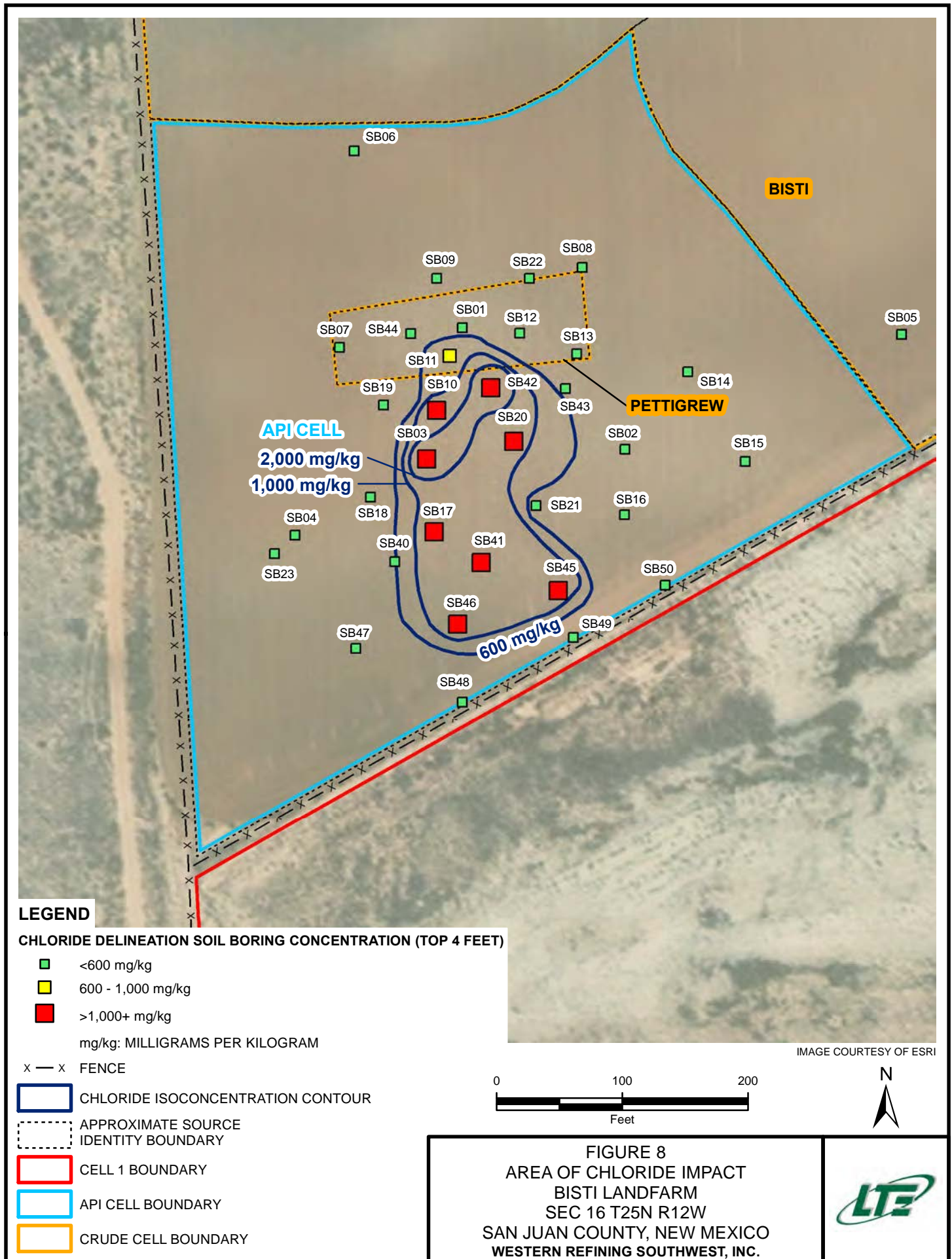
**FIGURE 7A**  
**HISTORICAL VADOSE ZONE TPH RESULTS**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**



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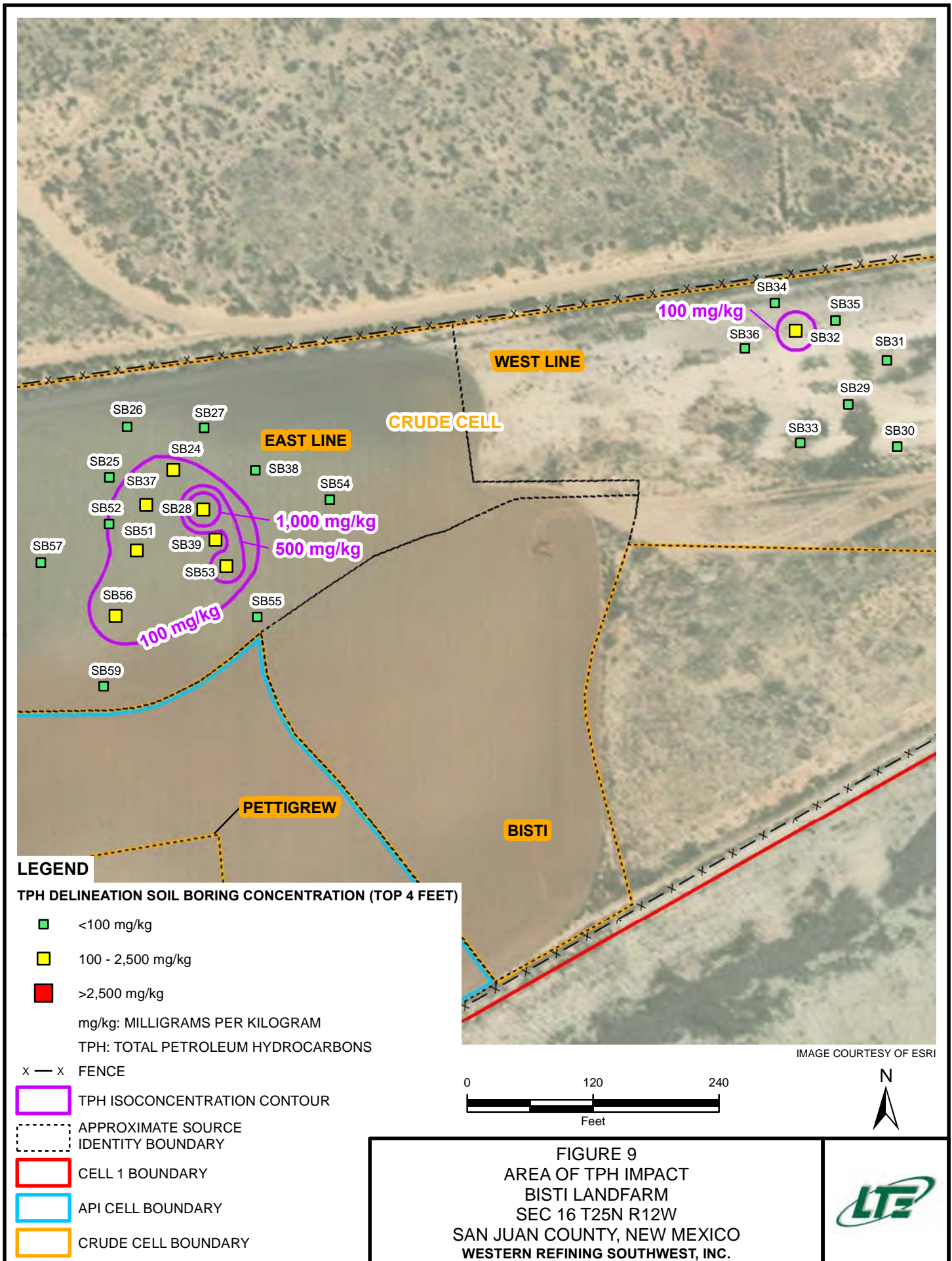




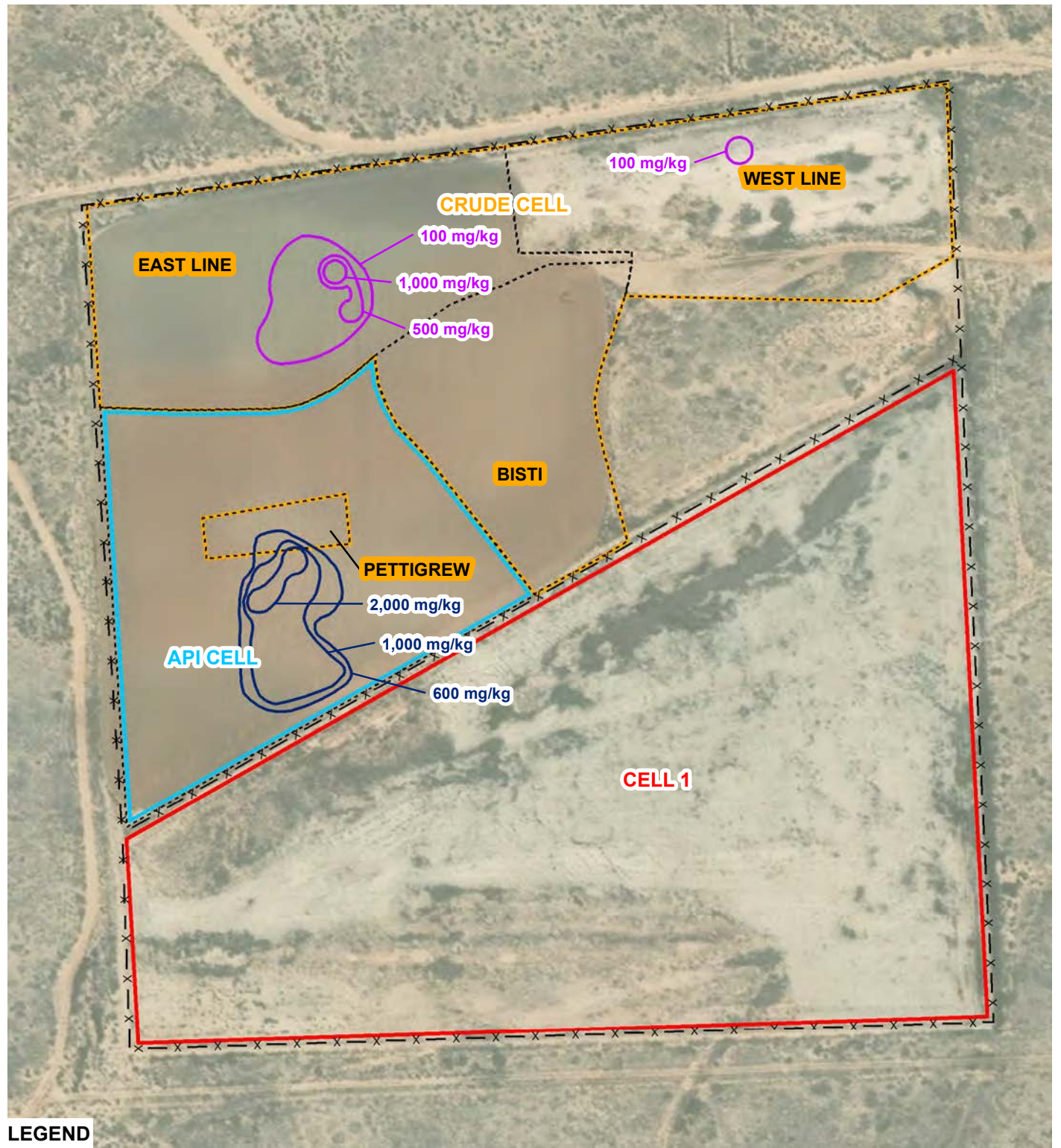


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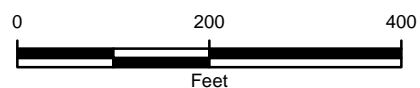




**LEGEND**

- x — x FENCE
- TPH ISOCONCENTRATION CONTOUR
- CHLORIDE ISOCONCENTRATION CONTOUR
- APPROXIMATE SOURCE IDENTITY BOUNDARY
- CELL 1 BOUNDARY
- API CELL BOUNDARY
- CRUDE CELL BOUNDARY

IMAGE COURTESY OF ESRI



**FIGURE 10**  
**AREAS OF IMPACT**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**



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GRAPHIC





GRAPHIC 1  
SOIL STANDARDS AND PROFILE  
BISTI LANDFARM  
SAN JUAN COUNTY, NEW MEXICO  
WESTERN REFINING SOUTHWEST

## Part 36 Standards

**0 – 24 Inches**  
Maximum  
Thickness of  
Treatment Zone Soil  
for Landfarm  
(19.15.36.15  
NMAC)

**0 – 8 Inches**  
Maximum Single Lift  
for Landfarm  
(19.15.36.15 NMAC)

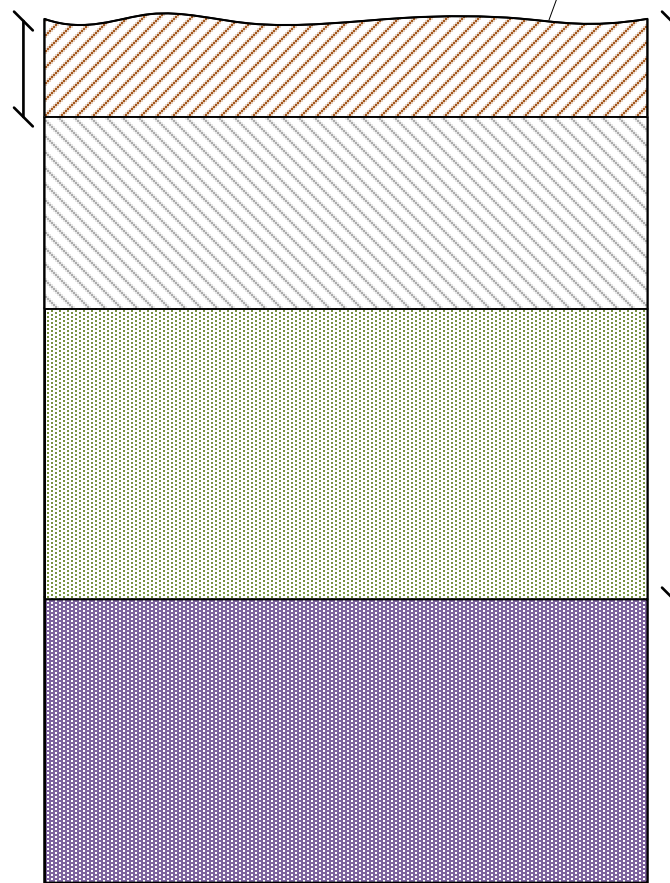
### Treatment Zone Closure Performance Standards:

-Chloride = 1,000 mg/kg  
-TPH = 2,500 mg/kg

## Part 29 Standards

### Soil Profile

Ground Surface



**0 – 4 Feet BGS**  
NMOCD Reclamation  
Standard  
(19.15.29.13 NMAC)  
-Chloride = 600 mg/kg  
-TPH = 100 mg/kg

**4+ Feet BGS**  
NMOCD Table 1 Closure  
Criteria (19.15.29.12 NMAC)  
-Chloride = 20,000 mg/kg  
-TPH = 2,500 mg/kg

TABLES



**TABLE 1**  
**BACKGROUND AND SOIL-SCREENING LEVEL CONCENTRATIONS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

ANALYTE	UNITS	1998 Background Sample Concentrations	2015 Updated Background Sample Concentrations	San Juan Basin Soil Composition, Regional Background Concentrations (USGS, 1)
		27-Mar-98	1-Sep-15	
Petroleum Hydrocarbons by EPA Method 8015M/D				
Gasoline Range Organics (GRO)	mg/kg	NA	<4.8	NE
Diesel Range Organics (DRO)	mg/kg	<50	<9.9	NE
Motor Oil Range Organics (MRO)	mg/kg	NA	<50	NE
Total Petroleum Hydrocarbons by Method 418.1 or 8015M/D				
TPH (DRO+GRO+MRO)	mg/kg	NA	<20	NE
Volatile Organic Compounds by EPA Method 8260B				
benzene	mg/kg	NA	<0.048	NE
toluene	mg/kg	NA	<0.048	NE
ethylbenzene	mg/kg	NA	<0.048	NE
methyl tert-butyl ether (MTBE)	mg/kg	NA	<0.048	NE
1,2-dichloroethane (EDC)	mg/kg	NA	<0.048	NE
1,2-dibromoethane (EDB)	mg/kg	NA	<0.048	NE
naphthalene	mg/kg	NA	<0.095	NE
1-methylnaphthalene	mg/kg	NA	<0.19	NE
2-methylnaphthalene	mg/kg	NA	<0.19	NE
bromodichloromethane	mg/kg	NA	<0.048	NE
bromoform (tribromomethane)	mg/kg	NA	<0.048	NE
bromomethane	mg/kg	NA	<0.14	NE
carbon tetrachloride (tetrachloromethane)	mg/kg	NA	<0.048	NE
chlorobenzene (monochlorobenzene)	mg/kg	NA	<0.048	NE
chloroform (trichloromethane)	mg/kg	NA	<0.048	NE
chloromethane	mg/kg	NA	<0.14	NE
cis-1,2-dichloroethene (cis-1,2-DCE)	mg/kg	NA	<0.048	NE
cis-1,3-dichloropropene	mg/kg	NA	<0.048	NE
1,2-dichlorobenzene	mg/kg	NA	<0.048	NE
1,4-dichlorobenzene	mg/kg	NA	<0.048	NE
dichlorodifluoromethane	mg/kg	NA	<0.048	NE
1,1-dichloroethane	mg/kg	NA	<0.048	NE
1,1-dichloroethene	mg/kg	NA	<0.048	NE
1,2-dichloropropane	mg/kg	NA	<0.048	NE
1,1-dichloropropene	mg/kg	NA	<0.095	NE
hexachlorobutadiene	mg/kg	NA	<0.095	NE
methylene chloride (dichloromethane)	mg/kg	NA	<0.14	NE
styrene	mg/kg	NA	<0.048	NE
1,1,2,2-tetrachloroethane	mg/kg	NA	<0.048	NE
tetrachloroethene (PCE)	mg/kg	NA	<0.048	NE
trans-1,2-dichloroethene (trans-1,2-DCE)	mg/kg	NA	<0.048	NE
trans-1,3-dichloropropene	mg/kg	NA	<0.048	NE



**TABLE 1**  
**BACKGROUND AND SOIL-SCREENING LEVEL CONCENTRATIONS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

ANALYTE	UNITS	1998 Background Sample Concentrations	2015 Updated Background Sample Concentrations	San Juan Basin Soil Composition, Regional Background Concentrations (USGS, 1)
		27-Mar-98	1-Sep-15	
1,2,4-trichlorobenzene	mg/kg	NA	<0.048	NE
1,1,1-trichloroethane	mg/kg	NA	<0.048	NE
1,1,2-trichloroethane	mg/kg	NA	<0.048	NE
trichloroethene (TCE)	mg/kg	NA	<0.048	NE
trichlorofluoromethane	mg/kg	NA	<0.048	NE
vinyl chloride (chloroethene)	mg/kg	NA	<0.048	NE
xylene, total	mg/kg	NA	<0.095	NE
<b>Polycyclic Aromatic Hydrocarbons by EPA Method 8270</b>				
Benzo(a)pyrene	mg/kg	NA	<0.0099	NE
<b>Total Phenol by Method 9066</b>				
Total Phenol	mg/kg	NA	<0.67	NE
<b>Metals by EPA Method 6010/6020</b>				
Arsenic	mg/kg	2.8	NA	1.7 - 7.6
Barium	mg/kg	180	NA	330 - 1,200
Cadmium	mg/kg	<1.3	NA	NE
Calcium	mg/kg	2,500	NA	4,000 - 34,000
Chromium	mg/kg	<5.0	NA	5.5 - 40
Copper	mg/kg	NA	3.2	1.6 - 19
Iron	mg/kg	NA	7,200	4,400 - 15,000
Lead	mg/kg	6.8	NA	6 - 19
Magnesium	mg/kg	1,300	NA	1,100 - 7,200
Manganese	mg/kg	NA	150	81 - 1,000
Mercury	mg/kg	<0.5	NA	NE
Potassium	mg/kg	810	NA	17,000 - 31,000
Selenium	mg/kg	<2.5	NA	NE
Silver	mg/kg	<1.3	NA	NE
Sodium	mg/kg	90	NA	7,000 - 17,000
Uranium	mg/kg	NA	<4.9	NE
Zinc	mg/kg	NA	14	14 - 44
<b>Polychlorinated Biphenyls by EPA Method 8082</b>				
Aroclor 1016	mg/kg	NA	<0.020	NE
Aroclor 1221	mg/kg	NA	<0.020	NE
Aroclor 1232	mg/kg	NA	<0.020	NE
Aroclor 1242	mg/kg	NA	<0.020	NE
Aroclor 1248	mg/kg	NA	<0.020	NE
Aroclor 1254	mg/kg	NA	<0.020	NE
Aroclor 1260	mg/kg	NA	<0.020	NE
<b>Cyanide by Method 9012B</b>				
Cyanide	mg/kg	NA	<0.25	NE

**TABLE 1**  
**BACKGROUND AND SOIL-SCREENING LEVEL CONCENTRATIONS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

ANALYTE	UNITS	1998 Background Sample Concentrations	2015 Updated Background Sample Concentrations	San Juan Basin Soil Composition, Regional Background Concentrations (USGS, 1)
		27-Mar-98	1-Sep-15	
Anions by EPA Method 300.0				
Chloride	mg/kg	<50	NA	NE
Fluoride	mg/kg	NA	0.84	NE
Nitrogen, Nitrate (As N)	mg/kg	NA	<0.30	NE
Sulfate	mg/kg	140	NA	NE
pH by Method SM4500-H+B				
pH	pH units	NA	7.89	NE
Radiochemistry by EPA Method 901.1				
Radium-226 **	pCi/g	NA	0.737 +/- 0.242	NE
Radium-228 **	pCi/g	NA	0.806 +/- 0.338	NE
General Chemistry				
Total Alkalinity (carbonate/bicarbonate)	mg/kg	136	NA	NE

**Notes:**

(1) - background soil concentrations based on Table 4 values (soil considered to have potential for use as topsoil), USGS Paper 1134-C, *Geochemical Variability of Natural Soils and Reclaimed Mine-Spoil Soils in the San Juan Basin, New Mexico*.

(2) - the lower cleanup standard is used for site reclamation within the top four feet of soil

TPH - Total Petroleum Hydrocarbons

mg/kg - milligrams per kilogram

DRO - diesel range organics

GRO - gasoline range organics

BTEX - benzene, toluene, ethylbenzene, total xylenes

NA - Not Analyzed

NE - Not Established

NMAC - New Mexico Administrative Code

NMOCD - New Mexico Oil and Gas Conservation Division

NMOCD Closure Criteria from July 2018 rule, Table 1; >100 feet to groundwater

PQL - practical quantitation limit

USGS - United States Geological Survey

< indicates result is less than the stated laboratory method practical quantitation limit

\*\* - screening level from ATSDR Toxicological Profile for Radium

Gray shading indicates the site background concentrations and/or PQL used for monitoring purposes

**TABLE 2**  
**2015 - 2020 API CELL VADOSE ZONE SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Analyte	PQL	NMOCD Table 1 Closure Criteria (NMAC 19.15.29)	Site Background Concentrations (27-Mar-98 and 1-Sept-15)	San Juan Basin Soil Composition (USGS, 1)	Minimum Detected Concentration	Maximum Detected Concentration
<b>TPH (mg/kg)</b>						
TPH Method: 8015	50	100/2,500 (2)	<50	NE	<9.1	<50
TPH GRO	4.8	Combined 1,000	<4.8	NE	<4.6	<5.0
TPH DRO	9.9		<9.9	NE	<9.1	<10
TPH MRO	50		<50		<50	<51
TPH Method: 418.1	20	100/2,500 (2)	<20	NE	<18	<20
<b>BTEX (mg/kg)</b>						
Benzene	0.048	10.0	<0.048	NE	<0.023	<0.050
Toluene	0.048	NE	<0.048	NE	<0.023	<0.050
Ethylbenzene	0.048	NE	<0.048	NE	<0.023	<0.050
Xylenes	0.048	NE	<0.048	NE	<0.093	<0.010
Total BTEX	0.048	50.0	<0.048	NE	<0.093	<0.10
<b>General Chemistry (mg/kg)</b>						
Chloride	38	600/20,000 (2)	<50	NE	1.80	<b>4,800</b>
Sulfate (3)	110	NE	140	NE	84.0	800
Alkalinity (3)	NE	NE	136	NE	60.0	120
Bicarbonate (3)	21	NE	110	NE	73.0	128
Carbonate (3)	5	NE	26	NE	147	147
<b>Metals (mg/kg)</b>						
Arsenic	2.4	NE	2.8	1.7 - 7.6	<2.4	<2.8
Barium	0.097	NE	180	330 - 1,200	46.0	170
Cadmium	0.097	NE	<1.3	NE	<0.097	<0.15
Calcium	25	NE	2,500	4,000 - 34,000	1,500	3,200
Total Chromium	0.29	NE	<5.0	5.5 - 40	1.40	3.20
Copper	0.29	NE	3.2	1.6 - 19	1.50	2.70
Iron	120	NE	7,200	4,400 - 15,000	4,700	6,700
Lead	0.24	NE	6.8	6 - 19	1.30	2.40
Magnesium	25	NE	1,300	1,100 - 7,200	940	940
Manganese	0.097	NE	150	81 - 1,000	87.0	130
Mercury	0.031	NE	<0.5	NE	<0.032	<0.034
Potassium	50	NE	810	17,000 - 31,000	500	670
Selenium	2.5	NE	<2.5	NE	<2.4	<4.4
Silver	0.24	NE	<1.3	NE	<0.24	<0.29
Sodium	25	NE	90	7,000 - 17,000	93.0	3,600
Uranium	4.9	NE	<4.9	NE	<4.9	<5.0
Zinc	2.4	NE	14	14 - 44	8.90	13.0

**Notes:**

- (1) - background soil concentrations based on Table 4 values (soil considered to have potential for use as topsoil), USGS Paper 1134-C, *Geochemical Variability of Natural Soils and Reclaimed Mine-Spoil Soils in the San Juan Basin, New Mexico*.
- (2) - the lower cleanup standard is used for site reclamation within the top four feet of soil
- (3) - sulfate, alkalinity, bicarbonate, and carbonate are general chemistry soil parameters, not chemicals. There are no soil screening levels for these parameters included in the EPA Regional Screening Levels (RSLs) or the NMED risk assessment guidance
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- DRO - diesel range organics
- GRO - gasoline range organics
- mg/kg - milligrams per kilogram
- NE - Not Established
- NMAC - New Mexico Administrative Code
- NMED - New Mexico Environment Department
- NMOCD - New Mexico Oil and Gas Conservation Division
- PQL - practical quantitation limit
- TPH - Total Petroleum Hydrocarbons
- USGS - United States Geological Survey
- < indicates result is less than the stated laboratory method practical quantitation limit
- Bold** indicates concentration exceeds the higher of background concentrations or NMOCD Table 1 Closure Criteria

**TABLE 3**  
**2015 - 2020 CRUDE CELL VADOSE ZONE SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Analyte	PQL	NMOC Table 1 Closure Criteria (NMAC 19.15.29)	Site Background Concentrations (27-Mar-98 and 1-Sept-15)	San Juan Basin Soil Composition (USGS, 1)	Minimum Detected Concentration	Maximum Detected Concentration
<b>TPH (mg/kg)</b>						
TPH Method: 8015	50	100/2,500 (2)	<50	NE	15.0	<b>106</b>
TPH GRO	4.8	Combined 1,000	<4.8	NE	<4.6	<5.0
TPH DRO	9.9		<9.9	NE	10.0	53
TPH MRO	50	NE	<50		61.0	61.0
TPH Method: 418.1	20	100/2,500 (2)	<20	NE	26.0	91.0
<b>BTEX (mg/kg)</b>						
Benzene	0.048	10.0	<0.048	NE	<0.023	<0.050
Toluene	0.048	NE	<0.048	NE	<0.023	<0.050
Ethylbenzene	0.048	NE	<0.048	NE	<0.023	<0.050
Xylenes	0.048	NE	<0.048	NE	<0.093	<0.010
Total BTEX	NE	50.0	<0.048	NE	<0.093	<0.10
<b>General Chemistry (mg/kg)</b>						
Chloride	<50	600/20,000 (2)	<50	NE	1.60	<b>3,500</b>
Sulfate (3)	110	NE	140	NE	14.0	340
Alkalinity (3)	NE	NE	136	NE	46.0	534
Bicarbonate (3)	21	NE	110	NE	56.0	510
Carbonate (3)	5	NE	26	NE	<4	<4
<b>Metals (mg/kg)</b>						
Arsenic	2.4	NE	2.8	1.7 - 7.6	2.50	3.40
Barium	0.097	NE	180	330 - 1,200	40.0	1,100
Cadmium	0.097	NE	<1.3	NE	<0.097	<5.0
Calcium	25	NE	2,500	4,000 - 34,000	1,100	7,000
Total Chromium	0.29	NE	<5.0	5.5 - 40	0.670	3.50
Copper	0.29	NE	3.2	1.6 - 19	1.60	3.80
Iron	120	NE	7,200	4,400 - 15,000	4,500	8,900
Lead	0.24	NE	6.8	6 - 19	1.20	6.40
Magnesium	25	NE	1,300	1,100 - 7,200	890	1,700
Manganese	0.097	NE	150	81 - 1,000	84.0	320
Mercury	0.03	NE	<0.5	NE	<0.0029	<0.034
Potassium	50	NE	810	17,000 - 31,000	360	1,100
Selenium	2.5	NE	<2.5	NE	<2.4	<12
Silver	0.24	NE	<1.3	NE	<0.24	<4.8
Sodium	25	NE	90	7,000 - 17,000	45.0	2,800
Uranium	4.9	NE	<4.9	NE	<4.8	<25
Zinc	2.4	NE	14	14 - 44	8.50	17.0

**Notes:**

- (1) - background soil concentrations based on Table 4 values (soil considered to have potential for use as topsoil), USGS Paper 1134-C, *Geochemical Variability of Natural Soils and Reclaimed Mine-Spoil Soils in the San Juan Basin, New Mexico*.
- (2) - the lower cleanup standard is used for site reclamation within the top four feet of soil
- (3) - sulfate, alkalinity, bicarbonate, and carbonate are general chemistry soil parameters, not chemicals. There are no soil screening levels for these parameters included in the EPA Regional Screening Levels (RSLs) or the NMED risk assessment guidance document.
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- DRO - diesel range organics
- GRO - gasoline range organics
- mg/kg - milligrams per kilogram
- NE - Not Established
- NMAC - New Mexico Administrative Code
- NMED - New Mexico Environment Department
- NMOC - New Mexico Oil and Gas Conservation Division
- PQL - practical quantitation limit
- TPH - Total Petroleum Hydrocarbons
- USGS - United States Geological Survey
- < indicates result is less than the stated laboratory method practical quantitation limit
- Bold** indicates concentration exceeds the higher of background concentrations or NMOC Table 1 Closure Criteria

TABLE 4  
RELEASE RE-SAMPLING VADOSE ZONE SOIL ANALYTICAL RESULTS

BISTI LANDFARM  
SAN JUAN COUNTY, NEW MEXICO  
WESTERN REFINING SOUTHWEST, INC.

