

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: gimccartney@marathonpetroleum.com	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:

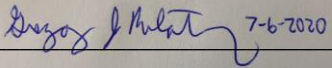
Elevated concentrations of chloride have been detected in soil at the Bisti Landfarm beneath the treatment zone at depths of approximately 4 feet below ground surface (bgs). Impacted soil (non-exempt, non-hazardous) originating from operations at pipelines, crude storage stations, and refineries waste 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.

Incident ID	NRM2019558816
District RP	
Facility ID	
Application ID	

<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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: 	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: <u>Greg McCartney</u>	Title: <u>Senior Environmental Professional</u>
Signature: 	Date: <u>7/6/2020</u>
email: <u>gjmccartney@marathonpetroleum.com</u>	Telephone: <u>419-310-4888</u>
<u>OCD Only</u> Received by: _____ Date: _____	

Incident ID	NRM2019558816
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>>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 not 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.*

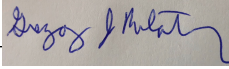
- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile 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

Incident ID	NRM2019558816
District RP	
Facility ID	
Application ID	

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: _____

Incident ID	NRM2019558816
District RP	
Facility ID	
Application ID	

Remediation Plan

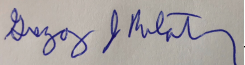
Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☒ 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: _____

Incident ID	NRM2019558816
District RP	
Facility ID	
Application ID	

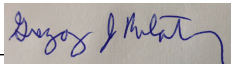
Closure

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

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

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

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: 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



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**



**A proud member
of WSP**

SITE CHARACTERIZATION REPORT AND VARIANCE REQUEST

BISTI LANDFARM
SAN JUAN COUNTY, NEW MEXICO

Project Number: 029520002
NMOCD Incident Number: NRM2019558816

Prepared by:

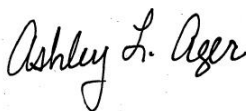


Stuart Hyde, L.G.
LTE Project Geologist

October 29, 2020

Date

Reviewed by:



Ashley Ager, PG LTE
Senior Geologist

October 29, 2020

Date

TABLE OF CONTENTS

1.0 INTRODUCTION	1-1
1.1 SITE DESCRIPTION AND HISTORY	1-1
2.0 SITE CHARACTERIZATION AND CLOSURE CRITERIA	2-1
2.1 GEOLOGY AND HYDROGEOLOGY	2-1
2.2 SITE RECEPTORS	2-1
2.3 CLOSURE CRITERIA	2-2
3.0 HISTORICAL SITE SAMPLING AND RESULTS	3-1
3.1 BACKGROUND CONCENTRATIONS.....	3-2
3.2 VADOSE ZONE CHLORIDE RESULTS.....	3-2
3.3 VADOSE ZONE TPH AND BTEX RESULTS.....	3-2
3.4 VADOSE ZONE CATIONS/ANIONS AND METALS CONSTITUENTS	3-2
3.5 VADOSE ZONE RELEASE RE-SAMPLING RESULTS AND PART 29 RELEASE REPORTING	3-2
3.5.1 Proposed Constituents of Concern	3-3
4.0 2020 SITE DELINEATION ACTIVITIES.....	4-1
4.1 SOIL BORING RESULTS.....	4-1
4.2 CHLORIDE DELINEATION ACTIVITIES.....	4-1
4.2.1 Chloride Analytical Results	4-2
4.3 TPH DELINEATION ACTIVITIES.....	4-2
4.3.1 TPH Analytical Results	4-2
4.4 SITE DELINEATION CONCLUSIONS	4-3
5.0 VARIANCE REQUEST	5-1
6.0 CLOSURE REQUEST.....	6-1
7.0 REFERENCES	7-1