ANALYTE	UNITS	NMOCD Table 1 Closure Criteria (NMAC 19.15.29)	Site Background Concentration (27-Mar-98 and 1-Sept-15)	San Juan Basin Soil Composition (USGS, 1)	CRUDE CELL								API CELL							
					Westline Vadose Zone	Eastline Vadose Zone	Bisti Vadose Zone	Pettigrew Vadose Zone	CRUDE01	CRUDE02	CRUDE03	CRUDE04	API Vadose Zone -1	API Vadose Zone -2	API Vadose Zone -3	API Vadose Zone -4	API01	API02	API03	API04
					4-May-15	4-May-15	4-May-15	4-May-15	5-May-20	5-May-20	5-May-20	5-May-20	4-May-15	4-May-15	4-May-15	4-May-15	5-May-20	5-May-20	5-May-20	5-May-20
Petroleum Hydrocarbons by EPA Method 8015M/D																				
Gasoline Range Organics (GRO)	mg/kg	Combined 1,000	<4.8	NE	<5.0	<4.9	<5.0	<5.0	<4.7	<4.7	<4.7	<5.0	<5.0	<5.0	<5.0	<4.9	<5.0	<4.7	<4.9	<4.9
Diesel Range Organics (DRO)	mg/kg		<9.9	NE	<9.9	18	<9.9	<10	<9.8	<9.0	100	19	<10	<9.9	<9.9	<10	<9.2	<8.9	<9.7	<9.5
Motor Oil Range Organics (MRO)	mg/kg	NE	<50	NE	<49	<49	<50	<50	<49	<45	150	<49	<50	<50	<50	<51	<46	<44	<48	<47
Total Petroleum Hydrocarbons by Method 418.1 or 8015M/D																				
TPH	mg/kg	100/2,500 (2)	<20	NE	<20	74	<20	<20	<19	<20	300	68	<20	<20	53	<20	<19	<19	<19	<18
Volatile Organic Compounds by EPA Method 8260B																				
benzene	mg/kg	10.0	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.024	<0.023	<0.024	<0.025	<0.050	<0.050	<0.050	<0.049	<0.025	<0.023	<0.024	<0.025
toluene	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
ethylbenzene	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
methyl tert-butyl ether (MTBE)	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,2-dichloroethane (EDC)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
1,2-dibromoethane (EDB)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
naphthalene	mg/kg	NE	<0.095	NE	<0.25	<0.25	<0.25	<0.25	<0.094	<0.093	<0.095	<0.099	<0.25	<0.25	<0.25	<0.25	<0.099	<0.094	<0.097	<0.099
1-methylnaphthalene	mg/kg	NE	<0.19	NE	<0.25	<0.25	<0.25	<0.25	<0.19	<0.19	<0.19	<0.20	<0.25	<0.25	<0.25	<0.25	<0.20	<0.19	<0.19	<0.20
2-methylnaphthalene	mg/kg	NE	<0.19	NE	<0.25	<0.25	<0.25	<0.25	<0.19	<0.19	<0.19	<0.20	<0.25	<0.25	<0.25	<0.25	<0.20	<0.19	<0.19	<0.20
bromodichloromethane	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
bromoform (tribromomethane)	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
bromomethane	mg/kg	NE	<0.14	NE	NA	NA	NA	NA	<0.14	<0.14	<0.14	<0.15	NA	NA	NA	NA	<0.15	<0.14	<0.15	<0.15
carbon tetrachloride (tetrachloromethane)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
chlorobenzene (monochlorobenzene)	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
chloroform (trichloromethane)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
chloromethane	mg/kg	NE	<0.14	NE	NA	NA	NA	NA	<0.14	<0.14	<0.14	<0.15	NA	NA	NA	NA	<0.15	<0.14	<0.15	<0.15
cis-1,2-dichloroethene (cis-1,2-DCE)	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
cis-1,3-dichloropropene	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,2-dichlorobenzene	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,4-dichlorobenzene	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
dichlorodifluoromethane	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,1-dichloroethane	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
1,1-dichloroethene	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
1,2-dichloropropane	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,1-dichloropropene	mg/kg	NE	<0.095	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
hexachlorobutadiene	mg/kg	NE	<0.095	NE	NA	NA	NA	NA	<0.094	<0.093	<0.095	<0.099	NA	NA	NA	NA	<0.099	<0.094	<0.097	<0.099
methylene chloride (dichloromethane)	mg/kg	NE	<0.14	NE	<0.15	<0.15	<0.15	<0.15	<0.14	<0.14	<0.14	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.14	<0.15	<0.15
styrene	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,1,2,2-tetrachloroethane	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
tetrachloroethene (PCE)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
trans-1,2-dichloroethene (trans-1,2-DCE)	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
trans-1,3-dichloropropene	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,2,4-trichlorobenzene	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
1,1,1-trichloroethane	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
1,1,2-trichloroethane	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
trichloroethene (TCE)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
trichlorofluoromethane	mg/kg	NE	<0.048	NE	NA	NA	NA	NA	<0.047	<0.047	<0.047	<0.050	NA	NA	NA	NA	<0.050	<0.047	<0.049	<0.049
vinyl chloride (chloroethene)	mg/kg	NE	<0.048	NE	<0.050	<0.049	<0.050	<0.050	<0.047	<0.047	<0.047	<0.050	<0.050	<0.050	<0.050	<0.049	<0.050	<0.047	<0.049	<0.049
xylene, total	mg/kg	NE	<0.095	NE	<0.10	<0.098	<0.10	<0.10	<0.094	<0.093	<0.095	<0.099	<0.10	<0.10	<0.10	<0.098	<0.099	<0.094	<0.097	<0.099

TABLE 4  
RELEASE RE-SAMPLING VADOSE ZONE SOIL ANALYTICAL RESULTS

BISTI LANDFARM  
SAN JUAN COUNTY, NEW MEXICO  
WESTERN REFINING SOUTHWEST, INC.

ANALYTE	UNITS	NMOCD Table 1 Closure Criteria (NMAC 19.15.29)	Site Background Concentration (27-Mar-98 and 1-Sept-15)	San Juan Basin Soil Composition (USGS, 1)	CRUDE CELL								API CELL							
					Westline Vadose Zone	Eastline Vadose Zone	Bisti Vadose Zone	Pettigrew Vadose Zone	CRUDE01	CRUDE02	CRUDE03	CRUDE04	API Vadose Zone -1	API Vadose Zone -2	API Vadose Zone -3	API Vadose Zone -4	API01	API02	API03	API04
					4-May-15	4-May-15	4-May-15	4-May-15	5-May-20	5-May-20	5-May-20	5-May-20	4-May-15	4-May-15	4-May-15	4-May-15	5-May-20	5-May-20	5-May-20	5-May-20
Polycyclic Aromatic Hydrocarbons by EPA Method 8270																				
Benzo(a)pyrene	mg/kg	NE	<0.0099	NE	<0.0099	<0.0099	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.0099	<0.0099	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020
Total Phenol by Method 9066																				
Total Phenol	mg/kg	NE	<0.67	NE	<2.58	<2.74	<2.63	<2.625	<0.670	<0.670	<0.670	<0.670	<2.655	<2.635	<2.615	<2.62	<0.670	<0.670	<0.670	<0.670
Metals by EPA Method 6010/6020																				
Arsenic	mg/kg	NE	2.8	1.7 - 7.6	<2.4	<2.4	<2.4	<2.4	<4.9	<4.8	<5.0	<5.1	<2.5	<2.4	<2.5	<2.4	<4.8	<5.1	<5.0	<5.1
Barium	mg/kg	NE	180	330 - 1,200	180	69	66	58	64	130	52	87	92	44	64	150	40	62	150	36
Cadmium	mg/kg	NE	<1.3	NE	<0.096	<0.097	<0.097	<0.098	<0.20	<0.19	<0.20	<0.20	<0.099	<0.097	<0.10	<0.097	<0.19	<0.21	<0.20	<0.20
Calcium	mg/kg	NE	2,500	4,000 - 34,000	NA	NA	NA	NA	3,300	3,400	3,100	7,000	NA	NA	NA	NA	1,400	2,300	5,500	1,500
Chromium	mg/kg	NE	<5.0	5.5 - 40	1.9	2.5	1.6	1.7	2.3	1.9	2.6	2.9	1.9	1.9	1.8	2.1	1.4	1.6	2.5	1.3
Copper	mg/kg	NE	3.2	1.6 - 19	1.7	3.5	2.1	2.3	2.5	2.0	2.1	3.2	2.3	2.3	2.4	2.3	1.5	1.6	2.9	1.3
Iron	mg/kg	NE	7,200	4,400 - 15,000	5,700	6,600	4,400	4,800	5,000	4,800	4,500	6,600	5,000	5,100	5,300	5,200	4,200	4,400	5,700	4,000
Lead	mg/kg	NE	6.8	6 - 19	2.0	3.10	1.9	2.0	0.84	1.3	1.7	1.5	1.9	2.0	2.1	2.1	1.7	1.2	1.6	1.6
Magnesium	mg/kg	NE	1,300	1,100 - 7,200	NA	NA	NA	NA	1,000	1,000	890	1,600	NA	NA	NA	NA	930	990	1,200	800
Manganese	mg/kg	NE	150	81 - 1,000	130	130	110	95	100	100	84	100	110	98	110	140	130	99	140	150
Mercury	mg/kg	NE	<0.5	NE	<0.034	<0.033	<0.032	<0.031	<0.033	<0.035	<0.034	<0.034	<0.034	<0.033	<0.035	<0.032	<0.034	<0.031	<0.033	<0.033
Potassium	mg/kg	NE	810	17,000 - 31,000	NA	NA	NA	NA	870	770	620	1,100	NA	NA	NA	NA	600	630	1,000	500
Selenium	mg/kg	NE	<2.5	NE	<2.4	<2.4	<2.4	<2.4	<4.9	<4.8	<5.0	<5.1	<2.5	<2.4	<2.5	<2.4	<4.8	<5.1	<5.0	<5.1
Silver	mg/kg	NE	<1.3	NE	<0.24	<0.24	<0.24	<0.24	<0.49	<0.48	<0.50	<0.51	<0.25	<0.24	<0.25	<0.24	<0.48	<0.51	<0.50	<0.51
Sodium	mg/kg	NE	90	7,000 - 17,000	NA	NA	NA	NA	1,600	67	100	140	NA	NA	NA	NA	72	140	2,100	<51
Uranium	mg/kg	NE	<4.9	NE	<4.8	<4.9	<4.8	<4.9	<9.8	<9.6	<10	<10	<5.0	<4.9	<5.0	<4.8	<9.7	<10	<10	<10
Zinc	mg/kg	NE	14	14 - 44	11	15	9	11	11	11	9.8	14	11	10	11	11	9.6	9.2	13	8.4
Polychlorinated Biphenyls by EPA Method 8082																				
Aroclor 1016	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Aroclor 1221	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Aroclor 1232	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Aroclor 1242	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Aroclor 1248	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Aroclor 1254	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Aroclor 1260	mg/kg	NE	<0.020	NE	<0.020	<0.020	<0.020	<0.020	<0.024	<0.025	<0.025	<0.024	<0.020	<0.020	<0.020	<0.020	<0.024	<0.024	<0.025	<0.024
Cyanide by Method 9012B																				
Cyanide	mg/kg	NE	<0.25	NE	<0.257	<0.273	<0.263	<0.261	<0.250	<0.250	<0.250	<0.250	<0.266	<0.26	<0.26	<0.26	<0.250	<0.250	<0.250	<0.250
Anions by EPA Method 300.0																				
Chloride	mg/kg	600/20,000 (2)	<50	NE	<7.5	12	24	310	800	<7.5	<7.5	8.9	140	<1.5	13	1,800	<7.5	8.0	370	<7.5
Fluoride	mg/kg	NE	0.84	NE	2.3	1.6	1.5	1.1	<1.5	<1.5	<1.5	1.7	2.4	1.6	0.81	1.7	1.6	<1.5	2.2	<1.5
Nitrogen, Nitrate (As N)	mg/kg	NE	<0.30	NE	<1.5	1.7	5.7	15	25	3.2	<1.5	15	24	3.8	2.3	3.1	<1.5	3.1	25	<1.5
Sulfate (3)	mg/kg	NE	140	NE	62	340	25	89	940	16	470	120	1,000	10	130	130	18	19	900	<7.5
pH by Method SM4500-H+B																				
pH	pH units	NE	7.89	NE	8.20	7.95	8.78	8.30	8.77	8.39	7.94	8.16	9.11	8.75	8.53	7.99	8.75	9.14	9.38	8.59

TABLE 4  
RELEASE RE-SAMPLING VADOSE ZONE SOIL ANALYTICAL RESULTS

BISTI LANDFARM  
SAN JUAN COUNTY, NEW MEXICO  
WESTERN REFINING SOUTHWEST, INC.

ANALYTE	UNITS	NMOCD Table 1 Closure Criteria (NMAC 19.15.29)	Site Background Concentration (27-Mar-98 and 1-Sept-15)	San Juan Basin Soil Composition (USGS, 1)	CRUDE CELL								API CELL							
					Westline Vadose Zone	Eastline Vadose Zone	Bisti Vadose Zone	Pettigrew Vadose Zone	CRUDE01	CRUDE02	CRUDE03	CRUDE04	API Vadose Zone -1	API Vadose Zone -2	API Vadose Zone -3	API Vadose Zone -4	API01	API02	API03	API04
					4-May-15	4-May-15	4-May-15	4-May-15	5-May-20	5-May-20	5-May-20	5-May-20	4-May-15	4-May-15	4-May-15	4-May-15	5-May-20	5-May-20	5-May-20	5-May-20
Radiochemistry by EPA Method 901.1																				
Radium-226 (4)	pCi/g	NE	0.737 +/- 0.242	NE	0.612 ± 0.201	0.611 ± 0.175	0.523 ± 0.181	0.742 ± 0.192	0.464 +/- 0.0981	0.455 +/- 0.108	0.666 +/- 0.186	0.898 +/- 0.142	0.572 ± 0.155	0.539 ± 0.153	0.586 ± 0.138	0.700 ± 0.177	0.512 +/- 0.191	0.584 +/- 0.127	0.446 +/- 0.103	0.563 +/- 0.142
Radium-228 (4)	pCi/g	NE	0.806 +/- 0.338	NE	0.599 ± 0.376	0.738 ± 0.342	0.805 ± 0.288	0.877 ± 0.279	0.510 +/- 0.136	0.493 +/- 0.167	0.549 +/- 0.125	0.622 +/- 0.167	0.852 ± 0.245	0.969 ± 0.326	0.495 ± 0.382	0.430 ± 0.511	0.646 +/- 0.298	0.590 +/- 0.178	0.501 +/- 0.135	0.645 +/- 0.210
General Chemistry																				
Total Alkalinity (carbonate/bicarbonate) (3)	mg/kg	NE	136	NE	NA	NA	NA	NA	148	94	63	98	NA	NA	NA	NA	92	93	182	90

Notes:  
(1) - background soil concentrations based on Table 4 values (soil considered to have potential for use as topsoil), USGS Paper 1134-C, *Geochemical Variability of Natural Soils and Reclaimed Mine-Spoil Soils in the San Juan Basin, New Mexico*.  
(2) - the lower cleanup standard is used for site reclamation within the top four feet of soil  
(3) - sulfate is a general chemistry soil parameter, not chemical. There are no soil screening levels for these parameters included in the EPA Regional Screening Levels (RSLs) or the NMED risk assessment guidance document.  
(4) - screening level from ATSDR Toxicological Profile for Radium  
BTEX - benzene, toluene, ethlybenzene, total xylenes  
DRO - diesel range organics  
GRO - gasoline range organics  
mg/kg - milligrams per kilogram  
NA - Not Analyzed  
NE - Not Established  
NMAC - New Mexico Administrative Code  
NMED - New Mexico Environment Department  
NMOCD - New Mexico Oil and Gas Conservation Division  
NMOCD Closure Criteria from July 2018 rule, Table 1; >100 feet to groundwater  
PQL - practical quantitation limit  
TPH - Total Petroleum Hydrocarbons  
USGS - United Stated Geological Survey  
**Bold** indicates concentration exceeds the higher of NMOCD Closure Criteria or site/regional background concentrations

**TABLE 5**  
**2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	Chloride Field Test Strips (ppm)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	600/20,000 (1)
SB01	---	---	0-1	<112	---
	---	---	1-2	<112	---
	---	---	2-3	<112	---
	SB01@3'-4'	8/11/2020	3-4	444	340
	---	---	4-6	548	---
	SB01@6'-8'	8/11/2020	6-8	1,168	1,000
	---	---	8-10	1,020	---
	---	---	10-12	1,168	---
	---	---	12-14	648	---
	SB01@14'-16'	8/11/2020	14-16	396	490
SB02	---	---	0-1	<112	---
	---	---	1-2	<112	---
	---	---	2-3	232	---
	SB02@3'-4'	8/11/2020	3-4	544	360
	SB02@4'-6'	8/11/2020	4-6	2,128	2,400
	---	---	6-8	1,624	---
	---	---	8-10	1,852	---
	---	---	10-12	1,852	---
	---	---	12-14	1,624	---
	SB02@14'-16'	8/11/2020	14-16	820	680
SB03	---	---	0-1	444	---
	---	---	1-2	1,520	---
	---	---	2-3	1,248	---
	SB03@3'-4'	8/11/2020	3-4	2,288	2,200*
	---	---	4-6	1,624	---
	---	---	6-8	1,412	---
	SB03@8'-10'	8/11/2020	8-10	2,289	2,200
	SB03@10'-12'	8/11/2020	10-12	760	640
SB04	SB04@0'-1'	8/11/2020	0-1	136	89
	---	---	1-2	<112	---
	---	---	2-3	<112	---
	---	---	3-4	<112	---
	---	---	4-6	<112	---
	SB04@6'-8'	8/11/2020	6-8	136	120
	---	---	8-10	136	---
	SB04@10'-12'	8/11/2020	10-12	136	100
SB05	---	---	0-1	<112	---
	---	---	1-2	<112	---
	SB05@2'-3'	8/11/2020	2-3	<112	<59
	---	---	3-4	<112	---
	---	---	4-6	<112	---
	SB05@6'-8'	8/11/2020	6-8	<112	<60
	---	---	8-10	<112	---
	SB05@10'-12'	8/11/2020	10-12	<112	<60



**TABLE 5**  
**2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	Chloride Field Test Strips (ppm)	Chloride (mg/kg)
<b>NMOCD Table 1 Closure Criteria (NMAC 19.15.29)</b>				NE	600/20,000 (1)
<b>SB06</b>	---	---	0-1	<124	---
	---	---	1-2	<124	---
	SB06@2'-3'	8/11/2020	2-3	<124	<60
	---	---	3-4	<124	---
	---	---	4-6	<124	---
	SB06@6'-8'	8/11/2020	6-8	<124	<60
	---	---	8-10	<124	---
	SB06@10'-12'	8/11/2020	10-12	<124	<59
<b>SB07</b>	---	---	0-1	<124	---
	SB07@1'-2'	8/11/2020	1-2	<124	<60
	---	---	2-3	<124	---
	---	---	3-4	<124	---
	---	---	4-6	<124	---
	SB07@6'-8'	8/11/2020	6-8	<124	<59
	---	---	8-10	<124	---
	SB07@10'-12'	8/11/2020	10-12	<124	61
<b>SB08</b>	SB08@0'-1'	8/11/2020	0-1	152	<60
	---	---	1-2	<124	---
	---	---	2-3	<124	---
	---	---	3-4	<124	---
	---	---	4-6	<124	---
	SB08@6'-8'	8/11/2020	6-8	<124	<60
	---	---	8-10	<124	---
	SB08@10'-12'	8/11/2020	10-12	184	110
<b>SB09</b>	---	---	0-1	<124	---
	---	---	1-2	<124	---
	SB09@2'-3'	8/11/2020	2-3	<124	<60
	---	---	3-4	<124	---
	SB09@4'-6'	8/11/2020	4-6	<124	<60
	SB09@6'-8'	8/11/2020	6-8	<124	<60
<b>SB10</b>	---	---	0-1	<124	---
	---	---	1-2	<124	---
	---	---	2-3	676	---
	SB10@3'-4'	---	3-4	1,712	1,600**
	---	---	4-6	1,408	---
	---	---	6-8	1,980	---
<b>SB11</b>	---	---	0-1	<122	---
	---	---	1-2	<122	---
	---	---	2-3	312	---
	SB11@3'-4'	8/11/2020	3-4	704	620**
	SB11@4'-6'	8/11/2020	4-6	884	---
	SB11@6'-8'	8/11/2020	6-8	1,424	---

**TABLE 5**  
**2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	Chloride Field Test Strips (ppm)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	600/20,000 (1)
SB12	---	---	0-1	<122	---
	---	---	1-2	<122	---
	---	---	2-3	164	---
	SB@3'-4'	8/12/2020	3-4	648	130
	---	---	4-6	232	---
	---	---	6-8	1,168	---
SB13	---	---	0-1	<122	---
	---	---	1-2	164	---
	---	---	2-3	196	---
	SB13@3'-4'	8/12/2020	3-4	196	160
	SB13@4'-6'	8/12/2020	4-6	232	89
SB14	---	---	0-1	<122	---
	---	---	1-2	<122	---
	SB14@2'-3'	8/12/2020	2-3	<122	160
	---	---	3-4	<122	---
	SB14@4'-6'	8/12/2020	4-6	352	280
SB15	---	---	0-1	<122	---
	SB15@1'-2'	8/12/2020	1-2	312	320
	---	---	2-3	164	---
	---	---	3-4	312	---
	SB15@4'-6'	8/12/2020	4-6	544	520
SB16	---	---	0-1	<122	---
	---	---	1-2	<122	---
	SB16@2'-3'	8/12/2020	2-3	<122	150
	---	---	3-4	<122	---
	SB16@4'-6'	8/12/2020	4-6	928	160
SB17	---	---	0-1	<122	---
	---	---	1-2	232	---
	---	---	2-3	164	---
	SB17@3'-4'	8/12/2020	3-4	268	1,200**
	SB17@4'-6'	8/12/2020	4-6	1,424	1,400
SB18	---	---	0-1	<122	---
	---	---	1-2	<122	---
	SB18@2'-3'	8/12/2020	2-3	164	140
	---	---	3-4	<122	---
	SB18@4'-6'	8/12/2020	4-6	<122	93
	SB18@6'-8'	8/12/2020	6-8	134	720

**TABLE 5**  
**2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	Chloride Field Test Strips (ppm)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	600/20,000 (1)
SB19	---	---	0-1	<122	---
	SB19@1'-2'	8/12/2020	1-2	<122	<60
	---	---	2-3	<122	---
	---	---	3-4	<122	---
	SB19@4'-6'	8/12/2020	4-6	<122	<59
	SB19@6'-8'	8/12/2020	6-8	<122	<61
SB20	---	---	0-1	<122	---
	---	---	1-2	164	---
	---	---	2-3	136	---
	SB20@3'-4'	8/12/2020	3-4	1,520	1,900**
	SB20@4'-6'	8/12/2020	4-6	1,092	2,500
	SB20@6'-8'	8/12/2020	6-8	1,248	3,600
SB21	---	---	0-1	<122	---
	---	---	1-2	<122	---
	SB21@2'-3'	8/12/2020	2-3	312	560
	---	---	3-4	268	---
	SB21@4'-6'	8/12/2020	4-6	3,024	1,800
	SB21@6'-8'	8/12/2020	6-8	648	1,400
SB22	---	---	0-1	<122	---
	---	---	1-2	<122	---
	SB22@2'-3'	8/12/2020	2-3	<122	<59
	---	---	3-4	<122	---
	SB22@4'-6'	8/12/2020	4-6	<122	<60
	SB22@6'-8'	8/12/2020	6-8	<122	<60
SB23	---	---	0-1	<122	---
	---	---	1-2	<122	---
	SB23@2'-3'	8/12/2020	2-3	216	120
	---	---	3-4	<122	---
	SB23@4'-6'	8/12/2020	4-6	184	130
	SB23@6'-8'	8/12/2020	6-8	<122	150
SB40	SB40@1'	9/1/2020	1	268	330
	---	---	2	148	---
	---	---	3	148	---
	---	---	4.5	2,124	---
	SB40@6'	9/1/2020	6	1,172	1,400
SB41	---	---	1	148	---
	SB41@2'	9/1/2020	2	316	1,700**
	---	---	3	148	---
	---	---	4.5	1,860	---
	SB41@6'	9/1/2020	6	1,016	640

**TABLE 5**  
**2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	Chloride Field Test Strips (ppm)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	600/20,000 (1)
SB42	---	---	0-1	268	---
	---	---	1-2	464	---
	---	---	2-3	1,020	---
	SB42@4'	9/1/2020	3-4	2,440	3,500**
	SB42@6'	9/1/2020	4-6	2,440	4,900
SB43	---	---	0-1	<120	---
	---	---	1-2	<120	---
	SB43@3'	9/1/2020	2-3	<120	180
	---	---	3-4	<120	---
	SB43@6'	9/1/2020	4-6	<120	690
SB44	---	---	1	224	---
	---	---	2	224	---
	SB44@3'	9/1/2020	3	364	430
	---	---	4	464	---
	---	---	6	1,016	---
	---	---	8	1,016	---
	---	---	10	516	---
	SB44@12'	9/1/2020	12	148	320
	---	---	13	---	---
SB45	SB45@1'	9/8/2020	0-1	628	1,500**
	---	---	1-2	464	---
	---	---	2-3	268	---
	---	---	3-4	184	---
	SB45@6'	9/8/2020	4-6	412	370
SB46	---	---	0-1	184	---
	---	---	1-2	268	---
	---	---	2-3	688	---
	SB46@4'	9/8/2020	3-4	748	1,600**
	SB46@6'	9/8/2020	4-6	948	1,900
SB47	SB47@1'	9/8/2020	0-1	<120	82
	---	---	1-2	<120	---
	---	---	2-3	<120	---
	---	---	3-4	<120	---
	SB47@6'	9/8/2020	4-6	<120	63
SB48	---	---	0-1	<120	---
	---	---	1-2	<120	---
	SB48@3'	9/8/2020	2-3	<120	<60
	---	---	3-4	<120	---
	SB48@6'	9/8/2020	4-6	<120	<60

**TABLE 5**  
**2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	Chloride Field Test Strips (ppm)	Chloride (mg/kg)
<b>NMOCD Table 1 Closure Criteria (NMAC 19.15.29)</b>				NE	600/20,000 (1)
<b>SB49</b>	---	---	0-1	<120	---
	---	---	1-2	<120	---
	SB49@3-4'	9/14/2020	2-3	120	220
	---	---	3-4	184	---
	SB49@4-6'	9/14/2020	4-6	<120	140
<b>SB50</b>	SB50@0-1'	9/14/2020	0-1	148	240
	---	---	1-2	<120	---
	---	---	2-3	<120	---
	---	---	3-4	<120	---
	SB50@4-6'	9/14/2020	4-6	<120	<60

**Notes:**

mg/kg - milligrams per kilograms

NMAC - New Mexico Administrative Code

NMOCD - New Mexico Oil Conservation Division

&lt; - indicates result is less than the stated laboratory method practical quantitation limit

**BOLD** - indicates results exceed the NMOCD Table 1 Closure Criteria (NMAC 19.15.29.12)**\*\*** - asterisks indicate results exceed the NMOCD Reclamation Standard (NMAC 19.15.29.13)

(1) - the lower cleanup standard is used for site reclamation within the top four feet of soil

**TABLE 6**  
**2020 TPH DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	PID (ppm)	TPH-GRO (mg/Kg)	TPH-DRO (mg/Kg)	TPH-MRO (mg/Kg)	TPH (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	NE	NE	NE	100/2,500 (1)
SB24	SB24@0'-1'	8/12/2020	0-1	5.7	<4.8	51	63	114**
	---	---	1-2	4.9	---	---	---	---
	---	---	2-3	3.5	---	---	---	---
	---	---	3-4	4.2	---	---	---	---
	SB24@4'-6'	8/12/2020	4-6	3.1	<5.0	<9.4	<47	<47
	SB24@6'-8'	8/12/2020	6-8	3.6	<4.8	<9.6	<48	<48
SB25	---	---	0-1	2.2	---	---	---	---
	---	---	1-2	2.2	---	---	---	---
	---	---	2-3	1.5	---	---	---	---
	SB25@3'-4'	8/12/2020	3-4	3.6	<4.9	<9.8	<49	<49
	SB25@4'-6'	8/12/2020	4-6	1.7	<4.6	24	51	75
	SB25@6'-8'	8/12/2020	6-8	1.3	<4.7	<9.8	<49	<49
SB26	---	---	0-1	2.5	---	---	---	---
	---	---	1-2	2.4	---	---	---	---
	---	---	2-3	2.6	---	---	---	---
	SB26@3'-4'	8/12/2020	3-4	2.8	<4.7	<9.6	<48	<48
	SB26@4'-6'	8/12/2020	4-6	1.7	<4.9	15	<47	15
	SB26@6'-8'	8/12/2020	6-8	4.5	<4.8	<9.4	<47	<47
SB27	---	---	0-1	2	---	---	---	---
	---	---	1-2	2.3	---	---	---	---
	---	---	2-3	1.9	---	---	---	---
	SB27@3'-4'	8/12/2020	3-4	2.6	<4.7	<9.8	<49	<49
	SB27@4'-6'	8/12/2020	4-6	1.5	<4.9	13	<48	13
	SB27@6'-8'	8/12/2020	6-8	1.5	<4.7	<9.8	<49	<49
SB28	---	---	0-1	2.5	---	---	---	---
	SB28@1'-2'	8/12/2020	1-2	5.8	<4.7	490	510	1,000**
	---	---	2-3	5.8	---	---	---	---
	---	---	3-4	4.6	---	---	---	---
	SB28@4'-6'	8/12/2020	4-6	3.0	<4.7	160	240	400
	SB28@6'-8'	8/12/2020	6-8	2.6	<4.6	<9.4	<47	<47
SB29	SB29@0'-1'	8/12/2020	0-1	1.1	<4.8	21	75	96
	---	---	1-2	0.8	---	---	---	---
	---	---	2-3	0.7	---	---	---	---
	---	---	3-4	0.8	---	---	---	---
	SB29@4'-6'	8/12/2020	4-6	0.7	<4.6	<9.4	<47	<47
	SB29@6'-8'	8/12/2020	6-8	1.7	<4.6	<9.6	<48	<48
SB30	---	---	0-1	2.0	---	---	---	---
	---	---	1-2	1.8	---	---	---	---
	SB30@2'-3'	8/12/2020	2-3	2.6	<4.7	<8.7	<44	<44
	---	---	3-4	2.6	---	---	---	---
	SB30@4'-6'	8/12/2020	4-6	0.8	<4.9	37	150	187
	SB30@6'-8'	8/12/2020	6-8	3.4	<4.9	<9.2	<46	<46
SB31	---	---	0-1	1.5	---	---	---	---
	---	---	1-2	0.9	---	---	---	---
	---	---	2-3	2.0	---	---	---	---
	SB31@3'-4'	8/12/2020	3-4	2.6	<4.6	<9.3	<47	<47
	SB31@4'-6'	8/12/2020	4-6	1.5	<4.8	10	47	57
	SB31@6'-8'	8/12/2020	6-8	0.9	<4.7	<9.3	<46	<46
SB32	---	---	0-1	2.1	---	---	---	---
	SB32@1'-2'	8/12/2020	1-2	2.7	<5.0	33	120	153**
	---	---	2-3	2.2	---	---	---	---
	---	---	3-4	2.6	---	---	---	---
	SB32@4'-6'	8/12/2020	4-6	1.8	<4.7	23	120	143
	SB32@6'-8'	8/12/2020	6-8	2.0	<4.9	<9.9	<49	<49
SB33	---	---	0-1	1.4	---	---	---	---
	---	---	1-2	1.4	---	---	---	---
	SB33@2'-3'	---	2-3	1.7	<4.8	<9.7	<48	<48
	---	---	3-4	1.6	---	---	---	---
	SB33@4'-6'	---	4-6	1.1	<4.7	<9.6	<48	<48
	SB33@6'-8'	---	6-8	3.0	<4.9	<9.7	<48	<48

**TABLE 6**  
**2020 TPH DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	PID (ppm)	TPH-GRO (mg/Kg)	TPH-DRO (mg/Kg)	TPH-MRO (mg/Kg)	TPH (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	NE	NE	NE	100/2,500 (1)
SB34	SB34@1'	9/1/2020	0-1	4.0	<3.8	<10	<50	<50
	---	---	1-2	1.6	---	---	---	---
	---	---	2-3	1.2	---	---	---	---
	---	---	3-4	0.7	---	---	---	---
	SB34@6'	9/1/2020	4-6	0.5	<4.1	13	<46	13
SB35	---	---	0-1	0.0	---	---	---	---
	---	---	1-2	0.0	---	---	---	---
	SB35@3'	9/1/2020	2-3	0.2	<3.9	<9.2	<46	<46
	---	---	3-4	0.0	---	---	---	---
SB36	SB35@6'	9/1/2020	4-6	0.0	<4.0	<9.4	<47	<47
	SB36@1'	9/1/2020	0-1	0.0	<4.3	9.7	<48	9.7
	---	---	1-2	0.0	---	---	---	---
	---	---	2-3	0.0	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
SB37	SB36@6'	9/1/2020	4-6	0.0	<3.5	<8.4	<42	<42
	SB37@1'	9/1/2020	0-1	0.6	<4.1	95	150	245**
	---	---	1-2	0.2	---	---	---	---
	---	---	2-3	0.1	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
SB38	SB37@6'	9/1/2020	4-6	0.4	<3.9	<9.6	<48	<48
	SB38@1'	9/1/2020	0-1	2.8	<3.8	<10	<50	<50
	---	---	1-2	1.3	---	---	---	---
	---	---	2-3	1.0	---	---	---	---
	---	---	3-4	1.0	---	---	---	---
SB39	SB38@6'	9/1/2020	4-6	0.6	<3.6	<9.9	<50	<50
	---	---	0-1	0.9	---	---	---	---
	SB39@2'	9/1/2020	1-2	1.0	<4.7	140	300	440**
	---	---	2-3	0.4	---	---	---	---
	---	---	3-4	0.1	---	---	---	---
SB51	SB39@6'	9/1/2020	4-6	0.0	<4.4	<9.9	<49	<49
	SB51@0-1'	9/14/2020	0-1	0.2	<4.6	120	190	310**
	---	---	1-2	0.0	---	---	---	---
	---	---	2-3	0.0	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
SB52	SB51@4-6'	9/14/2020	4-6	0.0	<3.7	<9.7	<48	<48
	SB52@0-1'	9/14/2020	0-1	0.7	<3.8	<9.1	<45	<45
	---	---	1-2	0.3	---	---	---	---
	---	---	2-3	0.4	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
SB53	SB52@4-6'	9/14/2020	4-6	0.1	<3.9	<9.7	<48	<48
	SB53@1-2'	9/14/2020	0-1	0.0	---	---	---	---
	---	---	1-2	0.0	<3.9	200	450	650**
	---	---	2-3	0.0	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
SB54	SB53@4-6'	9/14/2020	4-6	0.0	<3.8	<10	<50	<50
	SB54@0-1'	9/14/2020	0-1	1.7	<4.4	<9.8	<49	<49
	---	---	1-2	1.5	---	---	---	---
	---	---	2-3	1.7	---	---	---	---
	---	---	3-4	1.3	---	---	---	---
SB55	SB54@4-6'	9/14/2020	4-6	1.3	<3.6	31	89	120
	SB55@0-1'	9/25/2020	0-1	0.2	<4.0	<9.8	<49	<49
	---	---	1-2	0.0	---	---	---	---
	---	---	2-3	0.0	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
SB55	---	---	4-5	0.0	---	---	---	---
	SB55@5-6'	9/25/2020	5-6	0.0	<3.3	<9.5	<48	<48

**TABLE 6**  
**2020 TPH DELINEATION SOIL ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

Boring Location	Soil Sample ID	Sample Date	Sample Depth (ft)	PID (ppm)	TPH-GRO (mg/Kg)	TPH-DRO (mg/Kg)	TPH-MRO (mg/Kg)	TPH (mg/kg)
<b>NMOCD Table 1 Closure Criteria (NMAC 19.15.29)</b>				NE	NE	NE	NE	100/2,500 (1)
<b>SB56</b>	SB56@0-1'	9/25/2020	0-1	3.2	<3.6	57	180	237**
	---	---	1-2	2.0	---	---	---	---
	---	---	2-3	2.3	---	---	---	---
	---	---	3-4	2.3	---	---	---	---
	---	---	4-5	2.2	---	---	---	---
	SB56@5-6'	9/25/2020	5-6	1.8	<3.7	<9.0	<45	<45
<b>SB57</b>	---	---	0-1	0.9	---	---	---	---
	SB57@1-2'	9/25/2020	1-2	1.1	<4.7	<9.8	<49	<49
	---	---	2-3	0.8	---	---	---	---
	---	---	3-4	0.7	---	---	---	---
	---	---	4-5	0.5	---	---	---	---
	SB57@5-6'	9/25/2020	5-6	0.5	<3.5	<9.0	<45	<45
<b>SB59</b>	SB59@0-1'	9/25/2020	0-1	2.0	<4.7	<9.1	<46	<46
	---	---	1-2	1.9	---	---	---	---
	---	---	2-3	1.9	---	---	---	---
	---	---	3-4	1.6	---	---	---	---
	---	---	4-5	1.5	---	---	---	---
	SB59@5-6'	9/25/2020	5-6	0.9	<4.6	<9.6	<48	<48

**Notes:**

mg/kg - milligrams per kilograms

DRO - diesel range organics

GRO - gasoline range organics

MRO - motor oil range organics

NE - Not Established

NMAC - New Mexico Administrative Code

NMOCD - New Mexico Oil Conservation Division

PID - photoionization detector

TPH- total petroleum hydrocarbons

&lt; - indicates result is less than the stated laboratory method practical quantitation limit

**BOLD** - indicates results exceed the NMOCD Table 1 Closure Criteria (NMAC 19.15.29.12)**\*\*** - asterisks indicate results exceed the NMOCD Reclamation Standard (NMAC 19.15.29.13)

(1) - the lower cleanup standard is used for site reclamation within the top four feet of soil



APPENDIX A: NIMOD EXTENSION REQUEST APPROVAL



**From:** [Smith, Cory, EMNRD](#)  
**To:** [McCartney, Gregory J.](#)  
**Cc:** [Hyde, Stuart](#); [Hencmann, Devin](#)  
**Subject:** RE: Release NRM201958816 - Bisti Landfarm Request for Site Characterization Report and Remediation Plan Extension  
**Date:** Monday, September 14, 2020 8:02:20 AM  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[image004.png](#)

---

Mr. McCartney,

OCD approves Marthon Petroleum's extension request to please submit the site characterization and remediation plan no later than October 29, 2020

Please include this approval in your report.

Thank you,

Cory Smith  
Environmental Specialist  
Oil Conservation Division  
Energy, Minerals, & Natural Resources  
1000 Rio Brazos, Aztec, NM 87410  
(505)334-6178 ext 115  
[cory.smith@state.nm.us](mailto:cory.smith@state.nm.us)

---

**From:** Hyde, Stuart <[shyde@ltenv.com](mailto:shyde@ltenv.com)>  
**Sent:** Friday, September 11, 2020 2:54 PM  
**To:** Smith, Cory, EMNRD <[Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)>  
**Cc:** Hencmann, Devin <[dhencmann@ltenv.com](mailto:dhencmann@ltenv.com)>; McCartney, Gregory J. <[gjmccartney@marathonpetroleum.com](mailto:gjmccartney@marathonpetroleum.com)>  
**Subject:** [EXT] RE: Release NRM201958816 - Bisti Landfarm Request for Site Characterization Report and Remediation Plan Extension

Cory,

I wanted to check in before the weekend on the report extension request the Bisti Landfarm. Thanks and have a great weekend.

Stuart Hyde, LG  
Project Geologist  
970.385.1096 *direct*  
970.903.1607 *cell*

---

**From:** Hyde, Stuart  
**Sent:** Thursday, September 10, 2020 8:31 AM  
**To:** Smith, Cory, EMNRD <[Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)>

**Cc:** Hencmann, Devin <[Devin.Hencmann@wsp.com](mailto:Devin.Hencmann@wsp.com)>; McCartney, Gregory J. <[gjmccartney@marathonpetroleum.com](mailto:gjmccartney@marathonpetroleum.com)>

**Subject:** RE: Release NRM201958816 - Bisti Landfarm Request for Site Characterization Report and Remediation Plan Extension

Sorry Cory, I missed a 5 in there. NRM2019558816. Please see attached approval email.

---

**From:** Smith, Cory, EMNRD <[Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)>

**Sent:** Thursday, September 10, 2020 7:51 AM

**To:** Hyde, Stuart <[Stuart.Hyde@wsp.com](mailto:Stuart.Hyde@wsp.com)>

**Cc:** Hencmann, Devin <[Devin.Hencmann@wsp.com](mailto:Devin.Hencmann@wsp.com)>; McCartney, Gregory J. <[gjmccartney@marathonpetroleum.com](mailto:gjmccartney@marathonpetroleum.com)>

**Subject:** RE: Release NRM201958816 - Bisti Landfarm Request for Site Characterization Report and Remediation Plan Extension

Stuart,

The provided incident# isn't located in our system I think it's a few numbers short.

Cory Smith  
Environmental Specialist  
Oil Conservation Division  
Energy, Minerals, & Natural Resources  
1000 Rio Brazos, Aztec, NM 87410  
(505)334-6178 ext 115  
[cory.smith@state.nm.us](mailto:cory.smith@state.nm.us)

---

**From:** Stuart Hyde <[shyde@ltenv.com](mailto:shyde@ltenv.com)>

**Sent:** Wednesday, September 9, 2020 4:42 PM

**To:** Smith, Cory, EMNRD <[Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)>

**Cc:** Devin Hencmann <[dhencmann@ltenv.com](mailto:dhencmann@ltenv.com)>; McCartney, Gregory J. <[gjmccartney@marathonpetroleum.com](mailto:gjmccartney@marathonpetroleum.com)>

**Subject:** [EXT] Release NRM201958816 - Bisti Landfarm Request for Site Characterization Report and Remediation Plan Extension

Cory,

The 90-day deadline for the Site Characterization Report and Remediation Plan for Bisti Landfarm (see attached C-141) is September 14, 2020. To date, LTE has conducted three sampling events as part of site characterization activities. In all, 48 soil borings have been advanced at the site thus far, but the most recent laboratory analytical results indicate additional samples are needed to finalize horizontal and vertical delineation. Additionally, weather conditions have caused delays in field work this week. Because of the unexpected multiple site visits required to achieve full delineation and the need for additional subsurface samples, LT Environmental and Western are requesting a 45-day extension to the report submittal with a new deadline of October 29, 2020.

Please call or email with any questions regarding this request. Thank you and talk to you soon.



Stuart Hyde, LG  
Project Geologist  
970.385.1096 *office*  
970.903.1607 *cell*  
848 East Second Avenue Durango, CO 81301  
[www.ltenv.com](http://www.ltenv.com)



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APPENDIX B: BORING LOGS





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5801</b>	Project: <b>Bisti LF Delineation</b>		
Date: <b>8/11/2020</b>	Project Number: <b>029520002</b>		
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>		
Elevation: <b>6,200</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>		Diameter: <b>2"</b>	Length: <b>NA</b>
Screen Type: <b>Schedule 40 PVC</b>		Slot: <b>0.010"</b>	Diameter: <b>2"</b>
		Length: <b>NA</b>	Total Depth: <b>6'</b>
			Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<112	Dry		NO		0			SM	Dry, loose, light red brown, fine sand, some silt	NO well
<100	D		N		1		7			
<112	D		N		2		85%			
444	D		N	5801 3'-4'	3					
548	D		N		4					
	D				5					
	D				6		80%			
See below	M		N		7		2	SP-SM	moist, compact, red brown, sand some silt	

									Boring/Well #	SB01			
									Project:	Bisai LF			
									Project #	029520002			
									Date	8/11/2020			
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks			Well Completion	
1,168	m		N	SB01 6'-8'	7			SP-SM	SAA				
					8								
1,020	m		N		9			SP	moist, lt brown, fine sand, trace silt				
					10								
1,168	m		N		11			SP	SAA				
					12								
648	m				13			SP	moist, brown/lt brown, sand trace silt				
					14								
396	m			SB01 14'-16'	15			SP	SAA, gravel @ 15'				
					16								
					17								
					18								

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Boring/Well Number: <b>SB02</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/11/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Elevation: <b>6266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>16'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<112	Dry		N		0			ML	Dry, it reddish brown, sandy silt	no well
<112	Dry		N		1			ML	SAA	
232	m		N		2			SP-SM	moist, reddish brown, silty sand	
544	m		N	SB02 3'-4'	3			SP-SM	SAA	
2,128	m		N	SB02 4'-6'	5			SP-SM	SAA	
m			N		7					



										Boring/Well #	SBO2
										Project:	Bisti LF
										Project #	029520002
										Date	6/11/20
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion	
1,624 m			N		7			SP	moist, reddish brown, med sand trace silt		
					8						
1,852 m			N		9			SP	moist, yellow brown, rust mottling, fine sand, some silt		
					10						
1,852 m			N		11			SP	SAA		
					12						
1,624 m			N		13			SP	SAA		
					14						
420 m		N		SBO2 14'-16'	15			SP	SAA		
					16						
					17						
					18						

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB03</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/11/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Elevation: <b>C, 266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>12'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
444	D		N		0			ML	Dry, red brown, sandy silt	NO well
1526	m		N		1			ML	moist, dark red brown, sandy silt	
1248	m		N		2			ML	SAA	
2286	m		N		3					
					4	SB03 3'-4'		SM	moist, lt brown, silty sand	
					5			SP	moist, lt brown, med sand, trace silt	
1624	m		N		6					
See below	m		N		7			SP	SAA	

									Boring/Well #	SB03			
									Project:	02950062			
									Project #	BISBI LE			
									Date	8/4			
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks			Well Completion	
1,412	m		N		7			SP	SAA				
					8								
2,288	m		N	SB03 8'-10'	9			SP	moist, dark brown, fine sand trace silt				
					10								
760	m		N	SB03 10'-12'	11			SP	SAA				
					12								
					13								
					14								
					15								
					16								
					17								
					18								

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB04</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/11/2020</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>

Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>	
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>12'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie-ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
136	m		N	SB04 0'-1'	0			ML	moist, red brown, sandy silt	no well
<122	m		N		1			ML	SAA	
<122	m		N		2			ML	SAA	
<122	m		N		3			SM	moist, lt red brown, silty sand	
<122	m		N		4			SM	SAA	
<122	m		N		5					
<122	m		N		6					
<122	m		N		7					

									Boring/Well #	5B04	
									Project:	Bisbi LF	
									Project #	029520002	
									Date	8/11	
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion	
136	m		N		7	5B04 6'-8'		SP	moist lt brown, fine sand, trace silt		
					8						
136	D		N		9			SP	Dry, gray/brown, some rust mottling, fine to medium sand, gravel @ 8'		
					10						
136	d		N		11	5B04 10'-12'		SP	SAA		
					12						
					13						
					14						
					15						
					16						
					17						
					18						





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB05</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/11/2020</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>
Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>
Slot: <b>0.010"</b>	Length: <b>NA</b>
	Hole Diameter: <b>2"</b>
	Depth to Liquid: <b>NA</b>
	Total Depth: <b>12'</b>
	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<122	m		N		0			ML	Moist, dark red brown, Sandy silt	NO Well
<122	m		N		1			ML	SAA	
<122	m		N	SB05 2'-3'	2	SB05 2'-3'		ML	moist, lt red brown, silty sand	
<122	m		N		3			ML	SAA	
<122	m		N		4			SP-SM SM	Moist, lt red brown, fine Sand, trace silt some	
<122	m		N		5					
<122	m		N	SB03 6'-8'	6			SM	moist, lt brown, fine sand trace silt some	
<122	m		N		7					

										Boring/Well #	SB05	
										Project:	Bisti LP	
										Project #	029520002	
										Date	8/4/20	
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion		
					7							
					8							
					9			SM	moist, yellow brown, fine to med sand, <del>some</del> silt			
					10							
					11			SM	SAA			
					12							
					13							
					14							
					15							
					16							
					17							
					18							

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5806</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/11/2020</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Elevation: <b>6,266</b>	Drilling Method: <b>Direct Push</b>
Detector: <b>PID/Quantab</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>
Slot: <b>0.010"</b>	Length: <b>NA</b>
	Hole Diameter: <b>2"</b>
	Depth to Liquid: <b>NA</b>
	Total Depth: <b>10'</b>
	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft..bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>0</b>			<b>ML</b>	<b>moist, 12 ped brown, sandy silty</b>	<b>NO well</b>
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>1</b>			<b>ML</b>	<b>SAA</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>	<b>5806</b> <b>2'-3'</b>	<b>2</b>			<b>ML</b>	<b>SAA</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>3</b>			<b>SM</b>	<b>moist, 12 brown, silty sand</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>4</b>			<b>SM</b>	<b>SAA</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>5</b>					
					<b>6</b>			<b>SM</b>	<b>SAA</b>	
					<b>7</b>					

									Boring/Well #	SBOG				
									Project:	Bisti LF				
									Project #	02952002				
									Date	8/11/2020				
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks			Well Completion		
<124	m		N	SBOG 6'-8'	7			SM	moist gray brown, sand, some silt					
<124	m		N		8			SM	moist lt brown, fine sand some silt					
<124	m		N	SBOG 10'-12'	9			SM	SAA					
					10									
					11									
					12									
					13									
					14									
					15									
					16									
					17									
					18									



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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5807</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/11/2020</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>
Slot: <b>0.010"</b>	Length: <b>NA</b>
	Hole Diameter: <b>2"</b>
	Depth to Liquid: <b>NA</b>
	Total Depth: <b>12'</b>
	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<del>&lt;124</del> 7124	m		N		0			ML	moist, dark red brown, silty sand	NO well
<124	m		N	5807 1'-2'	1			ML	moist to red brown, silty sand	
<124	m		N		2			ML	SAA	
<124	m		N		3			ML	SAA	
<124	m		N		4			ML	SAA	
<124	m		N		5			ML	SAA	
<124	m		N	5807 6'-8'	6			SM	moist, light brown, fine sand silt	
<124	m		N		7					



										Boring/Well #	5807	
										Project:	Bisbi LE	
										Project #	029520002	
										Date	8/11/2020	
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion		
					7							
					8							
2124	m		N		9			SP	moist, lt brown, fine sand trace silt			
					10							
					11			SP	SAN			
<124	m		N	5807 10'-12'	12							
					13							
					14							
					15							
					16							
					17							
					18							

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5808</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/11/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>12'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<b>152</b>	<b>m</b>		<b>N</b>	<b>5808 0-1</b>	<b>0</b>			<b>ML</b>	<b>moist, dark red brown, sandy silt</b>	<b>NO well</b>
					<b>1</b>			<b>ML</b>	<b>SAA</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>2</b>			<b>ML</b>	<b>SAA</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>3</b>			<b>ML</b>	<b>moist, lt brown, silty sand</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>4</b>			<b>SM</b>	<b>moist, lt brown, fine sand some silt</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>		<b>5</b>			<b>SM</b>	<b>SAA</b>	
<b>&lt;124</b>	<b>m</b>		<b>N</b>	<b>5808 6-8</b>	<b>7</b>			<b>SM</b>	<b>SAA</b>	

									Boring/Well #	5808	
									Project:	B1561 LF	
									Project #	029520002	
									Date	8/11/2020	
Qtab (ppm)	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion	
					7						
					8						
					9			SP	moist, lt brown, fine sand trace silt		
<124 m			N		10						
					11			SP	moist, dark brown, fine to med sand trace silt		
184 m			N	5808 10-12	12						
					13						
					14						
					15						
					16						
					17						
					18						

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB09</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/11/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>8'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<124	m		N		0			ML	moist, red brown, Sandy Silt	NO well
<124	m		N	SB09 2-3	1			ML	SAA	
<124	m		N		2			ML	SAA	
<124	m		N		3			SM	moist, lt brown, fine sand some silt	
<124	m		N	SB09 4-6	4			SM	SAA	
<124	m		N		5					
<124	m		N	SB09 6-8	6			SM	SAA	
<124	m		N		7					

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40' N SB03

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB10	Project: Bisti LF Delineation
Date: 8/11/2020	Project Number: 029520002
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx
Elevation: C. 266	Drilling Method: Direct Push
Detector: PID/Quantab	Sampling Method: Continuous
Gravel Pack: 10-20 Silica Sand	Seal: Hydrated Bentonite Chips
Casing Type: Schedule 40 PVC	Grout: Bentonite-Cement Slurry
Screen Type: Schedule 40 PVC	Diameter: 2" Length: NA
Slot: 0.010"	Hole Diameter: 2" Depth to Liquid: NA
	Total Depth: 8' Depth to Water: NA

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<124	m		N		0			ML	moist, is red brown, sandy silt	NO well
<124	m		N		1			ML	SAA	
676	m		N		2			SM	moist, dark red brown, silty sand	
1712	m		N		3			SM	SAA	
1408	m		N		4			SM	moist light brown, fine sand some silt	
1980	m		N		5			SM	SAA	
					6					
					7					





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB11</b>	Project: <b>Bisti LF Delineation</b>	
Date: <b>8/11/20</b>	Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>	
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>		Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b> Length: <b>NA</b>
		Hole Diameter: <b>2"</b> Depth to Liquid: <b>NA</b>
		Total Depth: <b>8'</b> Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
422	D		N		0			ML	Dry, lt brown, compact sandy silt	no well
<	m		N		1			SM	moist, red brown, sandy silt	
312	m		N		2			SM	SAA	
764	m		N	SB11 3'-4'	3			SM	moist, red brown, silty sand	
864	m		N	SB11 4'-6'	4			SP	moist, lt brown sand, trace silt	
1,424	m		N	SB11 6'-8'	5			SP	SAA	
					6					
					7					



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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5812</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/12/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>6'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<122	D		N		0			ML	Dry, loose, lt red brown, sandy silt	NO well
<122	m		N		1			SM	moist, loose, red brown, sandy silt	
					2			SM	SAA	
164	m		N		3			SM	moist, loose, red brown, silty sand	
648	m		N		4			SM	moist, loose, lt brown, fine sand some silt	
232	m		N		5			SM		
					6			SM	SAA	
1,168	m		N		7					



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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB13</b>	Project: <b>Bisti LF Delineation</b>		
Date: <b>8/12/2020</b>	Project Number: <b>029520002</b>		
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>		
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>8'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			ML	Dry, loose, red brown, Sandy Silt	NO well
164	D		N		1			SM	moist, red brown, Sandy Silt	
196	m		N		2			SM	SAA	
196	m		N		3			SM	moist, red brown, Silty Sand	
196	m		N	SB13 3-4	4			SM	moist, lt brown, Fine Sand Some Silt	
232	m		N	SB13 4-6	5			SM	SAA	
444	m		N	SB13 6'-8'	7			SM	SAA	

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB14</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/12/20</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Elevation: <b>C 266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>		Diameter: <b>2"</b> Length: <b>NA</b>	Hole Diameter: <b>2"</b> Depth to Liquid: <b>NA</b>
Screen Type: <b>Schedule 40 PVC</b> Slot: <b>0.010"</b>		Diameter: <b>2"</b> Length: <b>NA</b>	Total Depth: <b>8'</b> Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<122	D		N		0			ML	Dry, red brown, sandy silt	NO well
<122	m		N		1			ML	SAA	
<122	m		N	SB14 2'-3'	2			SM	moist, red brown, silty sand	
<122	m		N		3			SM	moist, lt brown, fine sand some silt	
					4			SM	SAA	
352	m		N	SB14 4'-6'	5					
					6					
648	m		N	SB14 6'-8'	7			SM	SAA	







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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5B15</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/12/20</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Elevation: <b>6,266</b>	Drilling Method: <b>Direct Push</b>
Detector: <b>PID/Quantab</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b> Length: <b>NA</b>
Slot: <b>0.010"</b>	Hole Diameter: <b>2"</b> Depth to Liquid: <b>NA</b>
	Diameter: <b>2"</b> Length: <b>NA</b>
	Total Depth: <b>8'</b> Depth to Water: <b>NA</b>

Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			ML	moist, dark red brown, sandy silt	NO well
<del>312</del> 312	m		N	5B15 1'-2'	1			ML	SAA	
164	m		N		2			SM	moist lt brn red brown, silty sand	
<del>312</del> 312	m		N		3			SM	SAA	
					4					
544	D		N	5B15 4'-6'	5			SM	Dry, lt brown, fine sand, some silt	
					6					
<del>760</del> 760	D		N	5B15 6'-8'	7			SM	SAA	



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				Boring/Well Number: <b>SB16</b>				Project: <b>Bisti LF Delineation</b>			
				Date: <b>8/12/20</b>				Project Number: <b>029520002</b>			
				Logged By: <b>E. Carroll/ C. McGinn</b>				Drilled By: <b>Earthworx</b>			
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>		Drilling Method: <b>Direct Push</b>		Sampling Method: <b>Continuous</b>					
Gravel Pack: <b>10-20 Silica Sand</b>				Seal: <b>Hydrated Bentonite Chips</b>		Grout: <b>Bentonite-Cement Slurry</b>					
Casing Type: <b>Schedule 40 PVC</b>		Diameter: <b>2"</b>		Length: <b>NA</b>		Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>			
Screen Type: <b>Schedule 40 PVC</b>		Slot: <b>0.010"</b>		Diameter: <b>2"</b>		Length: <b>NA</b>		Total Depth: <b>8'</b>			
								Depth to Water: <b>NA</b>			
Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion	
					0			ML	moist, red brown, sandy silt	No well	
122	m		N		1			ML	SAA		
122	m		N		2			SM	moist, red brown, silty sand		
122	m		N	SB16 2'-3'	3			SM	SAA		
122	m		N		4			SM	SAA		
928	m		N	SB16 4'-6'	5			SM	moist, lt brown, fine sand some silt		
736	m		N	SB16 6'-8'	7			SM	SAA		





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB17</b>		Project: <b>Bisti LF Delineation</b>	
Date: <b>8/12/20</b>		Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>		Drilled By: <b>Earthworx</b>	
Drilling Method: <b>Direct Push</b>		Sampling Method: <b>Continuous</b>	
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>		
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	
Casing Type: <b>Schedule 40 PVC</b>		Grout: <b>Bentonite-Cement Slurry</b>	
Screen Type: <b>Schedule 40 PVC</b>		Diameter: <b>2"</b>	Length: <b>NA</b>
Slot: <b>0.010"</b>		Hole Diameter: <b>2"</b>	Depth to Liquid: <b>NA</b>
		Total Depth: <b>8'</b>	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			ML	moist, red brown, sandy silt	No well
122	m		N		1			ML	SAA	
232	m		N		2			SM	moist red brown, silty sand	
164	m		N		3			SM	SAA	
268	m		N		4			SP-SM	moist, lt brown, fine sand few silt	
1,424	m		N		5					
					6					
1,732	m		N		7			SP-SM	SAA	

		 A proud member of WSP		<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>								
				Boring/Well Number: <b>SB18</b>				Project: <b>Bisti LF Delineation</b>				
Date: <b>8/12</b>				Project Number: <b>029520002</b>								
Logged By: <b>E. Carroll/ C. McGinn</b>				Drilled By: <b>Earthworx</b>								
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>		Drilling Method: <b>Direct Push</b>				Sampling Method: <b>Continuous</b>				
Gravel Pack: <b>10-20 Silica Sand</b>				Seal: <b>Hydrated Bentonite Chips</b>				Grout: <b>Bentonite-Cement Slurry</b>				
Casing Type: <b>Schedule 40 PVC</b>				Diameter: <b>2"</b>		Length: <b>NA</b>		Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>		
Screen Type: <b>Schedule 40 PVC</b>				Slot: <b>0.010"</b>		Diameter: <b>2"</b>		Length: <b>NA</b>		Total Depth: <b>6'</b>		
										Depth to Water: <b>NA</b>		
Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks		Well Completion	
					0			ML	moist, red brown, sandy silt		NO well	
<122	m		N		1			ML	SAA			
<122	m		N		2			SM	moist, lt red brown, silty sand			
164	m		N	SB18 2-3	3			SP-SM	moist, light brown, fine sand few silt			
<122	m		N		4			SP-SM	SAA			
<122	m		N	SB18 4'-6'	5			SP-SM	SAA			
134	m		N	SB18 6'-8'	7			SP-SM	SAA			





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB19</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/12/20</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>
Slot: <b>0.010"</b>	Length: <b>NA</b>
	Hole Diameter: <b>2'</b>
	Depth to Liquid: <b>NA</b>
	Total Depth: <b>8'</b>
	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			ML	moist, red brown, sandy silt	NO well
<122	m		N		1			ML	SAA	
<122	m		N	SB19 1-2	2			SM	moist, red brown, silty sand	
<122	m		N		3			SM	moist lb. brown, fine sand few silt	
<122	m		N	SB19 4-6	4			SM	SAA	
<122	m		N		5			SM	SAA	
<122	m		N	SB19 6-8	6			SM	SAA	
<122	m		N		7			SM	SAA	



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				Boring/Well Number: <b>SB20</b>				Project: <b>Bisti LF Delineation</b>				
				Date: <b>8/12/20</b>				Project Number: <b>029520002</b>				
				Logged By: <b>E. Carroll/ C. McGinn</b>				Drilled By: <b>Earthworx</b>				
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>		Drilling Method: <b>Direct Push</b>		Sampling Method: <b>Continuous</b>						
Gravel Pack: <b>10-20 Silica Sand</b>				Seal: <b>Hydrated Bentonite Chips</b>				Grout: <b>Bentonite-Cement Slurry</b>				
Casing Type: <b>Schedule 40 PVC</b>				Diameter: <b>2"</b>		Length: <b>NA</b>		Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>		
Screen Type: <b>Schedule 40 PVC</b>				Slot: <b>0.010"</b>		Diameter: <b>2"</b>		Length: <b>NA</b>		Total Depth: <b>8'</b>		
Depth to Water: <b>NA</b>												
Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks		Well Completion	
					0			ML	moist, red brown, sandy silt		NO WELL	
					1			ML	SAA			
					2			SM	moist red brown, silty sand			
					3			SM	SAA			
				SB20 3'-4'	4			SM	moist, lt brown, fine sand some silt			
				SB20 4'-6'	5			SM	SAA			
				SB20 6'-8'	6			SM	SAA			
					7							





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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:	SB21	Project:	Bisti LF Delineation
Date:	8/12/20	Project Number:	029520002
Logged By:	E. Carroll/ C. McGinn	Drilled By:	Earthworx
Elevation:	6,266	Drilling Method:	Direct Push
Detector:	PID/Quantab	Sampling Method:	Continuous
Gravel Pack:	10-20 Silica Sand	Seal:	Hydrated Bentonite Chips
Casing Type:	Schedule 40 PVC	Grout:	Bentonite-Cement Slurry
Screen Type:	Schedule 40 PVC	Diameter:	2"
Slot:	0.010"	Length:	NA
		Hole Diameter:	2"
		Depth to Liquid:	NA
		Total Depth:	8'
		Depth to Water:	NA



Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
412	m		N		0			ML	moist, red brown, sandy silt	NO well
412	m		N		1			ML	SAA	
312	m		N		2			SM	moist, red brown, silty sand	
208	m		N		3			SM	SAA	
3024	m		N		4			SM	moist, light brown, fine sand, few silt	
					5			SM	maxed out low range Qtab used high range	
					6			SM	SAA	
648					7			SM	low range Qtab	

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB 22</b>	Project: <b>Bisti LF Delineation</b>	
Date: <b>8/12/2020</b>	Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>	
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>		Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b> Length: <b>NA</b>
		Hole Diameter: <b>2"</b> Depth to Liquid: <b>NA</b>
		Total Depth: <b>8'</b> Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			ML	moist, red brown, sandy silt	NO well
<112	m		N		1			ML	SAN	
<112	m		N		2			ML	SAN	
<112	m		N	SB22 2'-3'	3			SM	moist, lt brown, fine sand some silt	
<122	m		N		4					
<122	m		N	SB22 4'-6'	5			SM	moist, lt brown, fine sand few silt	
<112	m		N	SB22 6'-8'	6			SM	SAN	
					7					

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				Boring/Well Number: <b>SB23</b>				Project: <b>Bisti LF Delineation</b>				
Date: <b>8/12/20</b>				Project Number: <b>029520002</b>								
Logged By: <b>E. Carroll/ C. McGinn</b>				Drilled By: <b>Earthworx</b>								
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>		Drilling Method: <b>Direct Push</b>				Sampling Method: <b>Continuous</b>				
Gravel Pack: <b>10-20 Silica Sand</b>				Seal: <b>Hydrated Bentonite Chips</b>				Grout: <b>Bentonite-Cement Slurry</b>				
Casing Type: <b>Schedule 40 PVC</b>				Diameter: <b>2"</b>		Length: <b>NA</b>		Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>		
Screen Type: <b>Schedule 40 PVC</b>				Slot: <b>0.010"</b>		Diameter: <b>2"</b>		Length: <b>NA</b>		Total Depth: <b>8'</b>		
Depth to Water: <b>NA</b>												
Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks		Well Completion	
<122	m		N		0			ML	moist, red brown sandy silt		NO well	
<122	m		N		1			ML	SAA			
216	m		N	SB23 2'-3'	2			SM	moist, red brown, silty sand			
<122	m		N		3			SM	SAA			
184	m		N	SB23 4'-6'	4			SM	moist, lt. brown, fine sand some silt			
<122	m		N	SB23 6'-8'	5			SM	moist, gray brown, fine sand few silt, rust mottles			



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB24</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/12/20</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Drilling Method: <b>Direct Push</b>
Screen Type: <b>Schedule 40 PVC</b>	Sampling Method: <b>Continuous</b>
Slot: <b>0.010"</b>	Grout: <b>Bentonite-Cement Slurry</b>
Diameter: <b>2"</b>	Length: <b>NA</b>
Hole Diameter: <b>2"</b>	Depth to Liquid: <b>NA</b>
Total Depth: <b>8'</b>	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	D	5.7	N	SB24 0'-1'	0			ML	Dry, gray brown, silt some sand	NO well
	D	4.9	N		1			ML	Dry, red brown, silty sand	
	D	3.5	N		2			ML	SAA	
	D	4.2	N		3			ML	SAA	
					4					
	M	3.1	N	SB24 4'-6'	5			SP-SM	moist lt brown fine sand few silt	
					6					
	M	3.6	N	SB24 6'-8'	7			SP-SM	moist, red brown, fine sand little silt	