TABLE OF CONTENTS (continued)**FIGURES**

FIGURE 1	SITE LOCATION MAP
FIGURE 2	SITE RECEPTOR MAP
FIGURE 3	PROXIMITY TO WATERCOURSE, LAKEBED, SINKHOLE, OR PLAYA LAKE
FIGURE 4	PROXIMITY TO 100-YEAR FLOODPLAIN
FIGURE 5	SITE MAP
FIGURE 6A	HISTORICAL VADOSE ZONE CHLORIDE RESULTS
FIGURE 6B	CHLORIDE DELINEATION BORINGS AND RESULTS
FIGURE 7A	HISTORICAL VADOSE ZONE TPH RESULTS
FIGURE 7B	TPH DELINEATION BORINGS AND RESULTS
FIGURE 8	AREA OF CHLORIDE IMPACT
FIGURE 9	AREA OF TPH IMPACT
FIGURE 10	AREAS OF IMPACT

GRAPHICS

GRAPHIC 1	SOIL STANDARDS AND PROFILE
-----------	----------------------------

TABLES

TABLE 1	BACKGROUND AND SOIL-SCREENING LEVEL CONCENTRATIONS
TABLE 2	2015 – 2020 API CELL VADOSE ZONE SOIL ANALYTICAL RESULTS
TABLE 3	2015 – 2020 CRUDE CELL VADOSE ZONE SOIL ANALYTICAL RESULTS
TABLE 4	RELEASE RE-SAMPLING VADOSE ZONE SOIL ANALYTICAL RESULTS
TABLE 5	2020 CHLORIDE DELINEATION SOIL ANALYTICAL RESULTS
TABLE 6	2020 TPH DELINEATION SOIL ANALYTICAL RESULTS

TABLE OF CONTENTS (continued)

APPENDICES

APPENDIX A	NMOCD EXTENSION REQUEST APPROVAL
APPENDIX B	BORING LOGS
APPENDIX C	LABORATORY ANALYTICAL REPORTS
APPENDIX D	NRCS SOIL DESCRIPTION
APPENDIX E	SITewise IMPACT ANALYSIS

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 (CO₂) 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 CO₂ 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.