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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB25</b>	Project: <b>Bisti LF Delineation</b>		
Date: <b>8/12/20</b>	Project Number: <b>029520002</b>		
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>		
Elevation: <b>6.266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b> Depth to Liquid: <b>NA</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b> Total Depth: <b>8'</b> Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	D	2.2	N		0			ML	Dry, gray brown, silty sand	NO well
	D	2.2	N		1			ML	SAA	
					2			ML	gray/black discoloration @ 2'	
	D	1.5	N		3			ML	SAA	
	D	3.6	N	SB25 3'-4'	4			ML	SAA	
					5			SM	<del>dry, gray brown</del> moist, lt. brown, fine sand some silt	
	M	1.7	N	SB25 4'-6'	6					
	M	1.3	N	SB25 6'-8'	7			SP-SM	moist, red brown, fine sand few silt	



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								Boring/Well Number: <b>SB26</b>				Project: <b>Bisti LF Delineation</b>			
								Date: <b>6/12/2020</b>				Project Number: <b>029520002</b>			
								Logged By: <b>E. Carroll/ C. McGinn</b>				Drilled By: <b>Earthworx</b>			
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>		Drilling Method: <b>Direct Push</b>				Sampling Method: <b>Continuous</b>							
Gravel Pack: <b>10-20 Silica Sand</b>				Seal: <b>Hydrated Bentonite Chips</b>				Grout: <b>Bentonite-Cement Slurry</b>							
Casing Type: <b>Schedule 40 PVC</b>				Diameter: <b>2"</b>		Length: <b>NA</b>		Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>					
Screen Type: <b>Schedule 40 PVC</b>				Slot: <b>0.010"</b>		Diameter: <b>2"</b>		Length: <b>NA</b>		Total Depth: <b>8'</b>					
Depth to Water: <b>NA</b>															
Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks		Well Completion				
	D 2.5		N		0			ML	dry, gray, silt, some sand		NO WELL				
	D 2.4		N		1			SM	dry, red brown, <del>sa</del> silty sand						
	D 2.6		N		2			SM	SAA						
	D 2.8		N	SB26 3'-4'	3			SM	SAA						
					4				moist, lt brown, fine to med sand, few silt						
	M 1.7		N	SB26 4'-6'	5			SPSM							
	M 4.5		N	SB26 6'-8'	6			SP-SM	moist, red brown, fine to med sand little silt						
					7										



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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>5B27</b>	Project: <b>Bisti LF Delineation</b>		
Date: <b>8/12/2020</b>	Project Number: <b>029520002</b>		
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>		
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>6'</b>	Depth to Liquid: <b>NA</b>
		Depth to Water: <b>NA</b>	

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	D	2.0	N		0			ML	Dry, black/gray med sand few silt, charcoal	NO well
	D	2.3	N		1			ML	SAA	
	m	1.9	N		2			SM	moist, red brown, silty sand	
	m	2.6	N	5B27 3-4'	3			SM	SAA	
	m	1.5	N	5B27 4-6	4			SM	Dry, light brown, fine sand some silt	
	m	1.5	N	5B27 6-8	5			SM-SP	moist, red brown, fine sand few silt	
					6					
					7					



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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB28</b>	Project: <b>Bisti LF Delineation</b>
Date: <b>8/12/2020</b>	Project Number: <b>029520002</b>
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>
Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>
Casing Type: <b>Schedule 40 PVC</b>	Grout: <b>Bentonite-Cement Slurry</b>
Screen Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>
Slot: <b>0.010"</b>	Length: <b>NA</b>
	Hole Diameter: <b>2"</b>
	Depth to Liquid: <b>NA</b>
	Total Depth: <b>8'</b>
	Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	D	2.5	N		0			SM	Dry, gray, med sand, few silts	NO well
	D	5.8	N	SB28 1'-2'	1			SP-SM	Dry, dark brown, med sand, few silts	
	D	5.8	N		2			SP-SM	SAA	
	D	5.8	N		3			SM	moist, red brown, silty sand	
	M	4.6	N		4					
	D	3.0	N	SB28 4'-6'	5			SP	Dry, loose, light brown, fine sand trace silts	
	D	2.6	N	SB28 6'-8'	7			SP	moist, dark red brown, fine sand, few silts	



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB29</b>	Project: <b>Bisti LF Delineation</b>	
Date: <b>8/12/20</b>	Project Number: <b>029520002</b>	
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>	
Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>	
Gravel Pack: <b>10-20 Silica Sand</b>	Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Depth to Liquid: <b>2"</b>
	Diameter: <b>2"</b>	Depth to Water: <b>2"</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	D	1.1	N	SB29 0'-1'	0			GP	Dry, light brown, Sand & gravel	
	D	0.8	N		1			SM	Dry, red brown, Silty Sand	
	D	0.7	N		2			SM	SAA	
	D	0.8	N		3			SM	SAA	
	D	0.7	N	SB29 4'-6'	4			SP	Dry, light brown, fine sand trace silt	
	D	1.7	N	SB29 6'-8'	5			SP	SAA	
					6					
					7					







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### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>SB 30</b>	Project: <b>Bisti LF Delineation</b>		
Date: <b>8/12/20</b>	Project Number: <b>029520002</b>		
Logged By: <b>E. Carroll/ C. McGinn</b>	Drilled By: <b>Earthworx</b>		
Elevation: <b>6,266</b>	Detector: <b>PID/Quantab</b>	Drilling Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica Sand</b>		Seal: <b>Hydrated Bentonite Chips</b>	Grout: <b>Bentonite-Cement Slurry</b>
Casing Type: <b>Schedule 40 PVC</b>	Diameter: <b>2"</b>	Length: <b>NA</b>	Hole Diameter: <b>2"</b>
Screen Type: <b>Schedule 40 PVC</b>	Slot: <b>0.010"</b>	Diameter: <b>2"</b>	Length: <b>NA</b>
		Total Depth: <b>6'</b>	Depth to Liquid: <b>NA</b>
			Depth to Water: <b>NA</b>

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	D 2.0	N			0			SP	Dry, gray, med sand, few gravel	No well
	D 1.8	N			1			SM	Dry, red brown, silty sand	
	D 2.6	N		SB30 2'-3'	2			SM	SAA	
	D 2.6	N			3			SM	SAA	
	D 0.8	N		SB30 4'-6'	4			GP	Dry, white, sand & gravel	
	D 3.4	N		SB30 6'-8'	5			SPM	moist, light yellow brown, fine sand, some silt	
					6					
					7					



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				Boring/Well Number: <b>SB31</b>					Project: <b>Bisti LF Delineation</b>				
				Date: <b>8/12/2020</b>					Project Number: <b>029520002</b>				
				Logged By: <b>E. Carroll/ C. McGinn</b>					Drilled By: <b>Earthworx</b>				
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>			Drilling Method: <b>Direct Push</b>			Sampling Method: <b>Continuous</b>					
Gravel Pack: <b>10-20 Silica Sand</b>					Seal: <b>Hydrated Bentonite Chips</b>			Grout: <b>Bentonite-Cement Slurry</b>					
Casing Type: <b>Schedule 40 PVC</b>					Diameter: <b>2"</b>			Length: <b>NA</b>		Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>	
Screen Type: <b>Schedule 40 PVC</b>					Slot: <b>0.010"</b>			Diameter: <b>2"</b>		Length: <b>NA</b>		Total Depth: <b>8'</b>	Depth to Water: <b>NA</b>
Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks			Well Completion	
	D	1.5	N		0			GP	Dry, brown, sand and gravel			No well	
	D	0.9	N		1			SM	Dry, red brown, silty sand				
	D	2.0	N		2			SM	SAA				
	D	2.6	N	SB31 3'-4'	3			SP	Dry, light brown, fine sand, few silts				
	D	1.5	N	SB31 4'-6'	4			SP	SAA				
	D	0.9	N	SB31 6'-8'	5			SP	SAA				
	D	0.9	N		6								
	D	0.9	N		7								

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

SB 32

Project:

Bisti LF Delineation

Date:

8/12/2020

Project Number:

029520002

Logged By:

E. Carroll/ C. McGinn

Drilled By:

Earthworx

Drilling Method:

Direct Push

Sampling Method:

Continuous

Elevation:

6,266

Detector:

PID/Quantab

Gravel Pack:

10-20 Silica Sand

Seal:

Hydrated Bentonite Chips

Grout:

Bentonite-Cement Slurry

Casing Type:

Schedule 40 PVC

Diameter:

2"

Length:

NA

Hole Diameter:

2"

Depth to Liquid:

NA

Screen Type:

Schedule 40 PVC

Slot:

0.010"

Diameter:

2"

Length:

NA



Total Depth:

6'

Depth to Water:



NA

Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
D	2.1	N			0			ML	Black, silt, fine sand	NO Well
D		N			1			GP	Dry, gray, sand & gravel	
D	2.7	N		SB32 1'-2'	2			SM	Dry red brown silty sand	
								SM	SAA	
D	2.2	N			3			SM	SAA	
D	2.6	N			4			SM	SAA	
D	1.8	N		SB32 4'-6'	5			SP-SM	Dry light brown, fine sand few silt	
					6					
M	2.0	N		SB32 6'-8'	7			SM	moist, brown, med. sand, few silt, rust mottling	

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				Boring/Well Number: <b>SB33</b>					Project: <b>Bisti LF Delineation</b>								
				Date: <b>8/10/2020</b>					Project Number: <b>029520002</b>								
				Logged By: <b>E. Carroll/ C. McGinn</b>					Drilled By: <b>Earthworx</b>								
Elevation: <b>6,266</b>		Detector: <b>PID/Quantab</b>			Drilling Method: <b>Direct Push</b>			Sampling Method: <b>Continuous</b>									
Gravel Pack: <b>10-20 Silica Sand</b>					Seal: <b>Hydrated Bentonite Chips</b>					Grout: <b>Bentonite-Cement Slurry</b>							
Casing Type: <b>Schedule 40 PVC</b>					Diameter: <b>2"</b>			Length: <b>NA</b>			Hole Diameter: <b>2"</b>		Depth to Liquid: <b>NA</b>				
Screen Type: <b>Schedule 40 PVC</b>					Slot: <b>0.010"</b>			Diameter: <b>2"</b>			Length: <b>NA</b>			Total Depth: <b>8'</b>		Depth to Water: <b>NA</b>	
Qtub (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chloride ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks				Well Completion				
	D	1.4	N		0			GP	Dry gray Sand and gravel				no well				
	D	1.4	N		1												
	D	1.7	N	SB33 2-3'	2			SM	Dry red brown silty Sand								
	D	1.6	N		3			SM	SAA								
	D	1.1	N	SB33 4-6'	4			SM	SAA								
	D	1.1	N	SB33 4-6'	5			SP-SM	Dry, lt brown, fine Sand few silt								
	D	3.0	N	SB33 6-8'	6												
	D	3.0	N	SB33 6-8'	7			SP-SM	SAA gravel @ 6.5'								

$$Z(\rho_{\text{par}})$$




 <b>Advancing Opportunity</b> 848 E. 2nd Ave Durango, Colorado 81301					
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
Boring/Well Number: <b>SB35</b>			Project: <b>Bisti Landfarm</b>		
Date: <b>9/1/2020</b>			Project Number: <b>029520002</b>		
Logged By: <b>EC</b>			Drilled By: <b>LTE</b>		
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Sampling Method: <b>Continuous</b>	
Casing Type:		Diameter:		Grout: <b>Bentonite</b>	
Screen Type:		Length:		Hole Diameter: <b>3"</b>	
Slot:		Diameter:		Depth to Liquid:	
Total Depth:		Length:		Depth to Water:	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.0			0			SM	0-6": Dry, brown/gray silty sand, no odor	No well?
		0.0			1					
		0.0			2					
		0.0		SB35 @ 2-3'	3			SM	6"-6' Dry red-brown, silty sand, no odor, clay in last 2"	
		0.0			4					
		0.0		SB35 @ 5-6'	5					
		0.0			6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



 <div style="display: inline-block; vertical-align: middle;"> <b>Advancing Opportunity</b>  <b>848 E. 2nd Ave</b>  <b>Durango, Colorado 81301</b> </div>				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>			
Boring/Well Number: <b>SB36</b>				Project: <b>Bisti Landfarm</b>			
Date: <b>9/1/2020</b>				Project Number: <b>029520002</b>			
Logged By: <b>EC</b>				Drilled By: <b>LTE</b>			
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>			
Casing Type:		Diameter:		Length:		Hole Diameter: <b>3"</b>	
Screen Type:		Slot:		Diameter:		Length:	
Total Depth:		Depth to Liquid:		Depth to Water:			

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.0		SB36 @ 0-1'	0			SM	0-6", Dry brown/gray silty sand, no odor	No well
		0.0			1					
		0.0			2					
		0.0			3				6"-6': Dry, red-brown silty sand, no odor,	
		0.0			4					
		0.0		SB36 @ 4-6'	5			SM	gray/white clay @ bottom of boring	
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



Advancing Opportunity

848 E. 2nd Ave  
Durango, Colorado 81301

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>SB37</b>		Project: <b>Bisti Landfarm</b>	
Date: <b>9/1/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>EC</b>		Drilled By: <b>LTE</b>	
Elevation: <b>6,266</b>	Detector: <b>PID</b>	Drilling Method: <b>Hand Auger</b>	Sampling Method: <b>Continuous</b>
Gravel Pack:		Seal: <b>Bentonite</b>	Grout: <b>Bentonite</b>
Casing Type:	Diameter:	Length:	Hole Diameter: <b>3"</b>
Screen Type:	Slot:	Diameter:	Length:
		Total Depth:	Depth to Liquid:
			Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.6		SB37 @ 0-1'	0				0-6": Lt brown silty sand, no odor	No Well
		0.2			1			SM		
		0.1			2				6"-31": Red-brown silty sand, no odor	
		0.0			3					
		0.4		SB37 @ 5-6'	4			ML	3'-5': Dark red-brown sandy silt, no odor	
					5				5-6': Lt brown silty sand, no odor	
					6			SM		
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>			
<b>N</b>			
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>			
Boring/Well Number: <b>SB38</b>		Project: <b>Bisti Landfarm</b>	
Date: <b>9/1/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>EC</b>		Drilled By: <b>LTE</b>	
Elevation: <b>6,126</b>	Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>
Gravel Pack:		Seal: <b>Bentonite</b>	Sampling Method: <b>Continuous</b>
Casing Type:		Grout: <b>Bentonite</b>	
Screen Type:		Diameter:      Length:	Hole Diameter: <b>3"</b> Depth to Liquid:
Slot:		Diameter:      Length:	Total Depth:      Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<b>2.8</b>		<b>SB38</b>	0				<b>0-6": lt brown silty sand</b>	<b>No well</b>
				<b>CO-1'</b>	1				<b>no odor</b>	
		<b>1.3</b>			2			<b>SM</b>	<b>6"-3': red-brown, silty sand,</b>	
		<b>1.0</b>			3				<b>no odor</b>	
		<b>1.0</b>			4				<b>3'-5': Dark red-brown,</b>	
					5			<b>ML</b>	<b>sandy silt, no odor</b>	
		<b>0.6</b>		<b>SB38</b>	6			<b>SM</b>	<b>5'-6": lt brown silty</b>	
				<b>@ 4.6'</b>	7				<b>sand, no odor</b>	
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

 <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>							
				Boring/Well Number: <b>SB39</b>				Project: <b>Bisti Landfarm</b>			
				Date: <b>9/1/2020</b>				Project Number: <b>029520002</b>			
				Logged By: <b>EC</b>				Drilled By: <b>LTE</b>			
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>					
Gravel Pack:				Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>					
Casing Type:				Diameter:		Length:		Hole Diameter: <b>3"</b>	Depth to Liquid:		
Screen Type:		Slot:		Diameter:		Length:		Total Depth:	Depth to Water:		
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion	
		0.9		<del>SB39</del> <del>01-2'</del>	0				0-6", lt brown silty sand	No well	
					1				no odor		
		1.0		SB39 01-2'	2			SM	6"-3' = Red-brown, silty sand, no odor		
		0.4			3						
		0.1			4			ML	3'-5': Dark red-brown sandy silt, no odor		
		0.0		SB39 04-6'	5				5'-6': Lt brown silty sand, no odor		
					6			SM			
					7						
					8						
					9						
					10						
					11						
					12						
					13						
					14						
					15						



Advancing Opportunity



848 E. 2nd Ave  
Durango, Colorado 81301



**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>SB40</b>		Project: <b>Bisti Landfarm</b>	
Date: <b>9/1/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>EC</b>		Drilled By: <b>LTE</b>	
Elevation: <b>6,266</b>	Detector: <b>PID Quantas</b>		Drilling Method: <b>Hand Auger</b>
Gravel Pack:		Seal: <b>Bentonite</b>	Sampling Method: <b>Continuous</b>
Casing Type:		Grout: <b>Bentonite</b>	
Screen Type:		Diameter:	Length:
Slot:		Hole Diameter: <b>3"</b>	Depth to Liquid:
		Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
268		0.0		SB40 @ 0-1'	0				0-1' Lt brown silty sand no odor	None
145		0.0			1			SM		
148		0.0			2				1'-4': Red-brown silty sand, no odor	
2,124		0.0			3					
1172		0.0		SB40 @ 5-6'	4			SM	4'-6': Lt brown silty sand no odor	
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



 <b>Advancing Opportunity</b> 848 E. 2nd Ave Durango, Colorado 81301								<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>													
								Boring/Well Number: <b>51341</b>				Project: <b>Bisti Landfarm</b>									
								Date: <b>9/1/2020</b>				Project Number: <b>029520002</b>									
								Logged By: <b>EC</b>				Drilled By: <b>LTE</b>									
Elevation: <b>6266</b>		Detector: <b>PHD Quantity</b>		Drilling Method: <b>Hand Auger</b>				Sampling Method: <b>Continuous</b>													
Gravel Pack:				Seal: <b>Bentonite</b>				Grout: <b>Bentonite</b>													
Casing Type:				Diameter:		Length:		Hole Diameter: <b>3"</b>		Depth to Liquid:											
Screen Type:				Slot:		Diameter:		Length:		Total Depth:											
Penetration Resistance		Moisture Content		Vapor (ppm)		HC Staining?		Sample #		Depth (ft. bgs.)		Sample Run		Recovery		Soil/Rock Type		Lithology/Remarks		Well Completion	
148				0.0				<del>51341</del>		0						SM		0-1': Lt brown silty sand no odor		No well	
316				0.0				51341 @ 1-2'		1											
148				0.1						2						SM		1-4': Red-brown silty sand no odor			
1860				0.0						3											
										4						SM		4-6': Lt brown, silty sand, no odor			
				0.0				51341 @ 4-6'		5											
1016										6											
										7											
										8											
										9											
										10											
										11											
										12											
										13											
										14											
										15											

				 <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>																			
				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>																			
				Boring/Well Number: <b>SB40</b>				Project: <b>Bisti Landfarm</b>															
				Date: <b>9/1/2020</b>				Project Number: <b>029520002</b>															
Elevation: <b>6,266</b>				Detector: <b>PID Quantix</b>				Logged By: <b>EC</b>				Drilled By: <b>LTE</b>											
Gravel Pack:				Drilling Method: <b>Hand Auger</b>				Sampling Method: <b>Continuous</b>															
Casing Type:				Seal: <b>Bentonite</b>				Grout: <b>Bentonite</b>															
Screen Type:				Slot:				Diameter:				Length:				Hole Diameter: <b>3"</b>				Depth to Liquid:			
Screen Type:				Slot:				Diameter:				Length:				Total Depth:				Depth to Water:			
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks								Well Completion						
268					0				0-2': Lt brown silty sand, no odor SM 2-4': Red-brown silty sand, no odor SM 4-6': Lt brown silty sand, no odor								No well						
					1																		
464					2																		
1020				SB40 2-4'	3																		
2440					4																		
2440				SB40 4-6'	5																		
					6																		
					7																		
					8																		
					9																		
					10																		
					11																		
					12																		
					13																		
					14																		
					15																		

 <b>N</b>				<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>			
				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>			
				Boring/Well Number: <b>SB43</b>		Project: <b>Bisti Landfarm</b>	
				Date: <b>9/1/2020</b>		Project Number: <b>029520002</b>	
Logged By: <b>EC</b>		Drilled By: <b>LTE</b>					
Elevation: <b>6,266</b>		Detector: <b>PHD Quantek</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>			
Casing Type:		Diameter:		Length:		Hole Diameter: <b>3"</b>	Depth to Liquid:
Screen Type:		Slot:		Diameter:		Length:	
						Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm) <i>Clay</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					<i>No well</i>
		<i>&lt;120</i>			1			<i>SM</i>	<i>0-2': Lt brown silty sand, no odor</i>	
		<i>2120</i>			2					
		<i>&lt;120</i>		<i>SB43 @ 2-3'</i>	3				<i>2'-4': Red-brown, silty sand, no odor</i>	
		<i>420</i>			4					
				<i>SB43 @ 4-6'</i>	5			<i>SM</i>	<i>4'-6': Lt brown, silty sand, no odor</i>	
		<i>365</i>			6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

 <b>N</b>		<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>	
		<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>	
		Boring/Well Number: <b>SB44</b>	Project: <b>Bisti Landfarm</b>
		Date: <b>9/1/2020</b>	Project Number: <b>029520002</b>
Elevation: <b>6,266</b>		Detector: <b>PID Quantix</b>	
Gravel Pack:		Drilling Method: <b>Hand Auger</b>	
Casing Type:		Seal: <b>Bentonite</b>	
Screen Type:		Grout: <b>Bentonite</b>	
Slot:		Diameter:	Length:
Diameter:		Hole Diameter: <b>3"</b>	Depth to Liquid:
Length:		Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	pH (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1					
					2					
					3			SM		
					4					
					5					
					6					
					7					
					8					
					9			SP		
					10					
					11					
					12					
					13					
					14					
					15					

**Handwritten Notes:**  
 0-6': Lt brown / red-brown silty sand, no odor  
 6'-13': Yellow-brown, fine to medium sand, no odor

<div style="display: inline-block; vertical-align: middle; text-align: left;"> <div style="text-align: center; margin-bottom: 10px;">   <b>N</b> </div> <div> <b>Advancing Opportunity</b>  <b>848 E. 2nd Ave</b>  <b>Durango, Colorado 81301</b> </div> </div>				BORING LOG/MONITORING WELL COMPLETION DIAGRAM			
				Boring/Well Number: <b>51345</b>		Project: <b>Bisti Landfarm</b>	
				Date: <b>9/8/2020</b>		Project Number: <b>029520002</b>	
				Logged By: <b>CM</b>		Drilled By: <b>LTE</b>	
Elevation: <b>6,266</b>		Detector: <b>PHD Quantal</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack:				Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>	
Casing Type:				Diameter:		Length:	
Screen Type:				Slot:		Diameter:	
						Hole Diameter: <b>3"</b>	
						Depth to Liquid:	
						Total Depth:	
						Depth to Water:	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<b>628</b>		<b>SB45 C01</b>	0				<b>0-1': Red/Lt brown silty sand, no odor SNA</b> <div style="text-align: center; font-size: 2em;">↓</div>	<b>No well</b>
		<b>464</b>			1			<b>SM</b>		
		<b>268</b>			2					
		<b>184</b>			3					
		<b>418</b>		<b>SB45 C6'</b>	4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					





<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>N</b>	
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
Boring/Well Number: <b>SB46</b>			Project: <b>Bisti Landfarm</b>		
Date: <b>9/8/2020</b>			Project Number: <b>029520002</b>		
Logged By: <b>EM</b>			Drilled By: <b>LTE</b>		
Elevation: <b>6126</b>		Detector: <b>PHD Quantek</b>		Drilling Method: <b>Hand Auger</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Sampling Method: <b>Continuous</b>	
Casing Type:		Diameter:		Hole Diameter: <b>3"</b>	
Screen Type:		Slot:		Total Depth:	
Diameter:		Length:		Depth to Liquid:	
Diameter:		Length:		Depth to Water:	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<b>184</b>			0					
		<b>268</b>			1			<b>ML</b>	<b>0-1': Red-brown sandy silt, no odor</b>	<b>new well</b>
		<b>688</b>			2					
		<b>748</b>		<b>SB46 @ 4'</b>	3			<b>SM</b>	<b>2-4': Red-brown silty sand, no odor</b>	
		<b>948</b>		<b>SB46 @ 6'</b>	4			<b>SM</b>	<b>4-6': Lt brown-red silty sand, no odor</b>	
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

 <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>		<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>												
		Boring/Well Number: <b>SB47</b>					Project: <b>Bisti Landfarm</b>							
		Date: <b>9/8/2020</b>					Project Number: <b>029520002</b>							
		Logged By: <b>CM</b>					Drilled By: <b>LTE</b>							
Elevation: <b>6,266</b>		Detector: <b>PHD Quanta</b>		Drilling Method: <b>Hand Auger</b>			Sampling Method: <b>Continuous</b>							
Gravel Pack:				Seal: <b>Bentonite</b>			Grout: <b>Bentonite</b>							
Casing Type:				Diameter:			Length:			Hole Diameter: <b>3"</b>		Depth to Liquid:		
Screen Type:				Slot:			Diameter:			Length:			Total Depth:	
Penetration Resistance	Moisture Content	Vapor (ppm) <i>61 (Clean)</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks			Well Completion		
		<120		<b>SB47 @ 1'</b>	0			<b>ML</b>	<b>0-1': Red-brown silty sand, no odor</b>			<b>No Well</b>		
		<120			1									
		<120			2									
		<120			3			<b>SM</b>	<b>1'-3': Red-brown silty sand</b>					
		<120			4									
		<120		<b>SB47 @ 6'</b>	5			<b>SM</b>	<b>3-6': Lt brown-red silty sand, no odor</b>					
					6									
					7									
					8									
					9									
					10									
					11									
					12									
					13									
					14									
					15									

 <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>							
				Boring/Well Number: <b>SB48</b>				Project: <b>Bisti Landfarm</b>			
				Date: <b>7/8/2020</b>				Project Number: <b>029520002</b>			
				Logged By: <b>CM</b>				Drilled By: <b>LTE</b>			
Elevation: <b>6,266</b>		Detector: <b>PHD Quantus</b>		Drilling Method: <b>Hand Auger</b>				Sampling Method: <b>Continuous</b>			
Gravel Pack:				Seal: <b>Bentonite</b>				Grout: <b>Bentonite</b>			
Casing Type:				Diameter:		Length:		Hole Diameter: <b>3"</b>	Depth to Liquid:		
Screen Type:				Slot:		Diameter:		Length:	Depth to Water:		
Penetration Resistance	Moisture Content	Vapor (ppm) <i>&lt;120</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion	
		<i>&lt;120</i>			0				<i>0-3': Red/brown sandy silt, no odor</i>	<i>No Well</i>	
		<i>&lt;120</i>			1			<i>ML</i>			
		<i>&lt;120</i>			2				<i>ML</i>		
		<i>&lt;120</i>		<i>SB48 @ 3'</i>	3						
		<i>&lt;120</i>			4			<i>ML</i>	<i>3-6': Lt brown sandy silt, no odor</i>		
		<i>&lt;120</i>		<i>SB48 @ 6'</i>	5						
					6						
					7						
					8						
					9						
					10						
					11						
					12						
					13						
					14						
					15						

  <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>						
				Boring/Well Number: <b>SB49</b>		Project: <b>Bisti Landfarm</b>				
				Date: <b>9/14/2020</b>		Project Number: <b>029520002</b>				
				Logged By: <b>EC</b>		Drilled By: <b>LTE</b>				
Elevation: <b>6,266</b>		Detector: <b>PID Quantek</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>				
Gravel Pack:		Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>						
Casing Type:		Diameter:		Length:		Hole Diameter: <b>3"</b>				
Screen Type:		Slot:		Diameter:		Length:				
						Total Depth:				
						Depth to Water:				
Penetration Resistance	Moisture Content	Vapor (ppm) <i>Cl (ppm)</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<b>&lt;120</b>			0					<b>No well.</b>
		<b>&lt;120</b>			1			<b>SM</b>	<b>0-6', brown-red silty sand, no odor</b>	
		<b>126</b>			2					
		<b>184</b>		<b>SB49 @ 3-4'</b>	3					
		<b>&lt;126</b>		<b>SB49 @ 4-6'</b>	4			<b>SM</b>		
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

 <b>N</b>		<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>								
		<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>								
		Boring/Well Number: <b>SB 50</b>	Project: <b>Bisti Landfarm</b>							
		Date: <b>9/14/2020</b>	Project Number: <b>029520002</b>							
Elevation: <b>6,266</b>		Detector: <b>PHD Quantab</b>	Drilling Method: <b>Hand Auger</b>	Drilled By: <b>LTE</b>						
Gravel Pack:		Seal: <b>Bentonite</b>	Sampling Method: <b>Continuous</b>							
Casing Type:		Diameter:	Length:	Hole Diameter: <b>3"</b>	Depth to Liquid:					
Screen Type:		Slot:	Diameter:	Length:	Depth to Water:					
Penetration Resistance	Moisture Content	Vapor (ppm) <b>&lt;1 (ppm)</b>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<b>148</b>			0					<b>No well</b>
		<b>&lt;120</b>			1			<b>SM</b>	<b>0-2': Red-brown silty sand, no odor</b>	
		<b>&lt;120</b>			2					
		<b>&lt;120</b>			3				<b>2-6': Lt brown silty sand, no odor</b>	
		<b>&lt;120</b>			4					
		<b>&lt;120</b>			5			<b>SM</b>		
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>N</b>	
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
Boring/Well Number: <b>JB51</b>			Project: <b>Bisti Landfarm</b>		
Date: <b>9/14/2020</b>			Project Number: <b>029520002</b>		
Logged By: <b>EC</b>			Drilled By: <b>LTE</b>		
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Sampling Method: <b>Continuous</b>	
Casing Type:		Grout: <b>Bentonite</b>			
Screen Type:		Diameter:		Length:	
Slot:		Diameter:		Length:	
		Hole Diameter: <b>3"</b>		Depth to Liquid:	
		Total Depth:		Depth to Water:	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.2		JB51 00-1'	0					NE well
		0.0			1			SM	0-6': Lt brown-red silty sand, no odor	
		0.0			2					
		0.0			3					
		0.0			4					
		0.0		JB51 04-6'	5			SM		
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

				<b>Advancing Opportunity</b> 848 E. 2nd Ave Durango, Colorado 81301			
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>							
Boring/Well Number: <b>SB52</b>				Project: <b>Bisti Landfarm</b>			
Date: <b>9/14/2020</b>				Project Number: <b>029520002</b>			
Logged By: <b>EC</b>				Drilled By: <b>LTE</b>			
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>			
Casing Type:		Diameter:		Length:		Hole Diameter: <b>3"</b>	Depth to Liquid:
Screen Type:		Slot:		Diameter:		Total Depth:	Depth to Water:



  

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.7		SB52 @ 0-1'	0				0-2': lt brown-red silty sand, no odor	No well
		0.3			1			SM		
		0.4			2					
		0.0			3					
		0.1		SB52 @ 4-6'	4			ML	2-4': red brown sandy silt, no odor	
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>N</b>	
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
Boring/Well Number: <b>SB53</b>			Project: <b>Bisti Landfarm</b>		
Date: <b>9/14/2020</b>			Project Number: <b>029520002</b>		
Logged By: <b>EC</b>			Drilled By: <b>LTE</b>		
Elevation: <b>6126</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Sampling Method: <b>Continuous</b>	
Casing Type:		Grout: <b>Bentonite</b>			
Screen Type:		Diameter:		Length:	
		Hole Diameter: <b>3"</b>		Depth to Liquid:	
Slot:		Diameter:		Length:	
		Total Depth:		Depth to Water:	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.0			0					
		0.0		SB53	1			ML	0-3': Lt brown-red sandy silt, no odor	
		0.0		SB53	2					
		0.0		SB53	3					
		0.0		SB53	4					
		0.0		SB53	5			SM	3-6': red-brown silty sand, no odor	
		0.0		SB53	6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



 <b>Advancing Opportunity</b> 848 E. 2nd Ave Durango, Colorado 81301							
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>							
Boring/Well Number: <b>SB54</b>				Project: <b>Bisti Landfarm</b>			
Date: <b>9/14/2020</b>				Project Number: <b>029520002</b>			
Logged By: <b>EL</b>				Drilled By: <b>LTE</b>			
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>			
Casing Type:		Diameter:		Length:		Hole Diameter: <b>3"</b>	Depth to Liquid:
Screen Type:		Slot:		Diameter:		Length:	Depth to Water:
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery
		1.7		SB54 @ 0-1'	0		
		1.5			1		
		1.7			2		
		1.3			3		
		1.3			4		
		1.3		SB54 @ 4-6'	5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
Lithology/Remarks 0-6': Lt brown-red silty sand, no odor							Well Completion No well