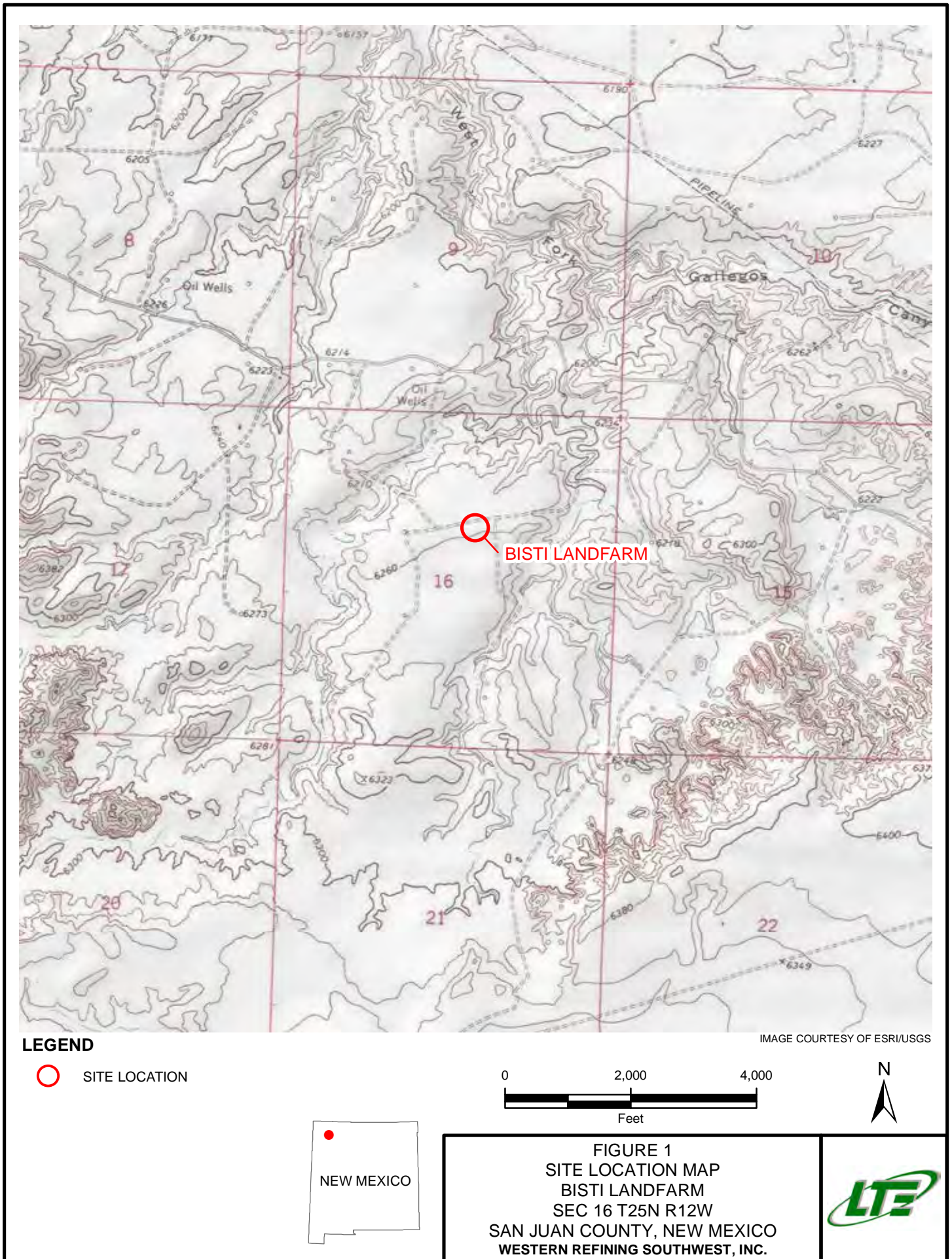
As such, Western requests NMOCD approval that no further action is required at the Site to remediate residual chloride and TPH concentrations under Part 29.

7.0 REFERENCES

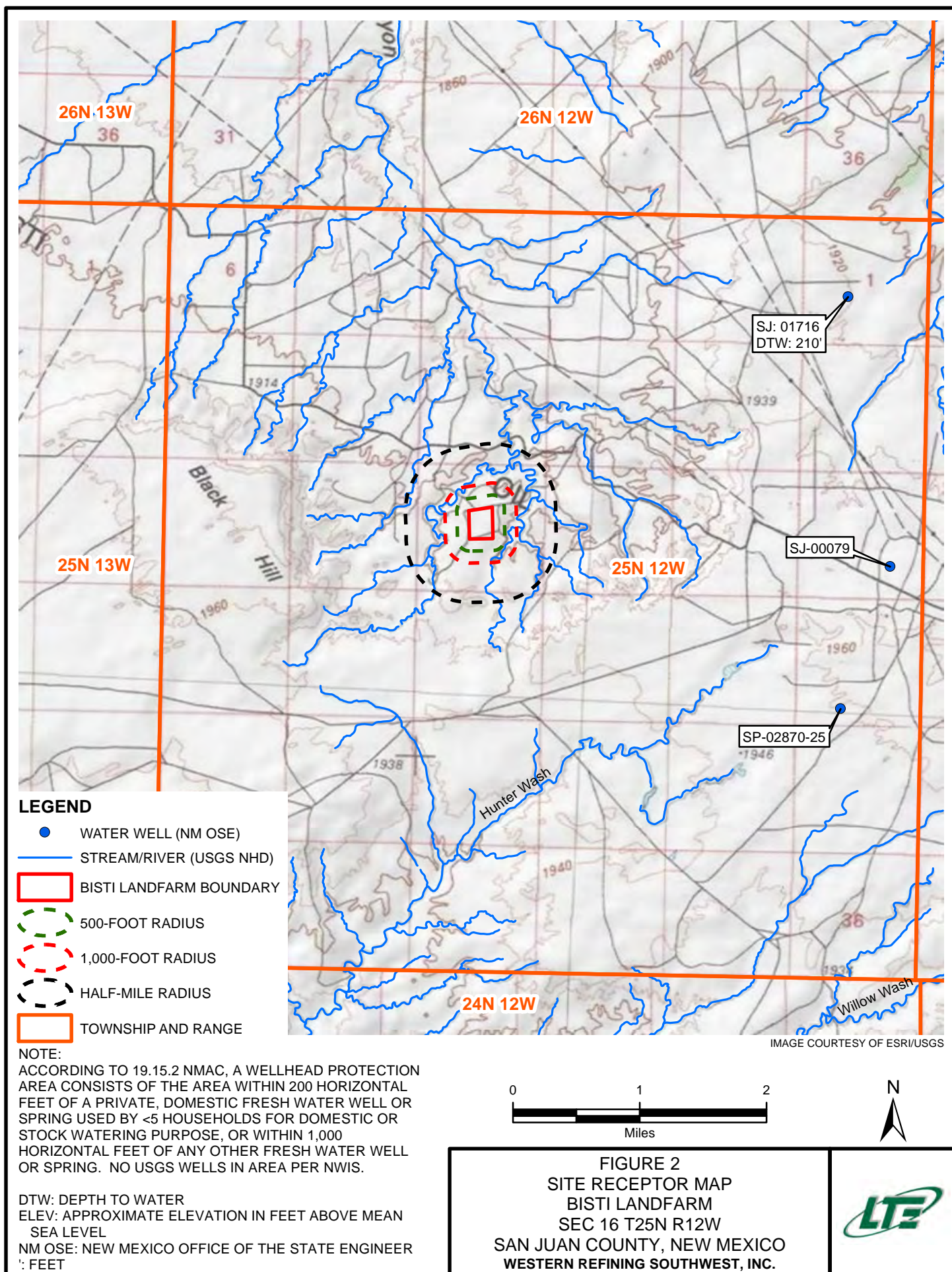
- ITRC. (2009). *Phytotechnology Technical and Regulatory Guidance and Decision Trees, Revised*. Washington DC: Interstate Technology & Regulatory Council.
- Kernodle, J. M. (1996). *Hydrogeology and Steady-State Simulation of Ground-Water Flow in the San Jan Basin, New Mexico, Colorado, Arizona, and Utah*. Albuquerque: United States Geological Survey.
- NMED. (2017). *Risk Assessment Guidance for Site Investigations and Remediation, Volume II Soil Screening Guidance for Ecological Risk Assessments*. Santa Fe: New Mexico Environment Department.
- NMED. (2019). *Risk Assessment Guidance for Site Investigations and Remediation, Volume I, Soil Screening Guidance for Human Health Risk Assessments*. Santa Fe: New Mexico Environment Department.
- Stone, W., Lyford, F., Frenzel, P., Mizell, N., & Padgett, E. (1983). *Hydrogeology and Water Resources of San Juan Basin, New Mexico*. New Mexico Bureau of Mines & Mineral Resources.
- USGS. (1981). *Geochemical Variability of Natural Soils and Reclaimed Mine-Spoil Soils in San Juan Basin, New Mexico*. Washington: United States Government Printing Office.