<b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>N</b>			
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>							
Boring/Well Number: <b>SBSS</b>				Project: <b>Bisti Landfarm</b>			
Date: <b>9/25/2020</b>				Project Number: <b>029520002</b>			
Logged By: <b>JH</b>				Drilled By: <b>LTE</b>			
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack:				Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>	
Casing Type:				Diameter:		Length:	
Screen Type:				Slot:		Diameter:	
						Hole Diameter: <b>3"</b>	
						Depth to Liquid:	
						Total Depth:	
						Depth to Water:	



Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.2		SBSS 20-1'	0				0-3': Lt brown, silty sand, no odor	No Well
		0.0			1			SM		
		0.0			2					
		0.0			3					
		0.0			4				3-6': red-brown silty sand, no odor	
		0.0			5			SM		
		0.0		SBSS 46'	6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



 <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>					
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
Boring/Well Number: <b>SB56</b>			Project: <b>Bisti Landfarm</b>		
Date: <b>9/25/2020</b>			Project Number: <b>029520002</b>		
Logged By: <b>SH</b>			Drilled By: <b>LTE</b>		
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Sampling Method: <b>Continuous</b>	
Casing Type:		Diameter:		Hole Diameter: <b>3"</b>	
Screen Type:		Slot:		Total Depth:	
Diameter:		Length:		Depth to Liquid:	
Diameter:		Length:		Depth to Water:	



  

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		3.2		SB56 00-1'	0					
		2.0			1			SM	0-3': Lt brown silty sand, no odor	
		2.3			2					
		2.3			3					
		2.3			4					
		2.2			5			SM	3-6': red-brown silty sand, no odor	
		1.8		SB56 04-6'	6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

 <b>Advancing Opportunity</b> 848 E. 2nd Ave Durango, Colorado 81301					
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
Boring/Well Number: <b>SB57</b>			Project: <b>Bisti Landfarm</b>		
Date: <b>9/25/2020</b>			Project Number: <b>029520002</b>		
Logged By: <b>SH</b>			Drilled By: <b>LTE</b>		
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>	
Gravel Pack:		Seal: <b>Bentonite</b>		Sampling Method: <b>Continuous</b>	
Casing Type:		Diameter:		Grout: <b>Bentonite</b>	
Screen Type:		Length:		Hole Diameter: <b>3"</b>	
Slot:		Diameter:		Depth to Liquid:	
		Length:		Total Depth:	
				Depth to Water:	

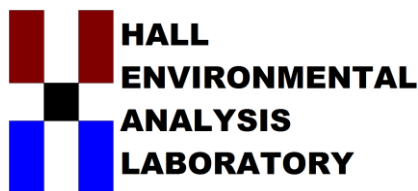
  

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.9			0					<b>No well</b>  0-3' : Lt brown, silty sand, no odor  3-6' : red-brown, silty sand, no odor
		1.1		SB57 @ 1-3'	1			SM		
		0.8			2					
		0.7			3					
		0.5			4					
		0.5			5			SM		
		0.5		SB57 @ 4-6'	6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

  <b>Advancing Opportunity</b> <b>848 E. 2nd Ave</b> <b>Durango, Colorado 81301</b>				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>						
				Boring/Well Number: <b>5859</b>		Project: <b>Bisti Landfarm</b>				
				Date: <b>9/25/2020</b>		Project Number: <b>029520002</b>				
				Logged By: <b>SH</b>		Drilled By: <b>LTE</b>				
Elevation: <b>6,266</b>		Detector: <b>PID</b>		Drilling Method: <b>Hand Auger</b>		Sampling Method: <b>Continuous</b>				
Gravel Pack:				Seal: <b>Bentonite</b>		Grout: <b>Bentonite</b>				
Casing Type:				Diameter:		Length:				
Screen Type:				Slot:		Diameter:				
						Hole Diameter: <b>3"</b>				
						Depth to Liquid:				
						Total Depth:				
						Depth to Water:				
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<b>2.0</b>		<b>5859 0-1'</b>	<b>0</b>					<b>No well</b>
					<b>1</b>			<b>SM</b>	<b>0-3': Lt brown silty sand, no odor</b>	
		<b>1.9</b>			<b>2</b>					
		<b>1.9</b>			<b>3</b>					
		<b>1.6</b>			<b>4</b>					
		<b>1.5</b>			<b>5</b>			<b>SM</b>	<b>3-6': red-brown, silty sand, no odor</b>	
		<b>0.9</b>		<b>5859 C4-6'</b>	<b>6</b>					
					<b>7</b>					
					<b>8</b>					
					<b>9</b>					
					<b>10</b>					
					<b>11</b>					
					<b>12</b>					
					<b>13</b>					
					<b>14</b>					
					<b>15</b>					

APPENDIX C: LABORATORY ANALYTICAL REPORTS





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

August 13, 2020

Stuart Hyde

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX: (505) 632-3911

RE: Bisti LF

OrderNo.: 2008618

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 9 sample(s) on 8/12/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB01 @ 3'-4'

Project: Bisti LF

Collection Date: 8/11/2020 10:40:00 AM

Lab ID: 2008618-001

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	340	60		mg/Kg	20	8/12/2020 10:43:27 AM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 1 of 10

## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB01 @ 6'-8'

Project: Bisti LF

Collection Date: 8/11/2020 11:08:00 AM

Lab ID: 2008618-002

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	1000	60		mg/Kg	20	8/12/2020 10:55:51 AM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 2 of 10

## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB01 @ 14'-16'

Project: Bisti LF

Collection Date: 8/11/2020 11:05:00 AM

Lab ID: 2008618-003

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	490	60		mg/Kg	20	8/12/2020 11:08:16 AM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB02 @ 3'-4'

Project: Bisti LF

Collection Date: 8/11/2020 11:45:00 AM

Lab ID: 2008618-004

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	360	60		mg/Kg	20	8/12/2020 11:20:41 AM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB02 @ 4'-6'

Project: Bisti LF

Collection Date: 8/11/2020 11:55:00 AM

Lab ID: 2008618-005

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	2400	150		mg/Kg	50	8/12/2020 12:59:57 PM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 5 of 10



## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB02 @ 14'-16'

Project: Bisti LF

Collection Date: 8/11/2020 12:00:00 PM

Lab ID: 2008618-006

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	680	60		mg/Kg	20	8/12/2020 11:45:29 AM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB03 @ 3'-4'

Project: Bisti LF

Collection Date: 8/11/2020 12:30:00 PM

Lab ID: 2008618-007

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	2200	60		mg/Kg	20	8/12/2020 11:57:54 AM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB03 @ 8'-10'

Project: Bisti LF

Collection Date: 8/11/2020 12:31:00 PM

Lab ID: 2008618-008

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	2200	60		mg/Kg	20	8/12/2020 12:10:18 PM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008618

Date Reported: 8/13/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB03 @ 10'-12'

Project: Bisti LF

Collection Date: 8/11/2020 12:32:00 PM

Lab ID: 2008618-009

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	640	59		mg/Kg	20	8/12/2020 12:47:32 PM	54358

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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

WO#: 2008618

13-Aug-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti LF

Sample ID: <b>MB-54358</b>	SampType: <b>mblk</b>		TestCode: <b>EPA Method 300.0: Anions</b>							
Client ID: <b>PBS</b>	Batch ID: <b>54358</b>		RunNo: <b>71009</b>							
Prep Date: <b>8/12/2020</b>	Analysis Date: <b>8/12/2020</b>		SeqNo: <b>2475210</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

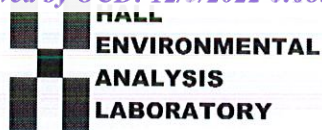
Sample ID: <b>LCS-54358</b>	SampType: <b>lcs</b>		TestCode: <b>EPA Method 300.0: Anions</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>54358</b>		RunNo: <b>71009</b>							
Prep Date: <b>8/12/2020</b>	Analysis Date: <b>8/12/2020</b>		SeqNo: <b>2475211</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.3	90	110			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of 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  
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: Western Refining  
Southwest, Inc.

Work Order Number: 2008618

RcptNo: 1

Received By: Isaiah Ortiz 8/12/2020 8:00:00 AM

Completed By: Emily Mocho 8/12/2020 8:32:29 AM

Reviewed By: DAD 8/12/20

IOX

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: SPA 8.12.20

Special Handling (if applicable)

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

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good	Not Present			



## Chain-of-Custody Record

Client: Western Refining  
Greg McCartney  
 Mailing Address: 539 S main St  
Findlay OH 45846  
 Phone #: \_\_\_\_\_

email or Fax#: \_\_\_\_\_  
 QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)  
 Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other \_\_\_\_\_  
 EDD (Type) PDF

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other \_\_\_\_\_  
 EDD (Type) PDF

EDD (Type) PDF

Date	Time	Matrix	Sample Name
8/11	1040	Soil	SB01 @ 3'-4'
1109			SB01 @ 6'-8'
1105			SB01 @ 14'-16'
1145			SB02 @ 3'-4'
1155			SB02 @ 4'-6'
1200			SB02 @ 14'-16'
1230			SB03 @ 3'-4'
1231			SB03 @ 8'-10'
1232			SB03 @ 10'-12'

Date: 8/11 Time: 1515  
 Relinquished by: Greg McCartney  
 Date: 8/11/2020 Time: 1903  
 Relinquished by: John W...

Turn-Around Time:

☐ Standard ☒ Rush Same Day

Project Name:

Bisbi LF

Project #:

PO # 4500183756

Project Manager:

Stuart HydeSampler: E. Carroll / C McGinnOn Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CF): 0.2 °C per 0.2 °C

Container Type and #

Preservative Type

HEAL No.

Type and #

Cooler Temp (including CF): 0.2 °C per 0.2 °C

Type and #

Preservative Type

HEAL No.

Type and #

Cooler Temp (including CF): 0.2 °C per 0.2 °C

Type and #

Preservative Type

HEAL No.

Type and #

Cooler Temp (including CF): 0.2 °C per 0.2 °C

Type and #

Preservative Type

HEAL No.

Type and #

Cooler Temp (including CF): 0.2 °C per 0.2 °C

Type and #

Preservative Type

HEAL No.

Type and #

## Analysis Request

BTEX / MTBE / TMBs (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<sub>3</sub>, NO<sub>2</sub>, PO<sub>4</sub>, SO<sub>4</sub>

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

Remarks:

Received by: John W... Date: 8/11/2020 Time: 1815Received by: John W... Date: 8/12/20 Time: 0800

Please cc: shyde@itenv.com  
ecarroil@itenv.com



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

August 19, 2020

Gregory McCartney  
Western Refining Southwest, Inc.  
#50 CR 4990  
Bloomfield, NM 87413  
TEL: (505) 632-4135  
FAX

RE: Bisti Landfarm

OrderNo.: 2008667

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 20 sample(s) on 8/12/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB04@ 0-1'

Project: Bisti Landfarm

Collection Date: 8/11/2020 1:00:00 PM

Lab ID: 2008667-001

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	89	60		mg/Kg	20	8/16/2020 11:09:42 PM	54448

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 1 of 21



## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB04@ 6-8'

Project: Bisti Landfarm

Collection Date: 8/11/2020 1:07:00 PM

Lab ID: 2008667-002

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	120	60		mg/Kg	20	8/16/2020 11:22:03 PM	54448

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB04@ 10-12'

Project: Bisti Landfarm

Collection Date: 8/11/2020 1:10:00 PM

Lab ID: 2008667-003

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	100	60		mg/Kg	20	8/17/2020 11:59:21 AM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB05@ 2-3'

Project: Bisti Landfarm

Collection Date: 8/11/2020 1:43:00 PM

Lab ID: 2008667-004

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	59		mg/Kg	20	8/17/2020 12:36:23 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB05@ 6-8'

Project: Bisti Landfarm

Collection Date: 8/11/2020 1:44:00 PM

Lab ID: 2008667-005

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 12:48:44 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB05@ 10-12'

Project: Bisti Landfarm

Collection Date: 8/11/2020 1:45:00 PM

Lab ID: 2008667-006

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 1:01:04 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB06@ 2-3'

Project: Bisti Landfarm

Collection Date: 8/11/2020 2:15:00 PM

Lab ID: 2008667-007

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 1:13:25 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB06@ 6-8'

Project: Bisti Landfarm

Collection Date: 8/11/2020 2:19:00 PM

Lab ID: 2008667-008

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 1:25:46 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 8 of 21

## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB06@ 10-12'

Project: Bisti Landfarm

Collection Date: 8/11/2020 2:18:00 PM

Lab ID: 2008667-009

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	59		mg/Kg	20	8/17/2020 1:38:07 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB07@ 1-2'

Project: Bisti Landfarm

Collection Date: 8/11/2020 2:45:00 PM

Lab ID: 2008667-010

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 1:50:27 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB07@ 6-8'

Project: Bisti Landfarm

Collection Date: 8/11/2020 2:48:00 PM

Lab ID: 2008667-011

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	59		mg/Kg	20	8/17/2020 2:27:30 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB07@ 10-12

Project: Bisti Landfarm

Collection Date: 8/11/2020 2:50:00 PM

Lab ID: 2008667-012

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	61	60		mg/Kg	20	8/17/2020 2:39:50 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB08@ 0-1'

Project: Bisti Landfarm

Collection Date: 8/11/2020 3:23:00 PM

Lab ID: 2008667-013

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 2:52:10 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB08@ 6-8'

Project: Bisti Landfarm

Collection Date: 8/11/2020 3:21:00 PM

Lab ID: 2008667-014

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 3:04:31 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB08@ 10-12'

Project: Bisti Landfarm

Collection Date: 8/11/2020 3:17:00 PM

Lab ID: 2008667-015

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	110	60		mg/Kg	20	8/17/2020 3:16:52 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB09@ 2-3'

Project: Bisti Landfarm

Collection Date: 8/11/2020 3:48:00 PM

Lab ID: 2008667-016

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 3:29:12 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB09@ 4-6'

Project: Bisti Landfarm

Collection Date: 8/11/2020 3:51:00 PM

Lab ID: 2008667-017

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 3:41:34 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB09@ 6-8'

Project: Bisti Landfarm

Collection Date: 8/11/2020 3:50:00 PM

Lab ID: 2008667-018

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 3:53:55 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB10@ 3-4'

Project: Bisti Landfarm

Collection Date: 8/11/2020 4:20:00 PM

Lab ID: 2008667-019

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	1600	59		mg/Kg	20	8/17/2020 4:06:16 PM	54460

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008667

Date Reported: 8/19/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB11 @ 3-4'

Project: Bisti Landfarm

Collection Date: 8/11/2020 4:52:00 PM

Lab ID: 2008667-020

Matrix: SOIL

Received Date: 8/12/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	620	60		mg/Kg	20	8/17/2020 5:08:01 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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

WO#: 2008667

19-Aug-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>MB-54448</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54448</b>	RunNo: <b>71150</b>								
Prep Date: <b>8/16/2020</b>	Analysis Date: <b>8/16/2020</b>	SeqNo: <b>2480689</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-54448</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54448</b>	RunNo: <b>71150</b>								
Prep Date: <b>8/16/2020</b>	Analysis Date: <b>8/16/2020</b>	SeqNo: <b>2480690</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.2	90	110			

Sample ID: <b>MB-54460</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54460</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2480954</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-54460</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54460</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2480955</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.6	90	110			

Sample ID: <b>MB-54477</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54477</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2480989</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-54477</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54477</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2480990</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of 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  
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: **Western Refining  
Southwest, Inc.**

Work Order Number: **2008667**

RcptNo: 1

Received By: **Isaiah Ortiz**

8/12/2020 8:00:00 AM

Completed By: **Leah Baca**

8/12/2020 2:45:11 PM

Reviewed By: **SJA 8.12.20**

*IOX*

*Leah Baca*

### Chain of Custody

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

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: *EM 8/12/20*

### Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

### 17. Cooler Information

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











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

August 20, 2020

Stuart Hyde

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX:

RE: Bisti Landfarm

OrderNo.: 2008700

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 34 sample(s) on 8/13/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB12 @ 3'-4'

Project: Bisti Landfarm

Collection Date: 8/12/2020 9:14:00 AM

Lab ID: 2008700-001

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	130	60		mg/Kg	20	8/17/2020 5:20:20 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB13 @ 3'-4'

Project: Bisti Landfarm

Collection Date: 8/12/2020 9:39:00 AM

Lab ID: 2008700-002

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	160	59		mg/Kg	20	8/17/2020 5:57:24 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB13 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 9:40:00 AM

Lab ID: 2008700-003

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	89	60		mg/Kg	20	8/17/2020 6:34:26 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB13 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 9:41:00 AM

Lab ID: 2008700-004

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	360	60		mg/Kg	20	8/17/2020 7:11:29 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB14 @ 2'-3'

Project: Bisti Landfarm

Collection Date: 8/12/2020 10:10:00 AM

Lab ID: 2008700-005

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	160	60		mg/Kg	20	8/17/2020 7:23:50 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB14 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 10:12:00 AM

Lab ID: 2008700-006

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	280	60		mg/Kg	20	8/17/2020 7:36:11 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB14 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 10:14:00 AM

Lab ID: 2008700-007

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	77	60		mg/Kg	20	8/17/2020 7:48:31 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB15 @ 1'-2'

Project: Bisti Landfarm

Collection Date: 8/12/2020 11:07:00 AM

Lab ID: 2008700-008

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	320	59		mg/Kg	20	8/17/2020 8:00:53 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB15 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 11:08:00 AM

Lab ID: 2008700-009

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	520	60		mg/Kg	20	8/17/2020 8:13:14 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB15 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 11:10:00 AM

Lab ID: 2008700-010

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	190	61		mg/Kg	20	8/17/2020 8:25:35 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB16 @ 2'-3'

Project: Bisti Landfarm

Collection Date: 8/12/2020 11:30:00 AM

Lab ID: 2008700-011

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	150	60		mg/Kg	20	8/17/2020 8:37:56 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB16 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 11:35:00 AM

Lab ID: 2008700-012

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	160	60		mg/Kg	20	8/17/2020 8:50:17 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB16 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 11:40:00 AM

Lab ID: 2008700-013

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JMT
Chloride	1100	60		mg/Kg	20	8/17/2020 9:02:37 PM	54477

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB17 @ 3'-4'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:10:00 PM

Lab ID: 2008700-014

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	1200	60		mg/Kg	20	8/17/2020 9:39:39 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB17 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:12:00 PM

Lab ID: 2008700-015

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JMT
Chloride	1400	60		mg/Kg	20	8/17/2020 9:51:59 PM	54477

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB17 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:15:00 PM

Lab ID: 2008700-016

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	1200	60		mg/Kg	20	8/17/2020 10:04:20 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB18 @ 2'-3'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:20:00 PM

Lab ID: 2008700-017

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	140	60		mg/Kg	20	8/17/2020 10:16:40 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB18 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:28:00 PM

Lab ID: 2008700-018

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	93	61		mg/Kg	20	8/17/2020 10:28:59 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB18 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:25:00 PM

Lab ID: 2008700-019

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	720	60		mg/Kg	20	8/17/2020 10:41:19 PM	54477

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB19 @ 1'-2'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:57:00 PM

Lab ID: 2008700-020

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/17/2020 11:18:22 PM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB19 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:53:00 PM

Lab ID: 2008700-021

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	59		mg/Kg	20	8/17/2020 11:30:43 PM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB19 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 12:52:00 PM

Lab ID: 2008700-022

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	61		mg/Kg	20	8/18/2020 12:32:25 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB20 @ 3'-4'

Project: Bisti Landfarm

Collection Date: 8/12/2020 1:26:00 PM

Lab ID: 2008700-023

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	1900	60		mg/Kg	20	8/18/2020 12:44:46 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB20 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 1:27:00 PM

Lab ID: 2008700-024

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	2500	150		mg/Kg	50	8/18/2020 11:04:34 PM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB20 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 1:24:00 PM

Lab ID: 2008700-025

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	3600	150		mg/Kg	50	8/18/2020 11:16:55 PM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB21 @ 2'-3'

Project: Bisti Landfarm

Collection Date: 8/12/2020 1:40:00 PM

Lab ID: 2008700-026

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	560	60		mg/Kg	20	8/18/2020 1:21:48 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB21 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 1:43:00 PM

Lab ID: 2008700-027

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JMT
Chloride	1800	61		mg/Kg	20	8/18/2020 1:34:08 AM	54484

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB21 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 1:42:00 PM

Lab ID: 2008700-028

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JMT
Chloride	1400	60		mg/Kg	20	8/18/2020 1:46:29 AM	54484

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB22 @ 2'-3'

Project: Bisti Landfarm

Collection Date: 8/12/2020 2:16:00 PM

Lab ID: 2008700-029

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	59		mg/Kg	20	8/18/2020 1:58:50 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB22 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 2:13:00 PM

Lab ID: 2008700-030

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/18/2020 2:35:51 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB22 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 2:15:00 PM

Lab ID: 2008700-031

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	ND	60		mg/Kg	20	8/18/2020 2:48:11 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB23 @ 2'-3'

Project: Bisti Landfarm

Collection Date: 8/12/2020 2:37:00 PM

Lab ID: 2008700-032

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	120	60		mg/Kg	20	8/18/2020 3:00:31 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB23 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 8/12/2020 2:28:00 PM

Lab ID: 2008700-033

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	130	60		mg/Kg	20	8/18/2020 3:12:51 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008700

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB23 @ 6'-8'

Project: Bisti Landfarm

Collection Date: 8/12/2020 2:29:00 PM

Lab ID: 2008700-034

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	150	60		mg/Kg	20	8/18/2020 3:25:12 AM	54484

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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

WO#: 2008700

20-Aug-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>MB-54477</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54477</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2480989</b>		Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-54477</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54477</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2480990</b>		Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

Sample ID: <b>MB-54484</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54484</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2481027</b>		Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-54484</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54484</b>	RunNo: <b>71156</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2481028</b>		Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.6	90	110			

**Qualifiers:**

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

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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: Western Refining  
Southwest, Inc.

Work Order Number: 2008700

RcptNo: 1

Received By: Cheyenne Cason 8/13/2020 7:55:00 AM

Completed By: Emily Mocho 8/13/2020 9:13:33 AM

Reviewed By: *LM* 8/13/20

### Chain of Custody

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

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: *CMC* 8/13/20

### Special Handling (if applicable)

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

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Not Present			
2	3.9	Good	Not Present			
3	0.3	Good	Not Present			
4	0.6	Good	Not Present			







## HALL ENVIRONMENTAL ANALYSIS LABORATORY

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request

Chain-of-Custody Record				Turn-Around Time:			
Client: <u>Western Refining</u>				<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush			
Contact: <u>Circa McCartney</u>				Project Name: <u>2020</u>			
Mailing Address: <u>539 main st.</u>				Project #: <u>Bisti t-f Landfarm</u>			
City/State: <u>Findlay, OH</u>				Project #: <u>4500183750</u>			
Phone #: _____				Project Manager: <u>Stuart Hyde</u>			
Email or Fax#: _____				Sampler: <u>C. McCartney, E. Carroll</u>			
QA/QC Package: <input type="checkbox"/> Level 4 (Full Validation)				On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Accreditation: <input type="checkbox"/> AZ Compliance				# of Coolers: <u>4</u>			
<input type="checkbox"/> NELAC <input type="checkbox"/> Other _____				Cooler Temp (including CF): <u>See Remarks</u> (°C)			
<input checked="" type="checkbox"/> EDD (Type) <u>PDF</u>				Container Type and #			
				Preservative Type			
				HEAL No			
Date				Time			
Time				Sample Name			
Matrix				Cooler Temp (°C)			
1324				SB2001-8'			
1340				SB2102-3'			
1343				SB2104'-6'			
1342				SB2106'-8'			
1410				SB2202'-3'			
1413				SB2204'-6'			
1415				SB2206'-8'			
1437				SB2302'-3'			
1428				SB2304'-6'			
1429				SB2306'-8'			
Relinquished by: <u>See card</u>				Received by: <u>Stuart Hyde</u>			
Date: <u>8/20/20</u>				Date: <u>8/20/20</u>			
Time: <u>1500</u>				Time: <u>1400</u>			
Relinquished by: <u>Stuart Hyde</u>				Received by: <u>See card</u>			
Date: <u>8/20/20</u>				Date: <u>8/20/20</u>			
Time: <u>1914</u>				Time: <u>0755</u>			

if necessary, samples submitted to Half 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  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [clients.hallenvironmental.com](http://clients.hallenvironmental.com)

August 20, 2020

Stuart Hyde

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX:

RE: 2020 Bisti Landfarm

OrderNo.: 2008697

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 30 sample(s) on 8/13/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB24 @ 0-1'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 2:48:00 PM

Lab ID: 2008697-001

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/15/2020 3:01:00 PM	54403
Surr: BFB	101	70-130		%Rec	1	8/15/2020 3:01:00 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	51	9.2		mg/Kg	1	8/19/2020 12:20:25 AM	54410
Motor Oil Range Organics (MRO)	63	46		mg/Kg	1	8/19/2020 12:20:25 AM	54410
Surr: DNOP	97.1	30.4-154		%Rec	1	8/19/2020 12:20:25 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB24 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 2:49:00 PM

Lab ID: 2008697-002

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/15/2020 3:29:44 PM	54403
Surr: BFB	103	70-130		%Rec	1	8/15/2020 3:29:44 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/19/2020 12:44:40 AM	54410
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/19/2020 12:44:40 AM	54410
Surr: DNOP	121	30.4-154		%Rec	1	8/19/2020 12:44:40 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB24 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 2:50:00 PM

Lab ID: 2008697-003

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/15/2020 3:58:29 PM	54403
Surr: BFB	110	70-130		%Rec	1	8/15/2020 3:58:29 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/19/2020 1:09:06 AM	54410
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/19/2020 1:09:06 AM	54410
Surr: DNOP	118	30.4-154		%Rec	1	8/19/2020 1:09:06 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB25 @ 3'-4'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:00:00 PM

Lab ID: 2008697-004

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/15/2020 4:27:15 PM	54403
Surr: BFB	106	70-130		%Rec	1	8/15/2020 4:27:15 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/19/2020 1:33:29 AM	54410
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/19/2020 1:33:29 AM	54410
Surr: DNOP	120	30.4-154		%Rec	1	8/19/2020 1:33:29 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB25 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:01:00 PM

Lab ID: 2008697-005

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/15/2020 4:56:07 PM	54403
Surr: BFB	106	70-130		%Rec	1	8/15/2020 4:56:07 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	24	9.5		mg/Kg	1	8/19/2020 1:57:56 AM	54410
Motor Oil Range Organics (MRO)	51	48		mg/Kg	1	8/19/2020 1:57:56 AM	54410
Surr: DNOP	88.5	30.4-154		%Rec	1	8/19/2020 1:57:56 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB25 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:02:00 PM

Lab ID: 2008697-006

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/15/2020 5:24:53 PM	54403
Surr: BFB	110	70-130		%Rec	1	8/15/2020 5:24:53 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/19/2020 2:22:23 AM	54410
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/19/2020 2:22:23 AM	54410
Surr: DNOP	121	30.4-154		%Rec	1	8/19/2020 2:22:23 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB26 @ 3'-4'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:09:00 PM

Lab ID: 2008697-007

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/15/2020 5:53:36 PM	54403
Surr: BFB	103	70-130		%Rec	1	8/15/2020 5:53:36 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/19/2020 2:46:51 AM	54410
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/19/2020 2:46:51 AM	54410
Surr: DNOP	118	30.4-154		%Rec	1	8/19/2020 2:46:51 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB26 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:10:00 PM

Lab ID: 2008697-008

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/15/2020 6:22:19 PM	54403
Surr: BFB	104	70-130		%Rec	1	8/15/2020 6:22:19 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	15	9.4		mg/Kg	1	8/14/2020 10:32:54 PM	54410
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/14/2020 10:32:54 PM	54410
Surr: DNOP	35.4	30.4-154		%Rec	1	8/14/2020 10:32:54 PM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB26 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:11:00 PM

Lab ID: 2008697-009

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/15/2020 6:50:58 PM	54403
Surr: BFB	106	70-130		%Rec	1	8/15/2020 6:50:58 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/19/2020 3:11:18 AM	54410
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/19/2020 3:11:18 AM	54410
Surr: DNOP	118	30.4-154		%Rec	1	8/19/2020 3:11:18 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB27 @ 3'-4'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:17:00 PM

Lab ID: 2008697-010

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/15/2020 7:19:38 PM	54403
Surr: BFB	105	70-130		%Rec	1	8/15/2020 7:19:38 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/19/2020 3:35:34 AM	54410
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/19/2020 3:35:34 AM	54410
Surr: DNOP	134	30.4-154		%Rec	1	8/19/2020 3:35:34 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB27 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:20:00 PM

Lab ID: 2008697-011

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/15/2020 7:48:14 PM	54403
Surr: BFB	105	70-130		%Rec	1	8/15/2020 7:48:14 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	13	9.6		mg/Kg	1	8/19/2020 3:59:55 AM	54410
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/19/2020 3:59:55 AM	54410
Surr: DNOP	86.8	30.4-154		%Rec	1	8/19/2020 3:59:55 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB27 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:22:00 PM

Lab ID: 2008697-012

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/15/2020 8:16:48 PM	54403
Surr: BFB	104	70-130		%Rec	1	8/15/2020 8:16:48 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/19/2020 4:24:16 AM	54410
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/19/2020 4:24:16 AM	54410
Surr: DNOP	127	30.4-154		%Rec	1	8/19/2020 4:24:16 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB28 @ 1'-2'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:37:00 PM

Lab ID: 2008697-013

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/15/2020 8:45:20 PM	54403
Surr: BFB	101	70-130		%Rec	1	8/15/2020 8:45:20 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	490	95		mg/Kg	10	8/14/2020 11:24:46 PM	54410
Motor Oil Range Organics (MRO)	510	470		mg/Kg	10	8/14/2020 11:24:46 PM	54410
Surr: DNOP	0	30.4-154	S	%Rec	10	8/14/2020 11:24:46 PM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB28 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:36:00 PM

Lab ID: 2008697-014

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/15/2020 9:13:56 PM	54403
Surr: BFB	101	70-130		%Rec	1	8/15/2020 9:13:56 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	160	10		mg/Kg	1	8/19/2020 4:48:21 AM	54410
Motor Oil Range Organics (MRO)	240	50		mg/Kg	1	8/19/2020 4:48:21 AM	54410
Surr: DNOP	95.9	30.4-154		%Rec	1	8/19/2020 4:48:21 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB28 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:36:00 PM

Lab ID: 2008697-015

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/15/2020 9:42:27 PM	54403
Surr: BFB	104	70-130		%Rec	1	8/15/2020 9:42:27 PM	54403
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/19/2020 5:12:20 AM	54410
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/19/2020 5:12:20 AM	54410
Surr: DNOP	126	30.4-154		%Rec	1	8/19/2020 5:12:20 AM	54410

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB29 @ 0'-1'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:50:00 PM

Lab ID: 2008697-016

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/15/2020 10:10:57 PM	54415
Surr: BFB	102	70-130		%Rec	1	8/15/2020 10:10:57 PM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	21	8.5		mg/Kg	1	8/18/2020 7:32:52 PM	54431
Motor Oil Range Organics (MRO)	75	42		mg/Kg	1	8/18/2020 7:32:52 PM	54431
Surr: DNOP	110	30.4-154		%Rec	1	8/18/2020 7:32:52 PM	54431

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB29 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:52:00 PM

Lab ID: 2008697-017

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/16/2020 1:30:10 AM	54415
Surr: BFB	98.1	70-130		%Rec	1	8/16/2020 1:30:10 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/17/2020 6:26:31 PM	54431
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/17/2020 6:26:31 PM	54431
Surr: DNOP	90.6	30.4-154		%Rec	1	8/17/2020 6:26:31 PM	54431

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB29 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 3:54:00 PM

Lab ID: 2008697-018

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/16/2020 2:55:41 AM	54415
Surr: BFB	105	70-130		%Rec	1	8/16/2020 2:55:41 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/17/2020 6:50:37 PM	54431
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/17/2020 6:50:37 PM	54431
Surr: DNOP	97.1	30.4-154		%Rec	1	8/17/2020 6:50:37 PM	54431

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB30 @ 2'-3'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:00:00 PM

Lab ID: 2008697-019

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/16/2020 3:24:08 AM	54415
Surr: BFB	106	70-130		%Rec	1	8/16/2020 3:24:08 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	8/17/2020 7:14:41 PM	54431
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	8/17/2020 7:14:41 PM	54431
Surr: DNOP	104	30.4-154		%Rec	1	8/17/2020 7:14:41 PM	54431

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB30 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:02:00 PM

Lab ID: 2008697-020

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/16/2020 3:52:38 AM	54415
Surr: BFB	106	70-130		%Rec	1	8/16/2020 3:52:38 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: CLP
Diesel Range Organics (DRO)	37	9.2		mg/Kg	1	8/18/2020 7:56:51 PM	54431
Motor Oil Range Organics (MRO)	150	46		mg/Kg	1	8/18/2020 7:56:51 PM	54431
Surr: DNOP	98.7	30.4-154		%Rec	1	8/18/2020 7:56:51 PM	54431

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB30 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:01:00 PM

Lab ID: 2008697-021

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/16/2020 4:21:10 AM	54415
Surr: BFB	106	70-130		%Rec	1	8/16/2020 4:21:10 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	8/18/2020 7:18:02 PM	54467
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/18/2020 7:18:02 PM	54467
Surr: DNOP	100	30.4-154		%Rec	1	8/18/2020 7:18:02 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB31 @ 3'-4'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:10:00 PM

Lab ID: 2008697-022

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/16/2020 4:49:40 AM	54415
Surr: BFB	99.1	70-130		%Rec	1	8/16/2020 4:49:40 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/18/2020 7:42:28 PM	54467
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/18/2020 7:42:28 PM	54467
Surr: DNOP	100	30.4-154		%Rec	1	8/18/2020 7:42:28 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB31 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:12:00 PM

Lab ID: 2008697-023

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/16/2020 5:18:16 AM	54415
Surr: BFB	107	70-130		%Rec	1	8/16/2020 5:18:16 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	10	9.3		mg/Kg	1	8/19/2020 11:23:46 PM	54467
Motor Oil Range Organics (MRO)	47	46		mg/Kg	1	8/19/2020 11:23:46 PM	54467
Surr: DNOP	98.9	30.4-154		%Rec	1	8/19/2020 11:23:46 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB31 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:11:00 PM

Lab ID: 2008697-024

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/16/2020 5:47:01 AM	54415
Surr: BFB	105	70-130		%Rec	1	8/16/2020 5:47:01 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/18/2020 9:19:58 PM	54467
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/18/2020 9:19:58 PM	54467
Surr: DNOP	92.4	30.4-154		%Rec	1	8/18/2020 9:19:58 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB32 @ 1'-2'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:20:00 PM

Lab ID: 2008697-025

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/16/2020 6:15:34 AM	54415
Surr: BFB	109	70-130		%Rec	1	8/16/2020 6:15:34 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	33	9.8		mg/Kg	1	8/19/2020 11:48:22 PM	54467
Motor Oil Range Organics (MRO)	120	49		mg/Kg	1	8/19/2020 11:48:22 PM	54467
Surr: DNOP	101	30.4-154		%Rec	1	8/19/2020 11:48:22 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB32 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:18:00 PM

Lab ID: 2008697-026

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/16/2020 6:44:06 AM	54415
Surr: BFB	103	70-130		%Rec	1	8/16/2020 6:44:06 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	23	9.8		mg/Kg	1	8/20/2020 12:12:43 AM	54467
Motor Oil Range Organics (MRO)	120	49		mg/Kg	1	8/20/2020 12:12:43 AM	54467
Surr: DNOP	97.6	30.4-154		%Rec	1	8/20/2020 12:12:43 AM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB32 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:15:00 PM

Lab ID: 2008697-027

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/16/2020 7:12:39 AM	54415
Surr: BFB	101	70-130		%Rec	1	8/16/2020 7:12:39 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/18/2020 10:33:13 PM	54467
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/18/2020 10:33:13 PM	54467
Surr: DNOP	101	30.4-154		%Rec	1	8/18/2020 10:33:13 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB33 @ 3'-4'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:30:00 PM

Lab ID: 2008697-028

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/16/2020 7:41:08 AM	54415
Surr: BFB	109	70-130		%Rec	1	8/16/2020 7:41:08 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/18/2020 10:57:37 PM	54467
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/18/2020 10:57:37 PM	54467
Surr: DNOP	107	30.4-154		%Rec	1	8/18/2020 10:57:37 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB33 @ 4'-6'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:28:00 PM

Lab ID: 2008697-029

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/16/2020 8:09:42 AM	54415
Surr: BFB	102	70-130		%Rec	1	8/16/2020 8:09:42 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/18/2020 11:22:17 PM	54467
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/18/2020 11:22:17 PM	54467
Surr: DNOP	101	30.4-154		%Rec	1	8/18/2020 11:22:17 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2008697

Date Reported: 8/20/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB33 @ 6'-8'

Project: 2020 Bisti Landfarm

Collection Date: 8/12/2020 4:27:00 PM

Lab ID: 2008697-030

Matrix: SOIL

Received Date: 8/13/2020 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/16/2020 8:38:15 AM	54415
Surr: BFB	104	70-130		%Rec	1	8/16/2020 8:38:15 AM	54415
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/18/2020 11:46:38 PM	54467
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/18/2020 11:46:38 PM	54467
Surr: DNOP	96.6	30.4-154		%Rec	1	8/18/2020 11:46:38 PM	54467

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2008697

20-Aug-20

Client: Western Refining Southwest, Inc.

Project: 2020 Bisti Landfarm

Sample ID: <b>MB-54431</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54431</b>	RunNo: <b>71115</b>								
Prep Date: <b>8/14/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2478838</b> Units: <b>mg/Kg</b>								
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	11		10.00		105	30.4	154			

Sample ID: <b>LCS-54431</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54431</b>	RunNo: <b>71115</b>								
Prep Date: <b>8/14/2020</b>	Analysis Date: <b>8/17/2020</b>	SeqNo: <b>2479491</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	101	70	130			
Surr: DNOP	4.8		5.000		96.2	30.4	154			

Sample ID: <b>LCS-54410</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54410</b>	RunNo: <b>71142</b>								
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/14/2020</b>	SeqNo: <b>2480451</b> Units: <b>mg/Kg</b>								
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	70	130			
Surr: DNOP	2.4		5.000		47.2	30.4	154			

Sample ID: <b>MB-54410</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54410</b>	RunNo: <b>71142</b>								
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/14/2020</b>	SeqNo: <b>2480454</b> Units: <b>mg/Kg</b>								
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	6.0		10.00		60.2	30.4	154			

Sample ID: <b>LCS-54467</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54467</b>	RunNo: <b>71149</b>								
Prep Date: <b>8/17/2020</b>	Analysis Date: <b>8/18/2020</b>	SeqNo: <b>2482199</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	105	70	130			
Surr: DNOP	5.2		5.000		104	30.4	154			

## Qualifiers:

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

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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2008697

20-Aug-20

Client: Western Refining Southwest, Inc.  
Project: 2020 Bisti Landfarm

Sample ID: MB-54467	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 54467	RunNo: 71149								
Prep Date: 8/17/2020	Analysis Date: 8/18/2020	SeqNo: 2482201	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		105	30.4	154			

Qualifiers:

- \*

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- 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#: 2008697

20-Aug-20

**Client:** Western Refining Southwest, Inc.**Project:** 2020 Bisti Landfarm

Sample ID: <b>mb-54403</b>	SampType: <b>MBLK</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>PBS</b>	Batch ID: <b>54403</b>			RunNo: <b>71094</b>						
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/15/2020</b>			SeqNo: <b>2477848</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	510		500.0		102	70	130			

Sample ID: <b>lcs-54403</b>	SampType: <b>LCS</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>54403</b>			RunNo: <b>71094</b>						
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/15/2020</b>			SeqNo: <b>2477849</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.2	70	130			
Surr: BFB	510		500.0		101	70	130			

Sample ID: <b>mb-54415</b>	SampType: <b>MBLK</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>PBS</b>	Batch ID: <b>54415</b>			RunNo: <b>71105</b>						
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/15/2020</b>			SeqNo: <b>2478196</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	530		500.0		106	70	130			

Sample ID: <b>lcs-54415</b>	SampType: <b>LCS</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>54415</b>			RunNo: <b>71105</b>						
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/15/2020</b>			SeqNo: <b>2478197</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.5	70	130			
Surr: BFB	540		500.0		107	70	130			

Sample ID: <b>2008697-016ams</b>	SampType: <b>MS</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>SB29 @ 0'-1'</b>	Batch ID: <b>54415</b>			RunNo: <b>71105</b>						
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/15/2020</b>			SeqNo: <b>2478199</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.36	0	96.6	49.2	122			
Surr: BFB	480		467.3		102	70	130			

Sample ID: <b>2008697-016amsd</b>	SampType: <b>MSD</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>SB29 @ 0'-1'</b>	Batch ID: <b>54415</b>			RunNo: <b>71105</b>						
Prep Date: <b>8/13/2020</b>	Analysis Date: <b>8/16/2020</b>			SeqNo: <b>2478200</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

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

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

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QC SUMMARY REPORT  
Hall Environmental Analysis Laboratory, Inc.

WO#: 2008697  
20-Aug-20

Client: Western Refining Southwest, Inc.  
Project: 2020 Bisti Landfarm

Sample ID: 2008697-016amsd		SampType: MSD		TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: SB29 @ 0'-1'		Batch ID: 54415		RunNo: 71105						
Prep Date: 8/13/2020		Analysis Date: 8/16/2020		SeqNo: 2478200		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.6	23.21	0	91.2	49.2	122	6.36	20	
Surr: BFB	480		464.3		103	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 Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

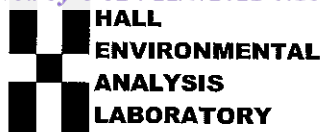
Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit





Hall Environmental Analysis Laboratory  
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: Western Refining  
Southwest, Inc.

Work Order Number: 2008697

RcptNo: 1

Received By: Cheyenne Cason 8/13/2020 7:55:00 AM

Completed By: Emily Mocho 8/13/2020 8:44:55 AM

Reviewed By: LB 8/13/20

### Chain of Custody

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

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: cmc 8/13/20

### Special Handling (if applicable)

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

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Not Present			
2	3.9	Good	Not Present			
3	0.3	Good	Not Present			
4	0.6	Good	Not Present			





<b>Chain-of-Custody Record</b>		Turn-Around Time:
Client:	<i>Western Refining</i>	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush
Mailing Address:	<i>Craig McCarney</i>	Project Name:
	<i>539 main st.</i>	<i>Bisai LF</i>
	<i>Findlay OH</i>	Project #:
Phone #:		<i>4500183750</i>

email or Fax#: \_\_\_\_\_

QAV/QC Package: \_\_\_\_\_

☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance  
☐ NELAC ☐ Other

☒ EDD (Type) PDE

Date	Time	Matrix	Sample Name
8/17	1620	601	SB3201'-2'
	1618		SB3204'-6'
	1615		SB3206'-8'
	1630		SB3303'-4'
	1628		SB3304'-6'
	1627		SB3306'-8'

Date:	8/17	Time:	1640	Relinquished by:	Eric Carver
Date:	8/12/2004	Time:	1914	Relinquished by:	Robert

Turn-Around Time:	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush
Project Name:	Bigai LF	
Project #:	4500183750	

Project Manager: *Stewart Hyde*

Sampler: *E. Carroll / C. McGinn*  
 On Ice: ☒ Yes ☐ No  
 # of Coolers: *4*

Cooler Temp (including CF)	See Breaks	HEAL No.	°C
Container Type and #	Preservative Type	2008697	
14 <sup>02</sup>	Cool	025	
		026	
		027	
		028	
		029	
		030	

Received by:	Via:	Date	Time
<i>Christa Wae</i>		8/12/2020	1810
Received by:	Via:	Date	Time
<i>Mx Crown</i>		8/13/20	0925



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request

[illegible]

Remarks:

Please cc: shyde@itenv.com  
ecarron@itenv.com



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

September 09, 2020

Gregory McCartney  
Western Refining Southwest, Inc.  
#50 CR 4990  
Bloomfield, NM 87413  
TEL: (505) 632-4135  
FAX:

RE: Bisti Landfarm

OrderNo.: 2009086

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 22 sample(s) on 9/2/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB34 @1'

Project: Bisti Landfarm

Collection Date: 9/1/2020 10:40:00 AM

Lab ID: 2009086-001

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/2/2020 4:35:26 PM	54891
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/2/2020 4:35:26 PM	54891
Surr: DNOP	93.7	30.4-154		%Rec	1	9/2/2020 4:35:26 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	9/2/2020 12:14:07 PM	54841
Surr: BFB	96.5	75.3-105		%Rec	1	9/2/2020 12:14:07 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB34 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 10:43:00 AM

Lab ID: 2009086-002

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	13	9.3		mg/Kg	1	9/2/2020 5:48:23 PM	54891
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/2/2020 5:48:23 PM	54891
Surr: DNOP	99.5	30.4-154		%Rec	1	9/2/2020 5:48:23 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.1		mg/Kg	1	9/2/2020 12:37:36 PM	54841
Surr: BFB	94.5	75.3-105		%Rec	1	9/2/2020 12:37:36 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB35 @3'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:05:00 AM

Lab ID: 2009086-003

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	9/2/2020 6:12:49 PM	54891
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/2/2020 6:12:49 PM	54891
Surr: DNOP	96.4	30.4-154		%Rec	1	9/2/2020 6:12:49 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	9/2/2020 1:01:07 PM	54841
Surr: BFB	94.9	75.3-105		%Rec	1	9/2/2020 1:01:07 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB35 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:07:00 AM

Lab ID: 2009086-004

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	9/2/2020 6:37:28 PM	54891
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/2/2020 6:37:28 PM	54891
Surr: DNOP	88.9	30.4-154		%Rec	1	9/2/2020 6:37:28 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	9/2/2020 1:24:32 PM	54841
Surr: BFB	95.9	75.3-105		%Rec	1	9/2/2020 1:24:32 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB36 @1'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:10:00 AM

Lab ID: 2009086-005

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	9.7	9.5		mg/Kg	1	9/2/2020 7:01:58 PM	54891
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/2/2020 7:01:58 PM	54891
Surr: DNOP	91.7	30.4-154		%Rec	1	9/2/2020 7:01:58 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.3		mg/Kg	1	9/2/2020 1:48:07 PM	54841
Surr: BFB	92.2	75.3-105		%Rec	1	9/2/2020 1:48:07 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB36 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:15:00 AM

Lab ID: 2009086-006

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	9/2/2020 7:26:34 PM	54891
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	9/2/2020 7:26:34 PM	54891
Surr: DNOP	90.7	30.4-154		%Rec	1	9/2/2020 7:26:34 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.5		mg/Kg	1	9/2/2020 2:58:37 PM	54841
Surr: BFB	93.7	75.3-105		%Rec	1	9/2/2020 2:58:37 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB37 @1'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:37:00 AM

Lab ID: 2009086-007

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	95	9.5		mg/Kg	1	9/3/2020 9:35:24 AM	54891
Motor Oil Range Organics (MRO)	150	47		mg/Kg	1	9/3/2020 9:35:24 AM	54891
Surr: DNOP	95.6	30.4-154		%Rec	1	9/3/2020 9:35:24 AM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.1		mg/Kg	1	9/2/2020 3:22:06 PM	54841
Surr: BFB	94.0	75.3-105		%Rec	1	9/2/2020 3:22:06 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB37 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:38:00 AM

Lab ID: 2009086-008

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/2/2020 8:15:31 PM	54891
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/2/2020 8:15:31 PM	54891
Surr: DNOP	90.1	30.4-154		%Rec	1	9/2/2020 8:15:31 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	9/2/2020 3:45:32 PM	54841
Surr: BFB	95.1	75.3-105		%Rec	1	9/2/2020 3:45:32 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB38 @1'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:40:00 AM

Lab ID: 2009086-009

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/2/2020 8:39:58 PM	54891
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/2/2020 8:39:58 PM	54891
Surr: DNOP	91.8	30.4-154		%Rec	1	9/2/2020 8:39:58 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	9/2/2020 4:08:59 PM	54841
Surr: BFB	95.9	75.3-105		%Rec	1	9/2/2020 4:08:59 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB38 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 11:48:00 AM

Lab ID: 2009086-010

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/2/2020 9:04:51 PM	54891
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/2/2020 9:04:51 PM	54891
Surr: DNOP	99.0	30.4-154		%Rec	1	9/2/2020 9:04:51 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.6		mg/Kg	1	9/2/2020 4:32:25 PM	54841
Surr: BFB	95.2	75.3-105		%Rec	1	9/2/2020 4:32:25 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB39 @2'

Project: Bisti Landfarm

Collection Date: 9/1/2020 12:00:00 PM

Lab ID: 2009086-011

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	140	19		mg/Kg	2	9/3/2020 9:59:43 AM	54891
Motor Oil Range Organics (MRO)	300	94		mg/Kg	2	9/3/2020 9:59:43 AM	54891
Surr: DNOP	90.7	30.4-154		%Rec	2	9/3/2020 9:59:43 AM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/2/2020 4:55:55 PM	54841
Surr: BFB	95.8	75.3-105		%Rec	1	9/2/2020 4:55:55 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB39 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 12:05:00 PM

Lab ID: 2009086-012

Matrix: MEOH (SOIL)

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/2/2020 9:53:45 PM	54891
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/2/2020 9:53:45 PM	54891
Surr: DNOP	92.0	30.4-154		%Rec	1	9/2/2020 9:53:45 PM	54891
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.4		mg/Kg	1	9/2/2020 5:19:24 PM	54841
Surr: BFB	94.7	75.3-105		%Rec	1	9/2/2020 5:19:24 PM	54841

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB40 @1'

Project: Bisti Landfarm

Collection Date: 9/1/2020 12:47:00 PM

Lab ID: 2009086-013

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	330	60		mg/Kg	20	9/2/2020 6:21:21 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB40 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 12:45:00 PM

Lab ID: 2009086-014

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	1400	60		mg/Kg	20	9/2/2020 6:58:34 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB41 @2'

Project: Bisti Landfarm

Collection Date: 9/1/2020 1:20:00 PM

Lab ID: 2009086-015

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	1700	60		mg/Kg	20	9/2/2020 7:10:58 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB41 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 1:22:00 PM

Lab ID: 2009086-016

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	640	60		mg/Kg	20	9/2/2020 7:23:23 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB42 @4'

Project: Bisti Landfarm

Collection Date: 9/1/2020 1:55:00 PM

Lab ID: 2009086-017

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: CAS
Chloride	3300	150		mg/Kg	50	9/4/2020 12:29:03 AM	54886

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB42 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 2:00:00 PM

Lab ID: 2009086-018

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: CAS
Chloride	4500	150		mg/Kg	50	9/4/2020 12:41:28 AM	54886

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB43 @3'

Project: Bisti Landfarm

Collection Date: 9/1/2020 2:20:00 PM

Lab ID: 2009086-019

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	180	59		mg/Kg	20	9/2/2020 8:25:26 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB43 @6'

Project: Bisti Landfarm

Collection Date: 9/1/2020 2:22:00 PM

Lab ID: 2009086-020

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	690	60		mg/Kg	20	9/2/2020 8:37:51 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB44 @3'

Project: Bisti Landfarm

Collection Date: 9/1/2020 2:46:00 PM

Lab ID: 2009086-021

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	430	60		mg/Kg	20	9/2/2020 8:50:15 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009086

Date Reported: 9/9/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB44 @12'

Project: Bisti Landfarm

Collection Date: 9/1/2020 2:48:00 PM

Lab ID: 2009086-022

Matrix: SOIL

Received Date: 9/2/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	320	60		mg/Kg	20	9/2/2020 9:02:40 PM	54886

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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

WO#: 2009086

09-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>MB-54886</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54886</b>	RunNo: <b>71554</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2501564</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-54886</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54886</b>	RunNo: <b>71554</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2501565</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.9	90	110			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of 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#: 2009086

09-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>2009086-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SB34 @1'</b>	Batch ID: <b>54891</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2500726</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	9.7	48.36	0	96.2	47.4	136			
Surr: DNOP	4.4		4.836		91.6	30.4	154			

Sample ID: <b>2009086-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SB34 @1'</b>	Batch ID: <b>54891</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2500727</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.7	48.40	0	95.4	47.4	136	0.769	43.4	
Surr: DNOP	4.4		4.840		91.5	30.4	154	0	0	

Sample ID: <b>LCS-54891</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54891</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2500763</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	101	70	130			
Surr: DNOP	4.6		5.000		92.2	30.4	154			

Sample ID: <b>MB-54891</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54891</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2500765</b> Units: <b>mg/Kg</b>								
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	9.2		10.00		92.2	30.4	154			

Sample ID: <b>LCS-54907</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54907</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/4/2020</b>	SeqNo: <b>2502752</b> Units: <b>%Rec</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.9		5.000		119	30.4	154			

Sample ID: <b>MB-54907</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54907</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/4/2020</b>	SeqNo: <b>2502753</b> Units: <b>%Rec</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

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

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#: 2009086

09-Sep-20

Client: Western Refining Southwest, Inc.  
Project: Bisti Landfarm

Sample ID: MB-54907	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 54907	RunNo: 71526								
Prep Date: 9/2/2020	Analysis Date: 9/4/2020	SeqNo: 2502753		Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	13		10.00		126	30.4	154			

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix
- 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#: 2009086

09-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

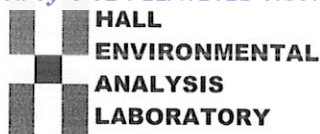
Sample ID: <b>mb-54841</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54841</b>	RunNo: <b>71546</b>								
Prep Date: <b>9/1/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2500649</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.1	75.3	105			

Sample ID: <b>lcs-54841</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54841</b>	RunNo: <b>71546</b>								
Prep Date: <b>9/1/2020</b>	Analysis Date: <b>9/2/2020</b>	SeqNo: <b>2500650</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	85.7	72.5	106			
Surr: BFB	1100		1000		107	75.3	105			S

**Qualifiers:**

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

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  
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: Western Refining Southw

Work Order Number: 2009086

RcptNo: 1

Received By: Cheyenne Cason

9/2/2020 8:05:00 AM

Completed By: Isaiah Ortiz

9/2/2020 8:31:37 AM

Reviewed By:

JR 9/2/20

I-0x

### Chain of Custody

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

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: cmc 9/2/20

### 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	4.2	Good	Yes			











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

September 11, 2020

Gregory McCartney  
Western Refining Southwest, Inc.  
#50 CR 4990  
Bloomfield, NM 87413  
TEL: (505) 632-4135  
FAX:

RE: Bisti Landfarm

OrderNo.: 2009470

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 8 sample(s) on 9/9/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order: 2009470

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Lab Order: 2009470

Project: Bisti Landfarm

Lab ID: 2009470-001

Collection Date: 9/8/2020 12:00:00 PM

Client Sample ID: SB45@1'

Matrix: SOIL

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

Analyst: MRA

Chloride	1500	60		mg/Kg	20	9/9/2020 10:14:03 AM	55039
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Lab ID: 2009470-002

Collection Date: 9/8/2020 11:09:00 AM

Client Sample ID: SB45@6'

Matrix: SOIL

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

Analyst: MRA

Chloride	370	59		mg/Kg	20	9/9/2020 10:26:23 AM	55039
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Lab ID: 2009470-003

Collection Date: 9/8/2020 12:30:00 PM

Client Sample ID: SB46@4'

Matrix: SOIL

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

Analyst: MRA

Chloride	1600	60		mg/Kg	20	9/9/2020 10:38:43 AM	55039
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Lab ID: 2009470-004

Collection Date: 9/8/2020 12:28:00 PM

Client Sample ID: SB46@6'

Matrix: SOIL

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

Analyst: MRA

Chloride	1900	60		mg/Kg	20	9/9/2020 10:51:04 AM	55039
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Lab ID: 2009470-005

Collection Date: 9/8/2020 1:12:00 PM

Client Sample ID: SB47@1'

Matrix: SOIL

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

Analyst: MRA

Chloride	82	60		mg/Kg	20	9/9/2020 11:03:23 AM	55039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

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

- 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

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## Analytical Report

Lab Order: 2009470

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Lab Order: 2009470

Project: Bisti Landfarm

Lab ID: 2009470-006

Collection Date: 9/8/2020 1:10:00 PM

Client Sample ID: SB47@6'

Matrix: SOIL

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

Analyst: MRA

Chloride	63	60		mg/Kg	20	9/9/2020 11:15:44 AM	55039
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Lab ID: 2009470-007

Collection Date: 9/8/2020 2:10:00 PM

Client Sample ID: SB48@3'

Matrix: SOIL

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

Analyst: MRA

Chloride	ND	60		mg/Kg	20	9/9/2020 11:28:05 AM	55039
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Lab ID: 2009470-008

Collection Date: 9/8/2020 2:12:00 PM

Client Sample ID: SB48@6'

Matrix: SOIL

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

Analyst: MRA

Chloride	ND	60		mg/Kg	20	9/9/2020 11:40:26 AM	55039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

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

- 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

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

WO#: 2009470

11-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>MB-55039</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>55039</b>	RunNo: <b>71694</b>								
Prep Date: <b>9/9/2020</b>	Analysis Date: <b>9/9/2020</b>	SeqNo: <b>2509421</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-55039</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55039</b>	RunNo: <b>71694</b>								
Prep Date: <b>9/9/2020</b>	Analysis Date: <b>9/9/2020</b>	SeqNo: <b>2509422</b>	Units: <b>mg/Kg</b>							
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 Quantitative 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

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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: Western Refining  
Southwest, Inc.

Work Order Number: 2009470

RcptNo: 1

Received By: Cheyenne Cason 9/9/2020 7:55:00 AM

Completed By: Juan Rojas 9/9/2020 8:04:29 AM

Reviewed By: *Ch* 9/9/20

### Chain of Custody

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

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: *se 9/9/20*

### Special Handling (if applicable)

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

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
By Whom: \_\_\_\_\_ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person  
Regarding: \_\_\_\_\_  
Client Instructions: \_\_\_\_\_

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	Good				







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

September 17, 2020

Gregory McCartney  
Western Refining Southwest, Inc.  
#50 CR 4990  
Bloomfield, NM 87413  
TEL: (505) 632-4135  
FAX:

RE: Bisti Landfarm

OrderNo.: 2009752

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/15/2020 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](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109



## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB49 @ 3'-4'

Project: Bisti Landfarm

Collection Date: 9/14/2020 11:25:00 AM

Lab ID: 2009752-001

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	220	60		mg/Kg	20	9/15/2020 1:17:47 PM	55172

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB49 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 9/14/2020 11:30:00 AM

Lab ID: 2009752-002

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	140	60		mg/Kg	20	9/15/2020 1:54:49 PM	55172

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB50 @ 0'-1'

Project: Bisti Landfarm

Collection Date: 9/14/2020 11:55:00 AM

Lab ID: 2009752-003

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JMT
Chloride	240	60		mg/Kg	20	9/15/2020 2:07:10 PM	55172

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB50

Project: Bisti Landfarm

Collection Date: 9/14/2020 12:00:00 PM

Lab ID: 2009752-004

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JMT
Chloride	ND	60		mg/Kg	20	9/15/2020 2:19:31 PM	55172

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB51 @ 0'-1'

Project: Bisti Landfarm

Collection Date: 9/14/2020 12:25:00 PM

Lab ID: 2009752-005

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/15/2020 1:51:47 PM	55150
Surr: BFB	103	70-130		%Rec	1	9/15/2020 1:51:47 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	120	9.9		mg/Kg	1	9/15/2020 4:39:57 PM	55169
Motor Oil Range Organics (MRO)	190	50		mg/Kg	1	9/15/2020 4:39:57 PM	55169
Surr: DNOP	102	30.4-154		%Rec	1	9/15/2020 4:39:57 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB51 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 9/14/2020 12:30:00 PM

Lab ID: 2009752-006

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	9/15/2020 2:20:19 PM	55150
Surr: BFB	103	70-130		%Rec	1	9/15/2020 2:20:19 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/15/2020 2:11:56 PM	55169
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/15/2020 2:11:56 PM	55169
Surr: DNOP	95.9	30.4-154		%Rec	1	9/15/2020 2:11:56 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB52 @ 0'-1'

Project: Bisti Landfarm

Collection Date: 9/14/2020 12:43:00 PM

Lab ID: 2009752-007

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	9/15/2020 2:48:47 PM	55150
Surr: BFB	98.3	70-130		%Rec	1	9/15/2020 2:48:47 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	9/15/2020 3:02:32 PM	55169
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	9/15/2020 3:02:32 PM	55169
Surr: DNOP	95.2	30.4-154		%Rec	1	9/15/2020 3:02:32 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB52 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 9/14/2020 12:50:00 PM

Lab ID: 2009752-008

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	9/15/2020 3:17:16 PM	55150
Surr: BFB	103	70-130		%Rec	1	9/15/2020 3:17:16 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/15/2020 3:26:43 PM	55169
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/15/2020 3:26:43 PM	55169
Surr: DNOP	95.0	30.4-154		%Rec	1	9/15/2020 3:26:43 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB53 @ 1'-2'

Project: Bisti Landfarm

Collection Date: 9/14/2020 1:05:00 PM

Lab ID: 2009752-009

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	9/15/2020 3:45:51 PM	55150
Surr: BFB	102	70-130		%Rec	1	9/15/2020 3:45:51 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	200	88		mg/Kg	10	9/15/2020 12:58:54 PM	55169
Motor Oil Range Organics (MRO)	450	440		mg/Kg	10	9/15/2020 12:58:54 PM	55169
Surr: DNOP	0	30.4-154	S	%Rec	10	9/15/2020 12:58:54 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB53 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 9/14/2020 1:10:00 PM

Lab ID: 2009752-010

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	9/15/2020 4:14:22 PM	55150
Surr: BFB	102	70-130		%Rec	1	9/15/2020 4:14:22 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/15/2020 3:51:19 PM	55169
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/15/2020 3:51:19 PM	55169
Surr: DNOP	94.3	30.4-154		%Rec	1	9/15/2020 3:51:19 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB54 @ 0'-1'

Project: Bisti Landfarm

Collection Date: 9/14/2020 1:50:00 PM

Lab ID: 2009752-011

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	4.4		mg/Kg	1	9/15/2020 4:42:50 PM	55150
Surr: BFB	103	70-130		%Rec	1	9/15/2020 4:42:50 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/15/2020 4:15:36 PM	55169
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/15/2020 4:15:36 PM	55169
Surr: DNOP	95.1	30.4-154		%Rec	1	9/15/2020 4:15:36 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009752

Date Reported: 9/17/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB54 @ 4'-6'

Project: Bisti Landfarm

Collection Date: 9/14/2020 1:55:00 PM

Lab ID: 2009752-012

Matrix: SOIL

Received Date: 9/15/2020 8:17:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	3.6		mg/Kg	1	9/15/2020 5:11:22 PM	55150
Surr: BFB	101	70-130		%Rec	1	9/15/2020 5:11:22 PM	55150
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	31	9.3		mg/Kg	1	9/15/2020 1:47:46 PM	55169
Motor Oil Range Organics (MRO)	89	47		mg/Kg	1	9/15/2020 1:47:46 PM	55169
Surr: DNOP	95.3	30.4-154		%Rec	1	9/15/2020 1:47:46 PM	55169

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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

WO#: 2009752

17-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>MB-55172</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>55172</b>	RunNo: <b>71878</b>								
Prep Date: <b>9/15/2020</b>	Analysis Date: <b>9/15/2020</b>	SeqNo: <b>2515816</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-55172</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55172</b>	RunNo: <b>71878</b>								
Prep Date: <b>9/15/2020</b>	Analysis Date: <b>9/15/2020</b>	SeqNo: <b>2515817</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.4	90	110			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of 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#: 2009752

17-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>LCS-55169</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55169</b>	RunNo: <b>71855</b>								
Prep Date: <b>9/15/2020</b>	Analysis Date: <b>9/15/2020</b>	SeqNo: <b>2514989</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.8	70	130			
Surr: DNOP	4.4		5.000		88.4	30.4	154			

Sample ID: <b>MB-55169</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>55169</b>	RunNo: <b>71855</b>								
Prep Date: <b>9/15/2020</b>	Analysis Date: <b>9/15/2020</b>	SeqNo: <b>2514990</b>			Units: <b>mg/Kg</b>					
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		93.1	30.4	154			

Sample ID: <b>2009752-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SB51 @ 0'-1'</b>	Batch ID: <b>55169</b>	RunNo: <b>71855</b>								
Prep Date: <b>9/15/2020</b>	Analysis Date: <b>9/15/2020</b>	SeqNo: <b>2515495</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	190	9.2	45.91	116.7	165	47.4	136			S
Surr: DNOP	4.8		4.591		104	30.4	154			

Sample ID: <b>2009752-005AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SB51 @ 0'-1'</b>	Batch ID: <b>55169</b>	RunNo: <b>71855</b>								
Prep Date: <b>9/15/2020</b>	Analysis Date: <b>9/15/2020</b>	SeqNo: <b>2515496</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	240	10	49.85	116.7	237	47.4	136	19.8	43.4	S
Surr: DNOP	5.4		4.985		108	30.4	154	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 Quantitative 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

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

WO#: 2009752

17-Sep-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

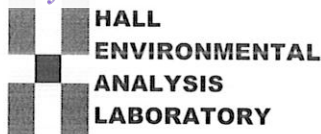
Sample ID: <b>ics-55150</b>	SampType: <b>LCS</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>55150</b>			RunNo: <b>71876</b>						
Prep Date: <b>9/14/2020</b>	Analysis Date: <b>9/15/2020</b>			SeqNo: <b>2515733</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.0	70	130			
Surr: BFB	500		500.0		99.1	70	130			

Sample ID: <b>mb-55150</b>	SampType: <b>MBLK</b>			TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>						
Client ID: <b>PBS</b>	Batch ID: <b>55150</b>			RunNo: <b>71876</b>						
Prep Date: <b>9/14/2020</b>	Analysis Date: <b>9/15/2020</b>			SeqNo: <b>2515734</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	510		500.0		103	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 Quantitative 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  
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: **Western Refining  
Southwest, Inc.**

Work Order Number: **2009752**

RcptNo: 1

Received By: **Cheyenne Cason** 9/15/2020 8:17:00 AM

Completed By: **Emily Mocho** 9/15/2020 8:18:24 AM

Reviewed By: *EM 9/15/20*

### 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: *EM 9/15/20*

### 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	3.7	Good	Yes			





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

October 05, 2020

Gregory McCartney  
Western Refining Southwest, Inc.  
#50 CR 4990  
Bloomfield, NM 87413  
TEL: (505) 632-4135  
FAX:

RE: Bisti Landfarm

OrderNo.: 2009G46

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/26/2020 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued September 29, 2020.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. 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. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB55@0-1'

Project: Bisti Landfarm

Collection Date: 9/25/2020 10:30:00 AM

Lab ID: 2009G46-001

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/28/2020 9:15:15 AM	55461
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/28/2020 9:15:15 AM	55461
Surr: DNOP	88.3	30.4-154		%Rec	1	9/28/2020 9:15:15 AM	55461
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	9/26/2020 2:09:16 PM	G72180
Surr: BFB	90.3	75.3-105		%Rec	1	9/26/2020 2:09:16 PM	G72180

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB55@5-6'

Project: Bisti Landfarm

Collection Date: 9/25/2020 10:35:00 AM

Lab ID: 2009G46-002

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	9/28/2020 9:43:48 AM	55461
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/28/2020 9:43:48 AM	55461
Surr: DNOP	83.3	30.4-154		%Rec	1	9/28/2020 9:43:48 AM	55461
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	3.3		mg/Kg	1	9/26/2020 3:19:58 PM	G72180
Surr: BFB	91.9	75.3-105		%Rec	1	9/26/2020 3:19:58 PM	G72180

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB56@0-1'

Project: Bisti Landfarm

Collection Date: 9/25/2020 11:00:00 AM

Lab ID: 2009G46-003

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>mb</b>
Diesel Range Organics (DRO)	57	9.3		mg/Kg	1	9/28/2020 11:21:55 AM	55461
Motor Oil Range Organics (MRO)	180	46		mg/Kg	1	9/28/2020 11:21:55 AM	55461
Surr: DNOP	104	30.4-154		%Rec	1	9/28/2020 11:21:55 AM	55461
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	3.6		mg/Kg	1	9/26/2020 3:43:30 PM	G72180
Surr: BFB	88.5	75.3-105		%Rec	1	9/26/2020 3:43:30 PM	G72180

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB56@5-6'

Project: Bisti Landfarm

Collection Date: 9/25/2020 11:10:00 AM

Lab ID: 2009G46-004

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	9/28/2020 10:02:53 AM	55461
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	9/28/2020 10:02:53 AM	55461
Surr: DNOP	89.4	30.4-154		%Rec	1	9/28/2020 10:02:53 AM	55461
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	9/26/2020 4:07:05 PM	G72180
Surr: BFB	94.1	75.3-105		%Rec	1	9/26/2020 4:07:05 PM	G72180

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB57@1-2'

Project: Bisti Landfarm

Collection Date: 9/25/2020 11:20:00 AM

Lab ID: 2009G46-005

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/28/2020 10:12:28 AM	55461
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/28/2020 10:12:28 AM	55461
Surr: DNOP	90.6	30.4-154		%Rec	1	9/28/2020 10:12:28 AM	55461
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/26/2020 4:30:36 PM	G72180
Surr: BFB	89.4	75.3-105		%Rec	1	9/26/2020 4:30:36 PM	G72180

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB57@5-6'

Project: Bisti Landfarm

Collection Date: 9/25/2020 11:25:00 AM

Lab ID: 2009G46-006

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	9/28/2020 10:22:04 AM	55461
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	9/28/2020 10:22:04 AM	55461
Surr: DNOP	107	30.4-154		%Rec	1	9/28/2020 10:22:04 AM	55461
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	3.5		mg/Kg	1	9/26/2020 4:54:12 PM	G72180
Surr: BFB	87.4	75.3-105		%Rec	1	9/26/2020 4:54:12 PM	G72180

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB59@0-1'

Project: Bisti Landfarm

Collection Date: 9/25/2020 12:10:00 PM

Lab ID: 2009G46-009

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	10/1/2020 12:56:02 AM	55574
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/1/2020 12:56:02 AM	55574
Surr: DNOP	112	30.4-154		%Rec	1	10/1/2020 12:56:02 AM	55574
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	10/1/2020 4:14:30 PM	55562
Surr: BFB	90.2	75.3-105		%Rec	1	10/1/2020 4:14:30 PM	55562

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009G46

Date Reported: 10/5/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: SB59@5-6'

Project: Bisti Landfarm

Collection Date: 9/25/2020 12:15:00 PM

Lab ID: 2009G46-010

Matrix: MEOH (SOIL)

Received Date: 9/26/2020 9:24:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/1/2020 1:20:25 AM	55574
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/1/2020 1:20:25 AM	55574
Surr: DNOP	114	30.4-154		%Rec	1	10/1/2020 1:20:25 AM	55574
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	10/1/2020 4:37:55 PM	55562
Surr: BFB	88.0	75.3-105		%Rec	1	10/1/2020 4:37:55 PM	55562

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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

WO#: 2009G46

05-Oct-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>2009G46-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SB55@0-1'</b>	Batch ID: <b>55461</b>	RunNo: <b>72183</b>								
Prep Date: <b>9/26/2020</b>	Analysis Date: <b>9/28/2020</b>	SeqNo: <b>2530695</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	9.9	49.70	2.870	93.3	15	184			
Surr: DNOP	4.6		4.970		92.1	30.4	154			

Sample ID: <b>2009G46-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SB55@0-1'</b>	Batch ID: <b>55461</b>	RunNo: <b>72183</b>								
Prep Date: <b>9/26/2020</b>	Analysis Date: <b>9/28/2020</b>	SeqNo: <b>2530696</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	49.75	2.870	84.9	15	184	8.72	23.9	
Surr: DNOP	4.1		4.975		82.3	30.4	154	0	0	

Sample ID: <b>LCS-55461</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55461</b>	RunNo: <b>72183</b>								
Prep Date: <b>9/26/2020</b>	Analysis Date: <b>9/28/2020</b>	SeqNo: <b>2530703</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.1	70	130			
Surr: DNOP	4.2		5.000		84.7	30.4	154			

Sample ID: <b>MB-55461</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>55461</b>	RunNo: <b>72183</b>								
Prep Date: <b>9/26/2020</b>	Analysis Date: <b>9/28/2020</b>	SeqNo: <b>2530704</b> Units: <b>mg/Kg</b>								
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	8.8		10.00		88.1	30.4	154			

Sample ID: <b>LCS-55574</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55574</b>	RunNo: <b>72293</b>								
Prep Date: <b>9/30/2020</b>	Analysis Date: <b>9/30/2020</b>	SeqNo: <b>2535442</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.5	70	130			
Surr: DNOP	5.0		5.000		101	30.4	154			

**Qualifiers:**

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

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#: 2009G46  
05-Oct-20

Client: Western Refining Southwest, Inc.  
Project: Bisti Landfarm

Sample ID: MB-55574	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 55574	RunNo: 72293								
Prep Date: 9/30/2020	Analysis Date: 9/30/2020	SeqNo: 2535445	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		103	30.4	154			

Qualifiers:

- \*

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- 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#: 2009G46

05-Oct-20

**Client:** Western Refining Southwest, Inc.**Project:** Bisti Landfarm

Sample ID: <b>2.5ug gro lcs</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>G72180</b>		RunNo: <b>72180</b>							
Prep Date:	Analysis Date: <b>9/26/2020</b>		SeqNo: <b>2530540</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	5.0	25.00	0	77.3	72.5	106			
Surr: BFB	1000		1000		101	75.3	105			

Sample ID: <b>2009g46-001ams</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>SB55@0-1'</b>	Batch ID: <b>G72180</b>		RunNo: <b>72180</b>							
Prep Date:	Analysis Date: <b>9/26/2020</b>		SeqNo: <b>2530559</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	4.0	19.92	0	93.4	61.3	114			
Surr: BFB	770		796.8		96.9	75.3	105			

Sample ID: <b>2009g46-001amsd</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>SB55@0-1'</b>	Batch ID: <b>G72180</b>		RunNo: <b>72180</b>							
Prep Date:	Analysis Date: <b>9/26/2020</b>		SeqNo: <b>2530560</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	4.0	19.92	0	85.9	61.3	114	8.39	20	
Surr: BFB	810		796.8		102	75.3	105	0	0	

Sample ID: <b>mb1</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>G72180</b>		RunNo: <b>72180</b>							
Prep Date:	Analysis Date: <b>9/26/2020</b>		SeqNo: <b>2530568</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		95.4	75.3	105			

Sample ID: <b>lcs-55562</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>55562</b>		RunNo: <b>72298</b>							
Prep Date: <b>9/30/2020</b>	Analysis Date: <b>10/1/2020</b>		SeqNo: <b>2537035</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.4	72.5	106			
Surr: BFB	960		1000		95.7	75.3	105			

Sample ID: <b>mb-55562</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>55562</b>		RunNo: <b>72298</b>							
Prep Date: <b>9/30/2020</b>	Analysis Date: <b>10/1/2020</b>		SeqNo: <b>2537036</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

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

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#: 2009G4605-Oct-20

Client: Western Refining Southwest, Inc.  
Project: Bisti Landfarm

Sample ID: mb-55562	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 55562	RunNo: 72298								
Prep Date: 9/30/2020	Analysis Date: 10/1/2020	SeqNo: 2537036	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	860		1000		85.5	75.3	105			

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

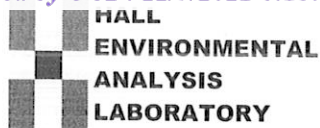
S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit



Hall Environmental Analysis Laboratory  
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: **Western Refining  
Southwest, Inc.**

Work Order Number: **2009G46**

RcptNo: 1

Received By: **Cheyenne Cason**

9/26/2020 9:24:00 AM

Completed By: **Desiree Dominguez**

9/26/2020 9:29:08 AM

Reviewed By: **DAD 9/26/20**

*DD*

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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? Yes ☒ No ☐

(Note discrepancies on chain of custody)

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? Yes ☒ No ☐

(If no, notify customer for authorization.)

# of preserved  
bottles checked  
for pH:

( $\leq 2$  or  $>12$  unless noted)

Adjusted?

Checked by: *CDC 9/26/20*

### Special Handling (if applicable)

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

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

## Chain-of-Custody Record

Client: Western Refining SouthwestMailing Address: Grey McCartney

Phone #: \_\_\_\_\_

email or Fax#: \_\_\_\_\_

QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other☐ EDD (Type) \_\_\_\_\_

Sampler: \_\_\_\_\_

On Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CF): 1.6 ± 0.1.6 (°C)

Container Type and #

Preservative Type

HEAL No. 2009646

Date

Time

Matrix

Sample Name

9/15/20 1030

SB55 C5-1'

1035

SB55 C5-6'

1100

SB56 C5-1'

1110

SB56 C5-6'

1120

SB57 C1-2'

1125

SB57 C5-6'

1145

SB58 C0-1'

1150

SB58 C5-6'

1210

SB59 C0-1'

1215

SB59 C5-6'

1230

SB60 C1-2'

1235

SB60 C5-6'

Relinquished by: \_\_\_\_\_

Date: 9/15/20Time: 1331

Relinquished by: \_\_\_\_\_

Date: 9/15/20Time: 1600Signature: Imative Waters

Turn-Around Time:

☐ Standard ☒ Rush Next DayProject Name: Bisti LandfarmProject #: PO# 4500183750Project Manager: Stuart Hyde, LTF

Sampler: \_\_\_\_\_

On Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CF): 1.6 ± 0.1.6 (°C)

Container Type and #

Preservative Type

HEAL No. 2009646

Date

Time

Matrix

Sample Name

9/15/20 1030

SB55 C5-1'

1035

SB55 C5-6'

1100

SB56 C5-1'

1110

SB56 C5-6'

1120

SB57 C1-2'

1125

SB57 C5-6'

1145

SB58 C0-1'

1150

SB58 C5-6'

1210

SB59 C0-1'

1215

SB59 C5-6'

1230

SB60 C1-2'

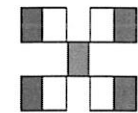
1235

SB60 C5-6'

Relinquished by: \_\_\_\_\_

Date: 9/15/20Time: 1331

Relinquished by: \_\_\_\_\_

Date: 9/15/20Time: 1600Signature: Imative Waters

## HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request

BTEX / MTBE / TMB's (8021)

8081 Pesticides/8082 PCB's

EDB (Method 504.1)

PAHs by 8310 or 8270SIMS

RCRA 8 Metals

Cl, F, Br, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>, SO<sub>4</sub>

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

HOLD

See Remarks

Remarks:

Please Hold  
5758-5360

APPENDIX D: NRCS SOIL DESCRIPTION





Map Unit Description: Doak-Sheppard-Shiprock association, rolling---San Juan County, New Mexico, Eastern Part

Bisti Landfarm

## San Juan County, New Mexico, Eastern Part

### DS—Doak-Sheppard-Shiprock association, rolling

#### Map Unit Setting

*National map unit symbol:* 1wwf

*Elevation:* 5,600 to 6,400 feet

*Mean annual precipitation:* 6 to 10 inches

*Mean annual air temperature:* 51 to 55 degrees F

*Frost-free period:* 140 to 160 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Doak and similar soils:* 40 percent

*Sheppard and similar soils:* 30 percent

*Shiprock and similar soils:* 20 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Doak

##### Setting

*Landform:* Fan remnants, mesas, stream terraces

*Landform position (three-dimensional):* Tread, talf

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex, linear

*Parent material:* Alluvium derived from sandstone and shale

##### Typical profile

*A - 0 to 3 inches:* loam

*Btk - 3 to 41 inches:* clay loam

*Ck - 41 to 60 inches:* loam

##### Properties and qualities

*Slope:* 0 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water*

*(Ksat):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Gypsum, maximum content:* 2 percent

*Maximum salinity:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 2.0

*Available water capacity:* High (about 10.1 inches)

Map Unit Description: Doak-Sheppard-Shiprock association, rolling---San Juan County, New Mexico, Eastern Part

Bisti Landfarm

### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Ecological site:* R035XB001NM - Loamy  
*Hydric soil rating:* No

### Description of Sheppard

#### Setting

*Landform:* Fan remnants, mesas, stream terraces, dunes  
*Landform position (three-dimensional):* Side slope, tread, talf  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Eolian deposits over mixed alluvium

#### Typical profile

*A - 0 to 3 inches:* loamy fine sand  
*C - 3 to 60 inches:* loamy fine sand

#### Properties and qualities

*Slope:* 0 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat excessively drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water capacity:* Low (about 4.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Ecological site:* R035XB007NM - Deep Sand  
*Hydric soil rating:* No

### Description of Shiprock

#### Setting

*Landform:* Fan remnants, mesas, stream terraces  
*Landform position (three-dimensional):* Tread, talf  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Eolian deposits over alluvium derived from sandstone

#### Typical profile

*A - 0 to 3 inches:* fine sandy loam



Map Unit Description: Doak-Sheppard-Shiprock association, rolling---San Juan County, New Mexico, Eastern Part

Bisti Landfarm

*CBk - 3 to 60 inches: fine sandy loam*

**Properties and qualities**

*Slope: 0 to 5 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Runoff class: Very low*

*Capacity of the most limiting layer to transmit water (Ksat): High  
(2.00 to 6.00 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Calcium carbonate, maximum content: 2 percent*

*Gypsum, maximum content: 2 percent*

*Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0  
mmhos/cm)*

*Sodium adsorption ratio, maximum: 2.0*

*Available water capacity: Moderate (about 6.6 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 3e*

*Land capability classification (nonirrigated): 7e*

*Hydrologic Soil Group: A*

*Ecological site: R035XB002NM - Sandy*

*Hydric soil rating: No*

**Minor Components**

**Avalon**

*Percent of map unit: 5 percent*

*Ecological site: R035XB003NM - Limy*

*Hydric soil rating: No*

**Mayqueen**

*Percent of map unit: 2 percent*

*Ecological site: R035XB007NM - Deep Sand*

*Hydric soil rating: No*

**Monierco**

*Percent of map unit: 2 percent*

*Ecological site: R035XB006NM - Shallow*

*Hydric soil rating: No*

**Uffens**

*Percent of map unit: 1 percent*

*Ecological site: R035XB005NM - Salt Flats*

*Hydric soil rating: No*

**Data Source Information**

Soil Survey Area: San Juan County, New Mexico, Eastern Part

Survey Area Data: Version 16, Jun 8, 2020

APPENDIX E: SITEWISE IMPACT ANALYSIS



Remedial Alternatives	GHG Emissions	Total energy Used	Water Consumption	Electricity Usage	Onsite NO <sub>x</sub> Emissions	Onsite SO <sub>x</sub> Emissions	Onsite PM <sub>10</sub> Emissions	Total NO <sub>x</sub> Emissions	Total SO <sub>x</sub> Emissions	Total PM <sub>10</sub> Emissions	Accident Risk Fatality	Accident Risk Injury
	metric ton	MMBTU	gallons	MWH	metric ton	metric ton	metric ton	metric ton	metric ton	metric ton		
Chloride	75.87	1.34E+03	0.00E+00	0.00E+00	1.52E-02	3.87E-03	1.41E-03	2.40E-01	1.26E-01	5.83E-01	2.12E-04	2.23E-02
TPH	57.11	1.01E+03	0.00E+00	0.00E+00	1.13E-02	2.88E-03	1.05E-03	1.81E-01	9.71E-02	4.35E-01	1.57E-04	1.65E-02

Additional Sustainability Metrics

Remedial Alternatives	Non-Hazardous Waste Landfill Space	Hazardous Waste Landfill Space	Topsoil Consumption	Costing	Lost Hours - Injury	Percent Electricity from Renewable Sources	Final Cost with Footprint Reduction
	tons	tons	cubic yards	\$		%	\$
Chloride	3170.00	0.00E+00	2.89E+03	0.00E+00	1.78E-01	0.0%	0.00E+00
TPH	2360.00	0.00E+00	2.15E+03	0.00E+00	1.32E-01	0.0%	0.00E+00

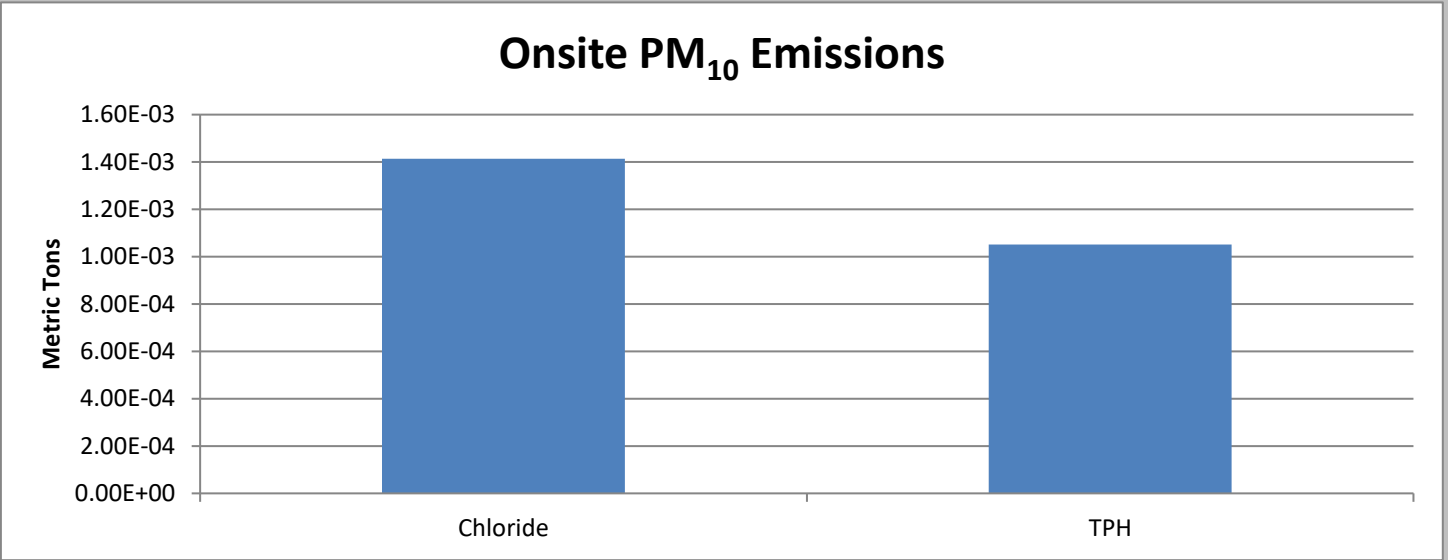
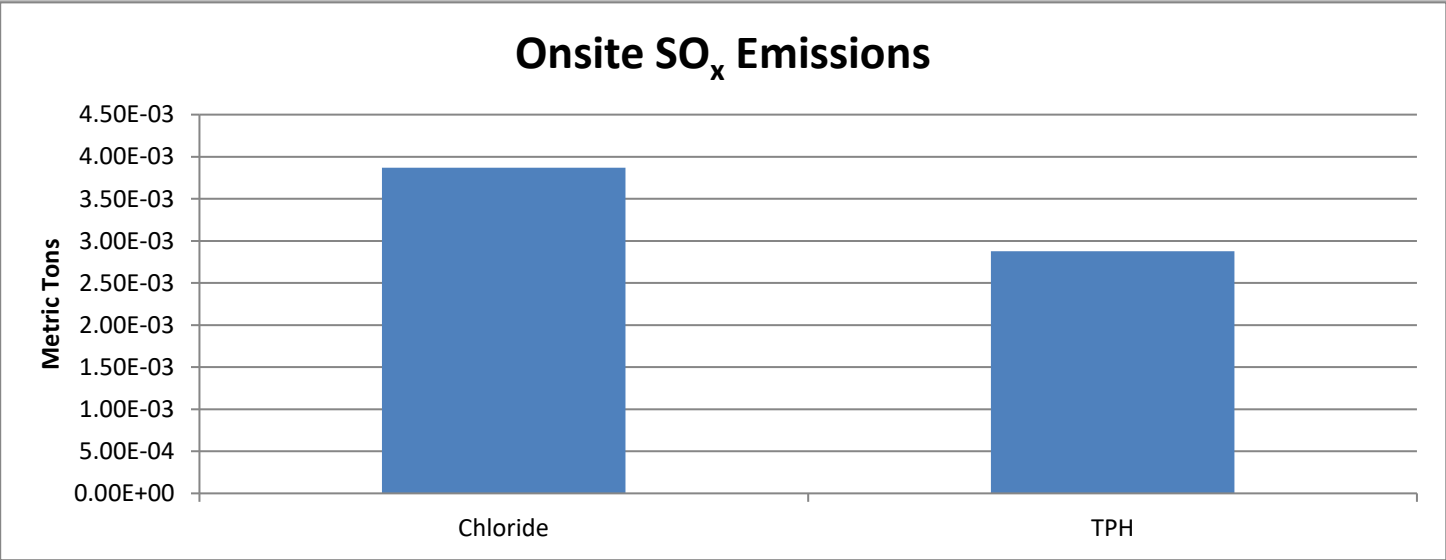
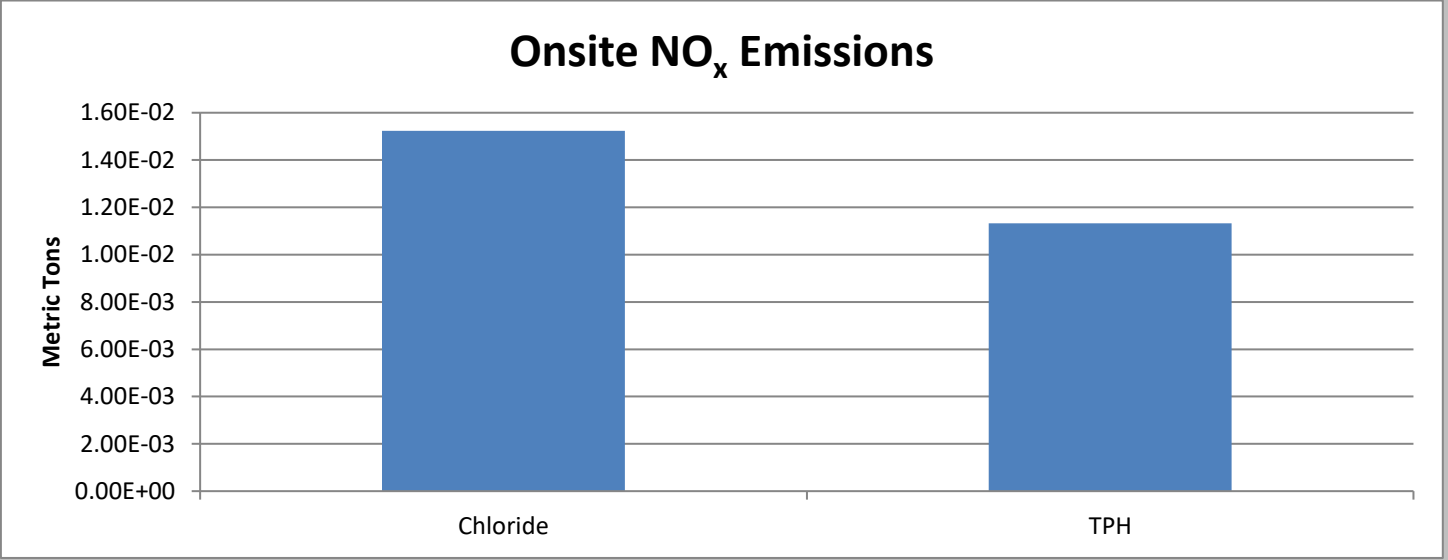
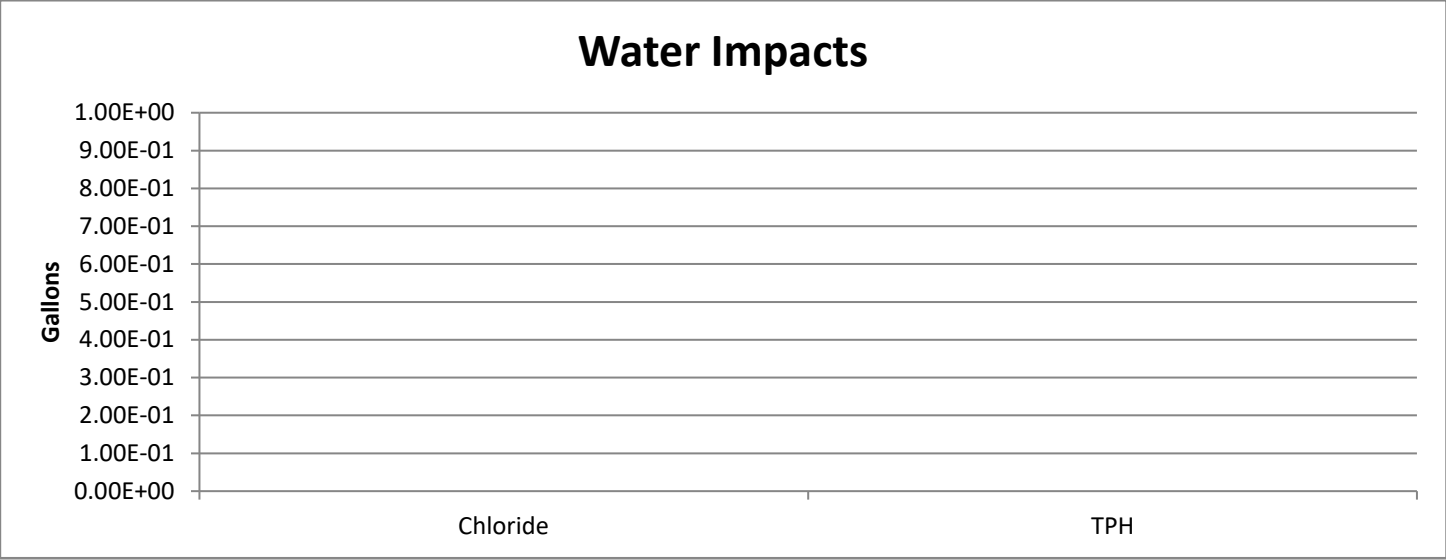
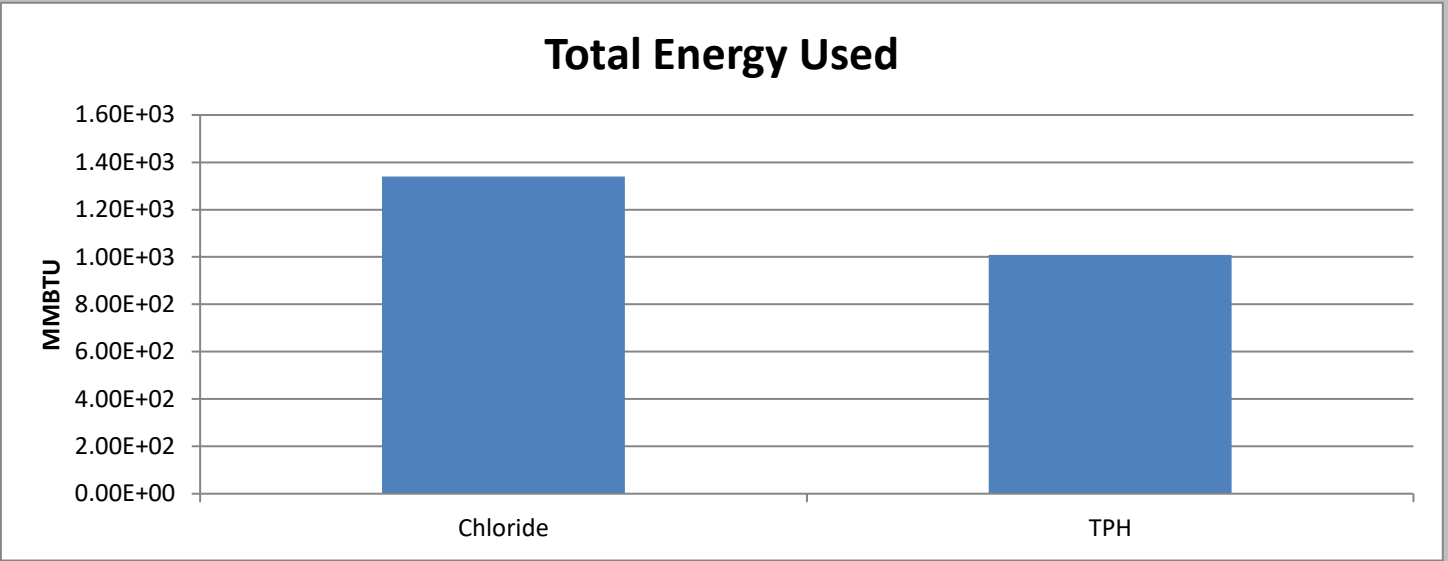
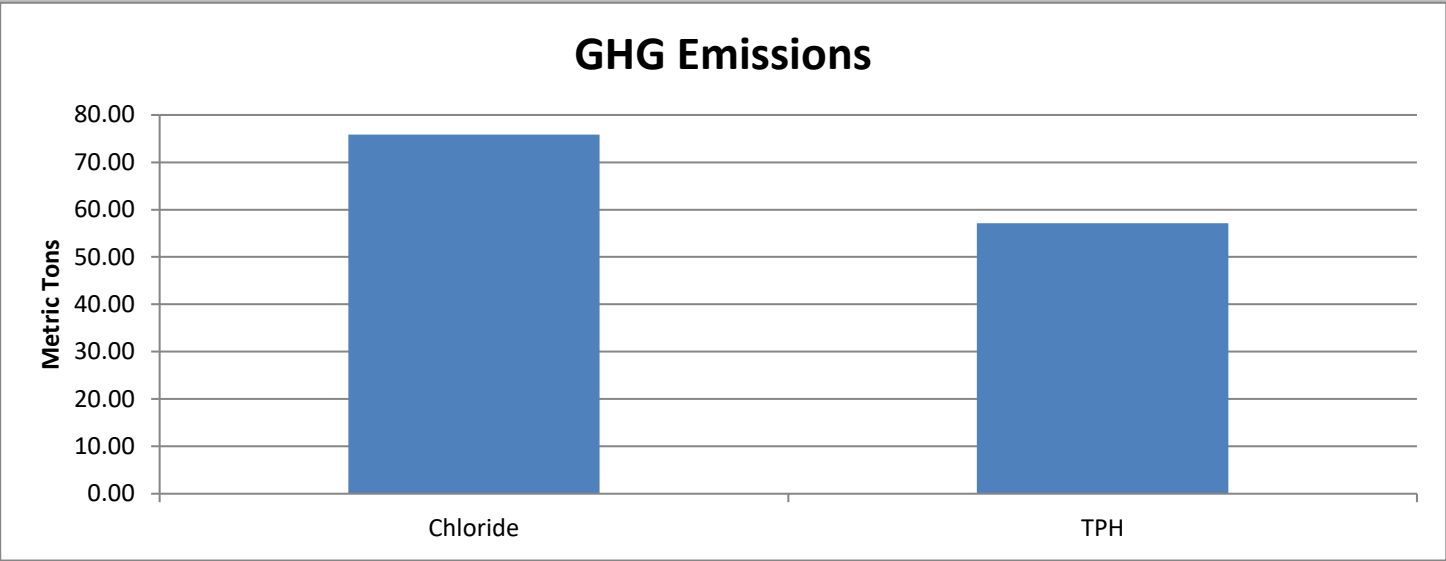
Relative Impact

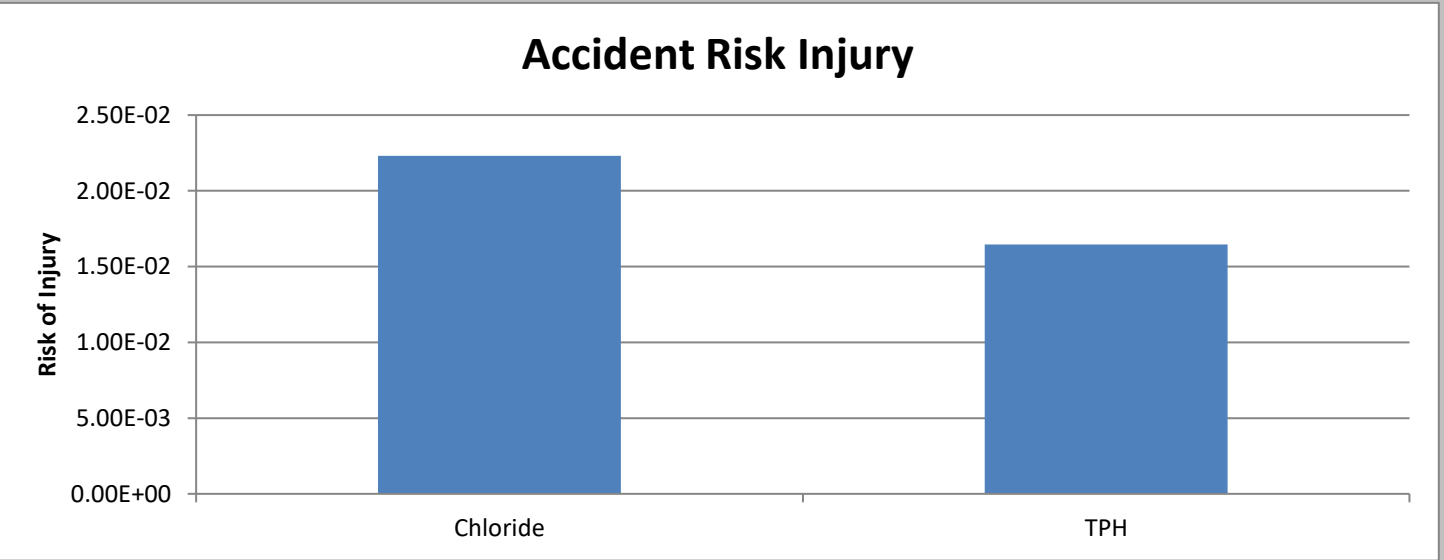
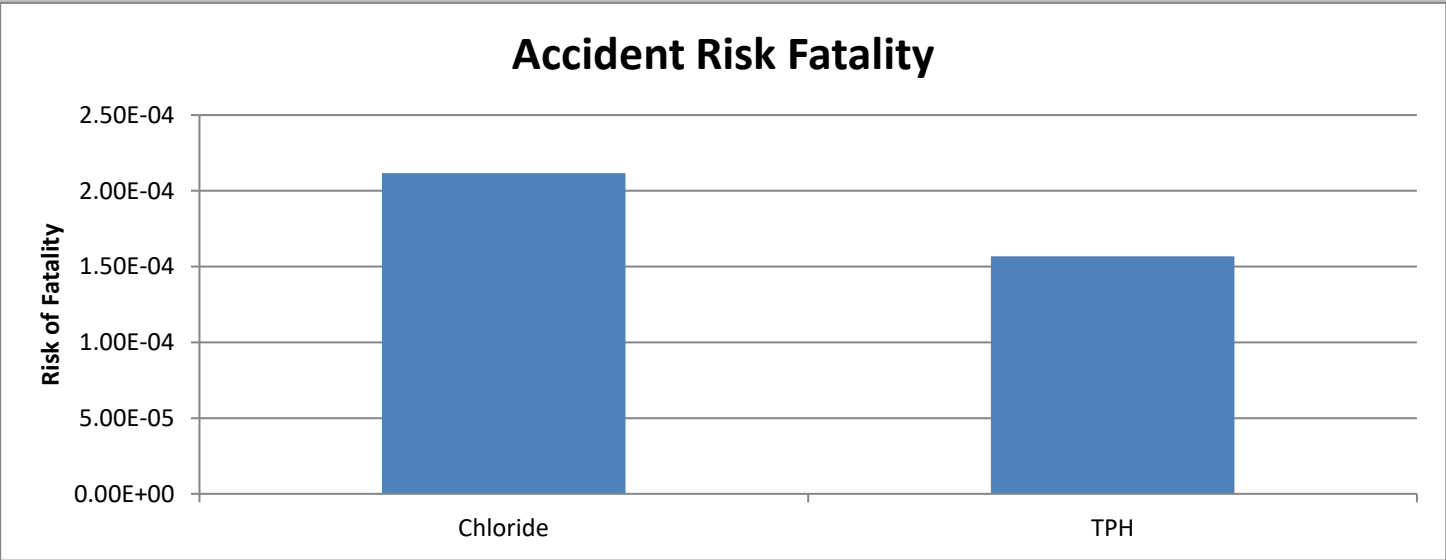
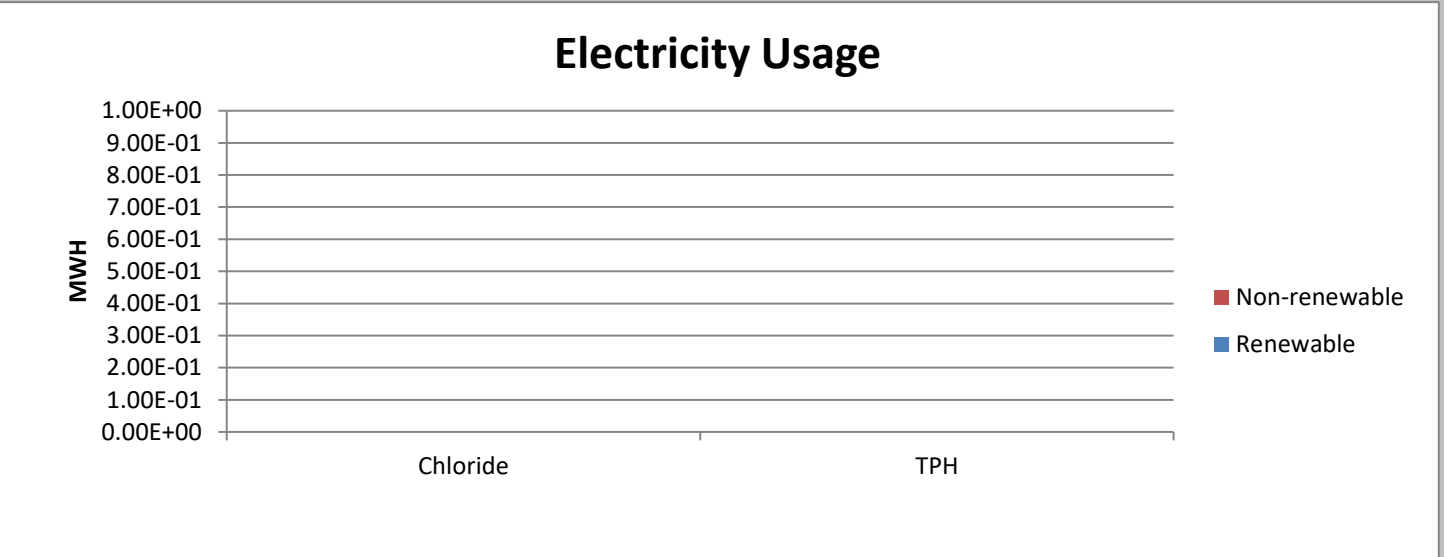
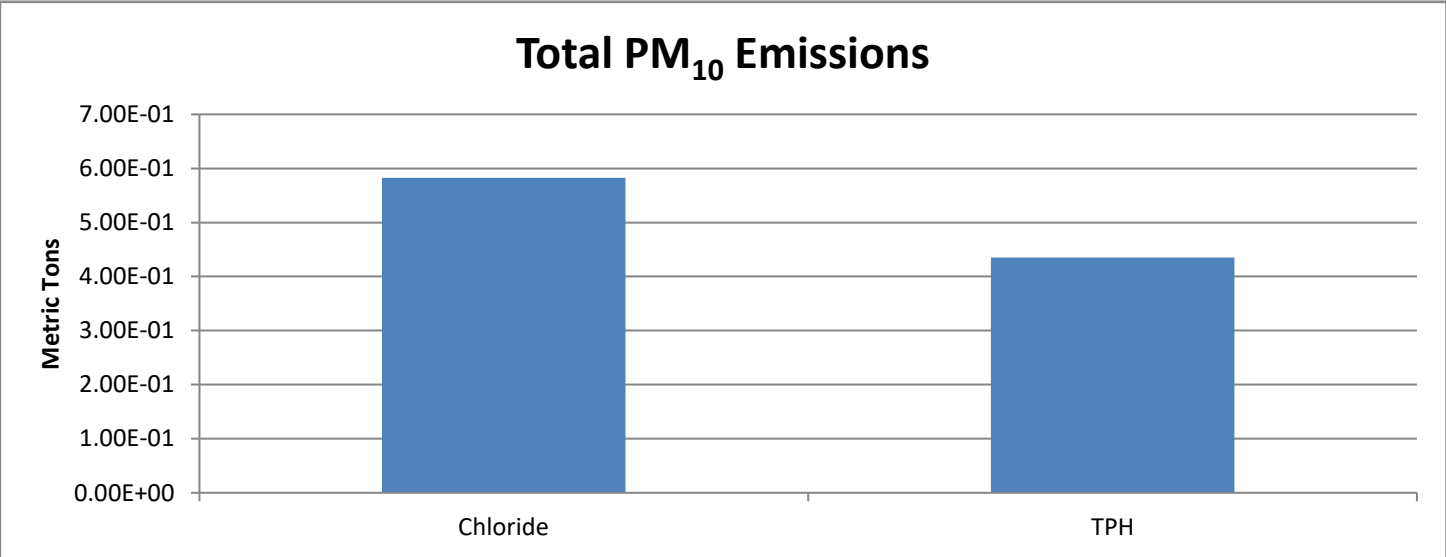
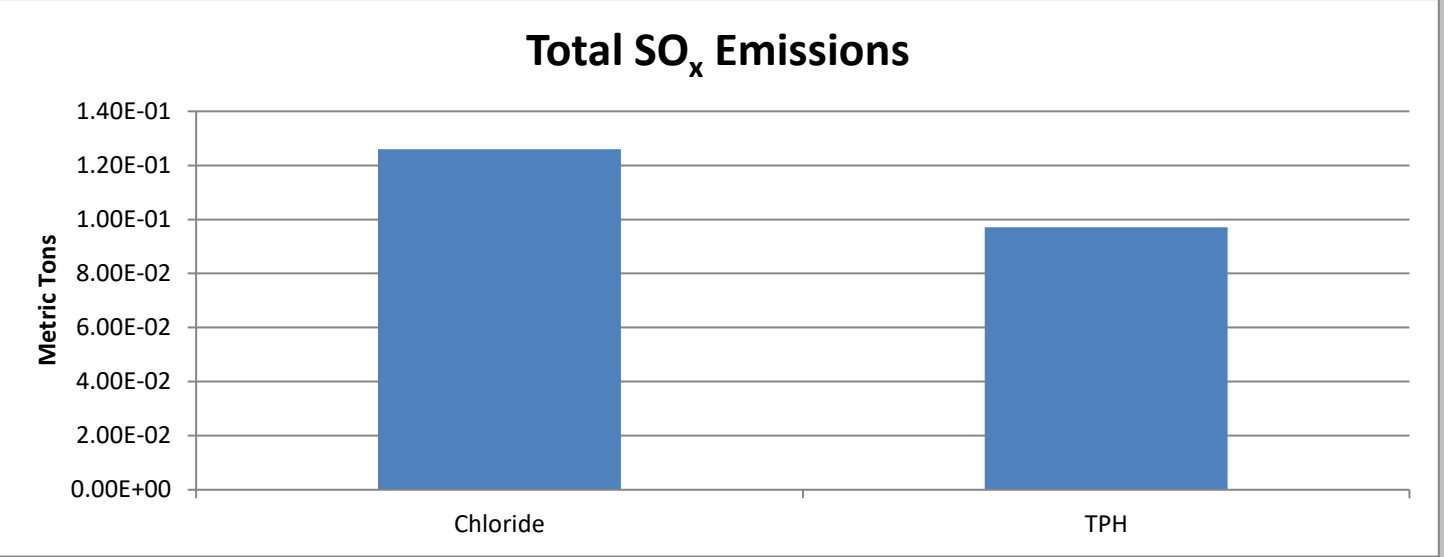
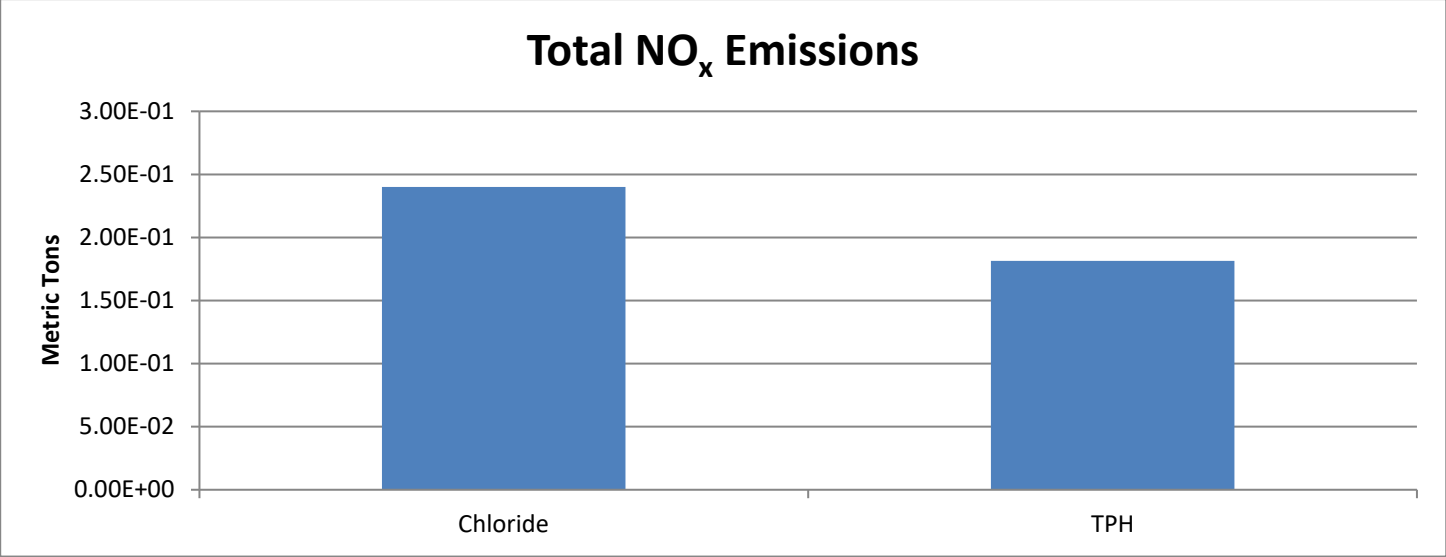
Remedial Alternatives	GHG Emissions	Energy Usage	Water Usage	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx emissions	Total SOx Emissions	Total PM10 Emissions	*Accident Risk Fatality	*Accident Risk Injury	Community Impacts	Resources Lost
Chloride	High	High	Low	Low	High	High	High	High	High	High	Low	Low	user select	user select
TPH	High	High	Low	Low	High	High	High	High	High	High	Low	Low	user select	user select

Relative Impact (User Override)

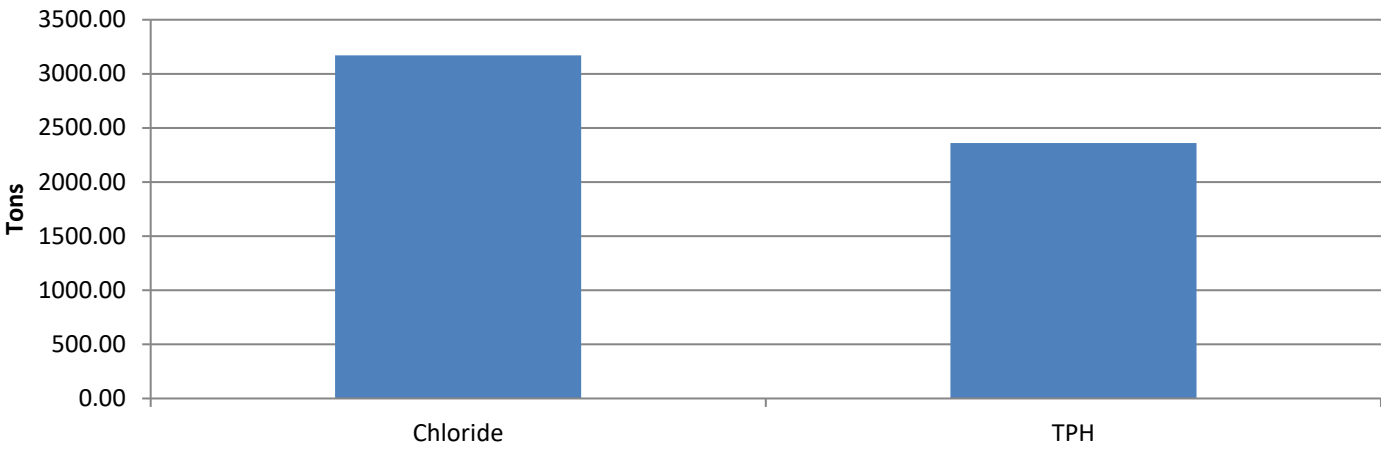
Remedial Alternatives	GHG Emissions	Energy Usage	Water Usage	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx Emissions	Total SOx Emissions	Total PM10 Emissions	*Accident Risk Fatality	*Accident Risk Injury	Community Impacts	Resources Lost
Chloride	High	High	Low	Low	High	High	High	High	High	High	Low	Low	user select	user select
TPH	High	High	Low	Low	High	High	High	High	High	High	Low	Low	user select	user select

\*Accident Risk is an estimate of how many accidents may occur. This risk is not the same as Cancer Risk, which is the probability (for a single person) of getting cancer. Accident risk is not comparable to Cancer Risk due to inherent fundamental differences.

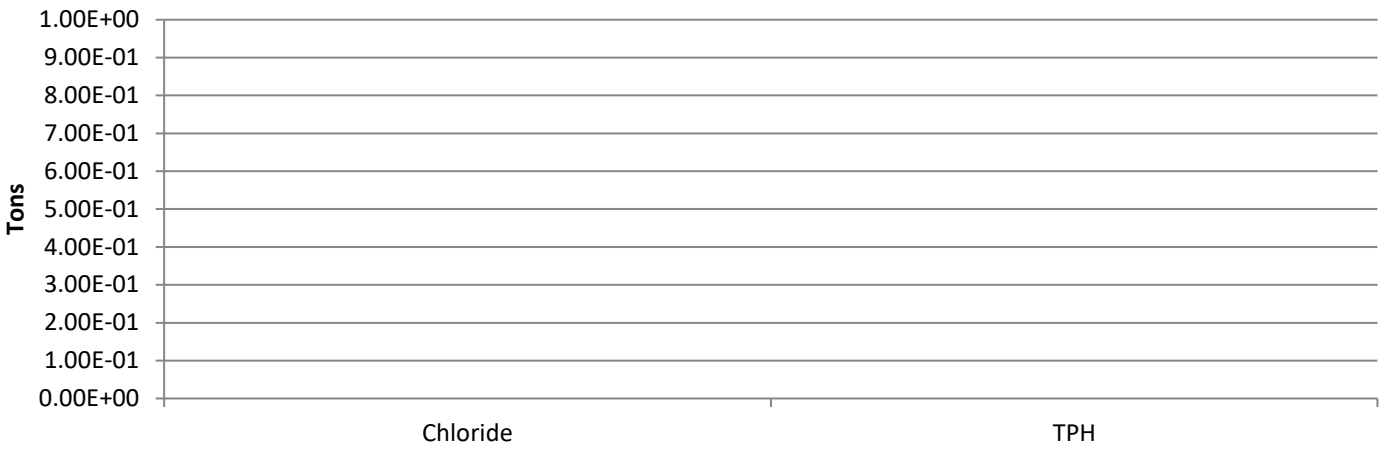




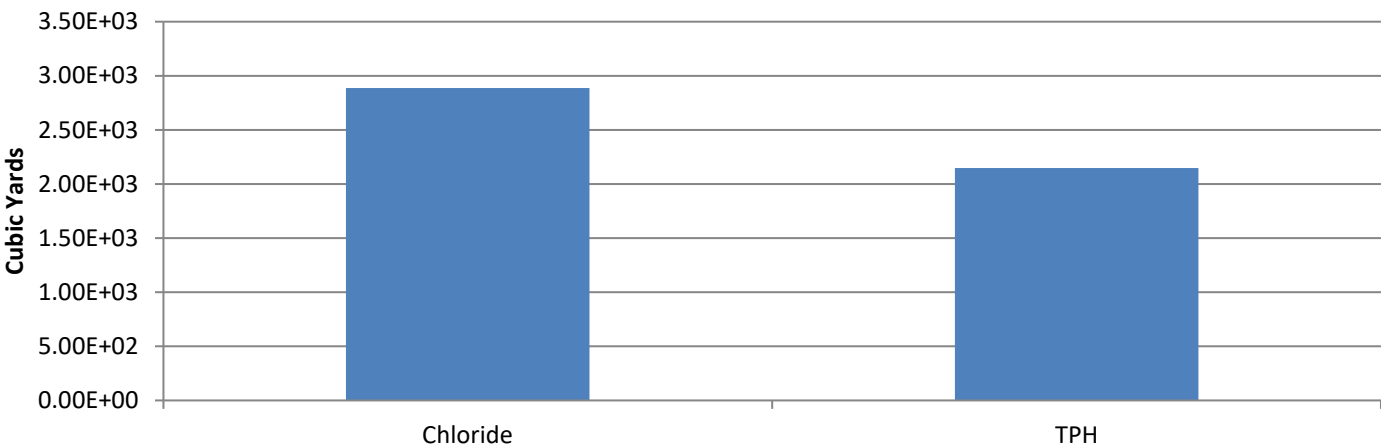
Non-Hazardous Waste Landfill Space



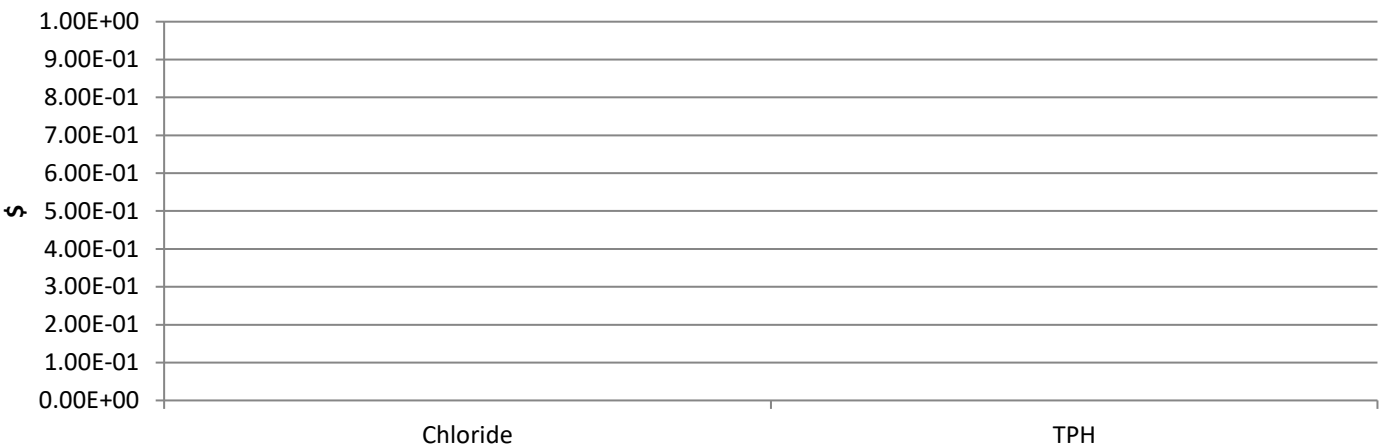
Hazardous Waste Landfill Space



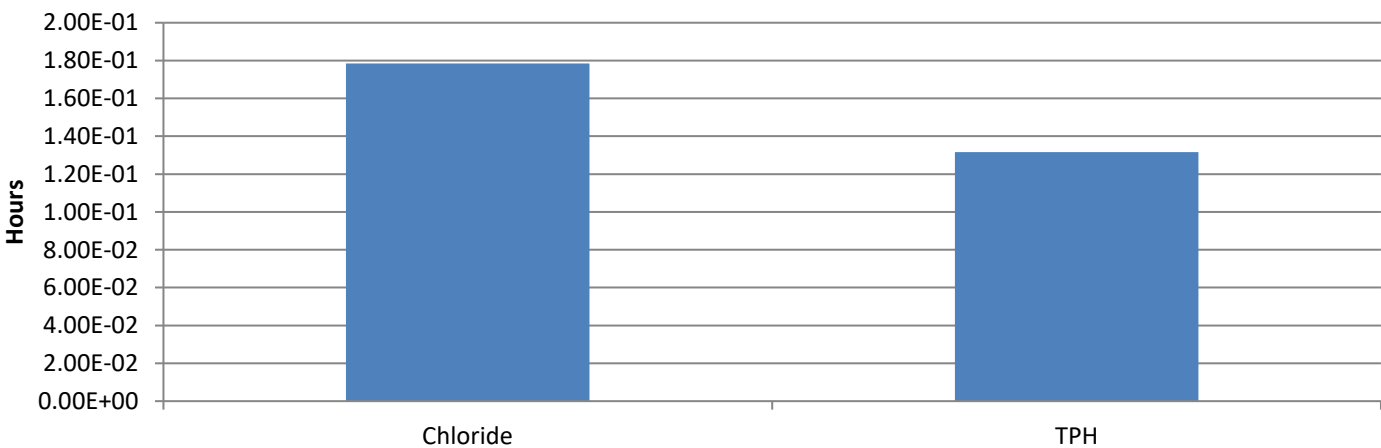
Topsoil Consumption



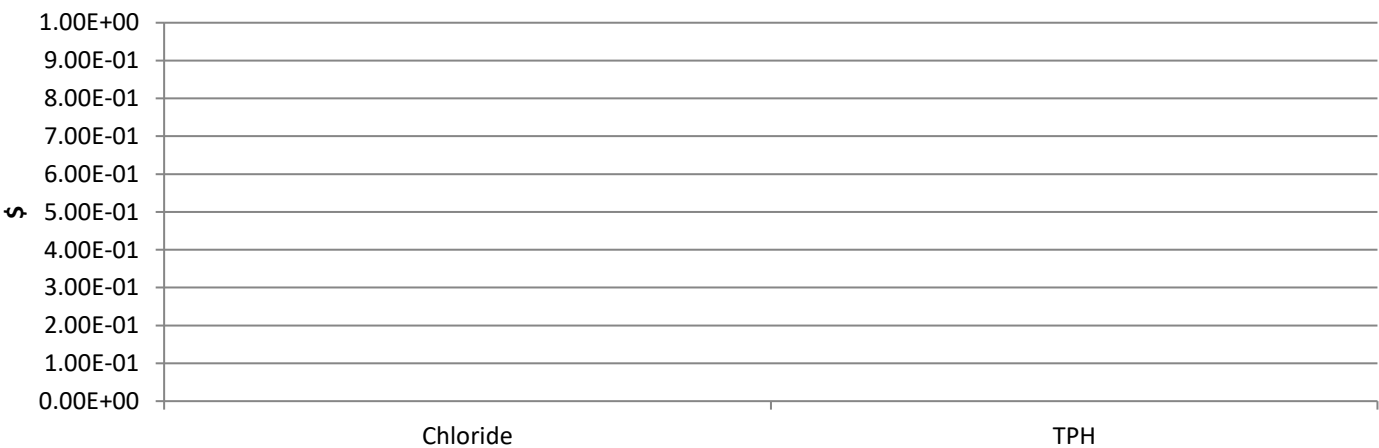
Costing

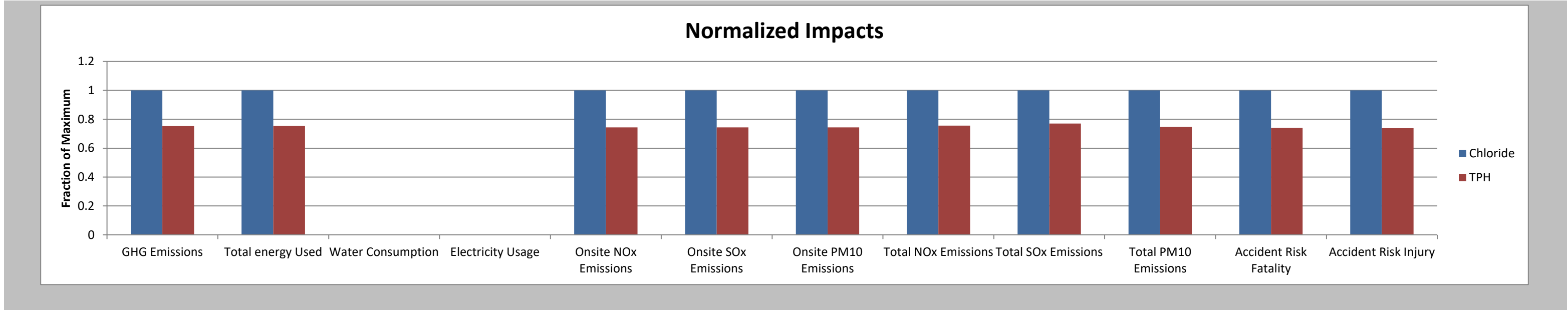


Lost Hours - Injury



Final Cost with Footprint Reduction







**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 11026

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 11026
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	3/11/2022

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
  
Action 165104

CONDITIONS

Operator: WESTERN REFINING COMPANY L.P. 123 W. Mills Ave. El Paso, TX 79901	OGRID: 264727
	Action Number: 165104
	Action Type: [C-137] Non-Fee SWMF Submittal (SWMF NON-FEE SUBMITTAL)

CONDITIONS

Created By	Condition	Condition Date
bjones	None	12/7/2022