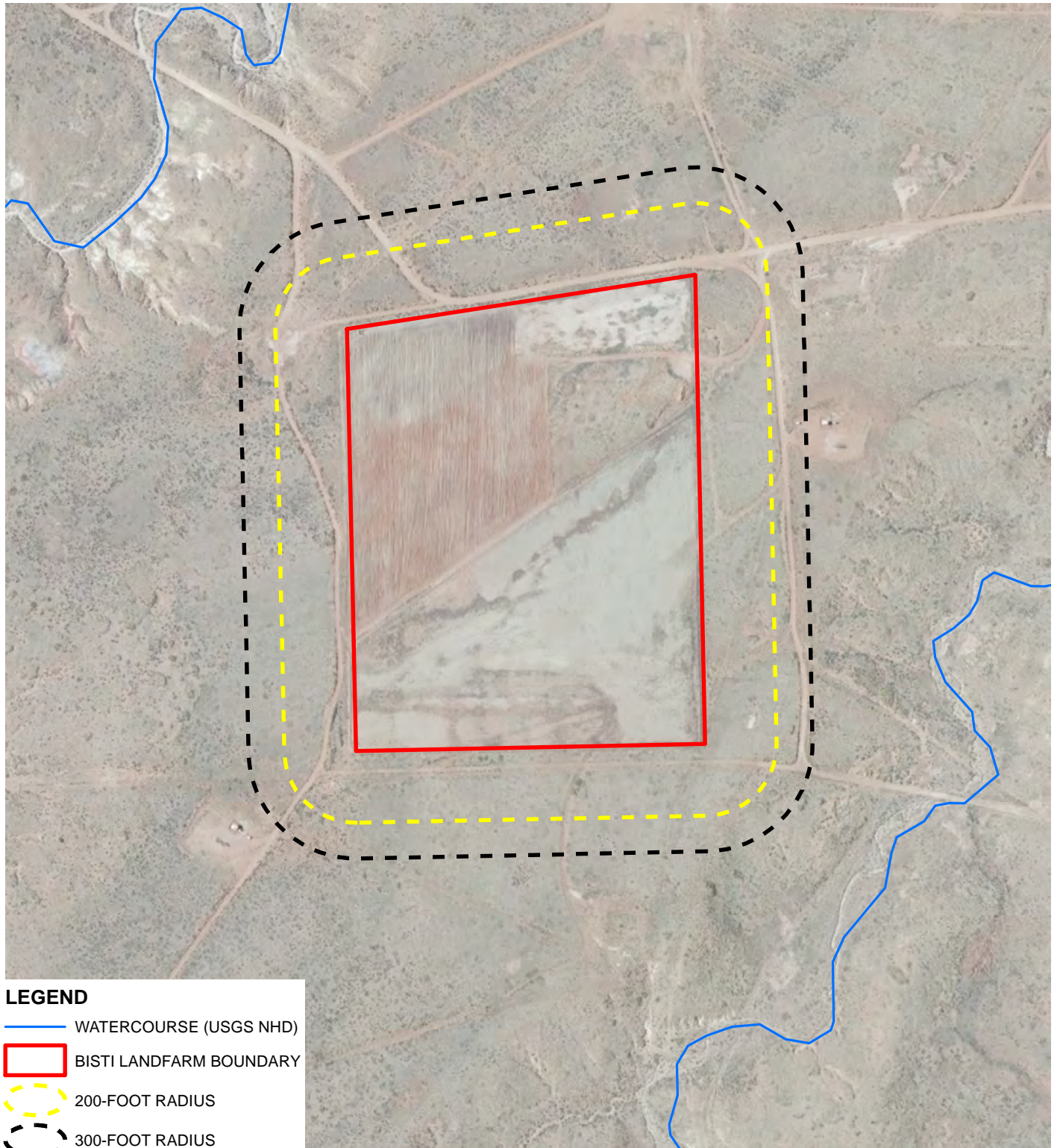
FIGURES





P:\Western Refining\GIS\MXD\WR1005 BISTI\WR1005_BISTI_LANDFARM_FIG01_SL_12292014.mxd



**LEGEND**

- WATERCOURSE (USGS NHD)
- BISTI LANDFARM BOUNDARY
- 200-FOOT RADIUS
- 300-FOOT RADIUS

NOTE:

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

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

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

IMAGE COURTESY OF ESRI

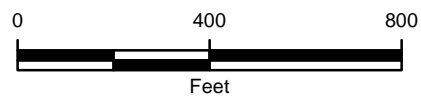
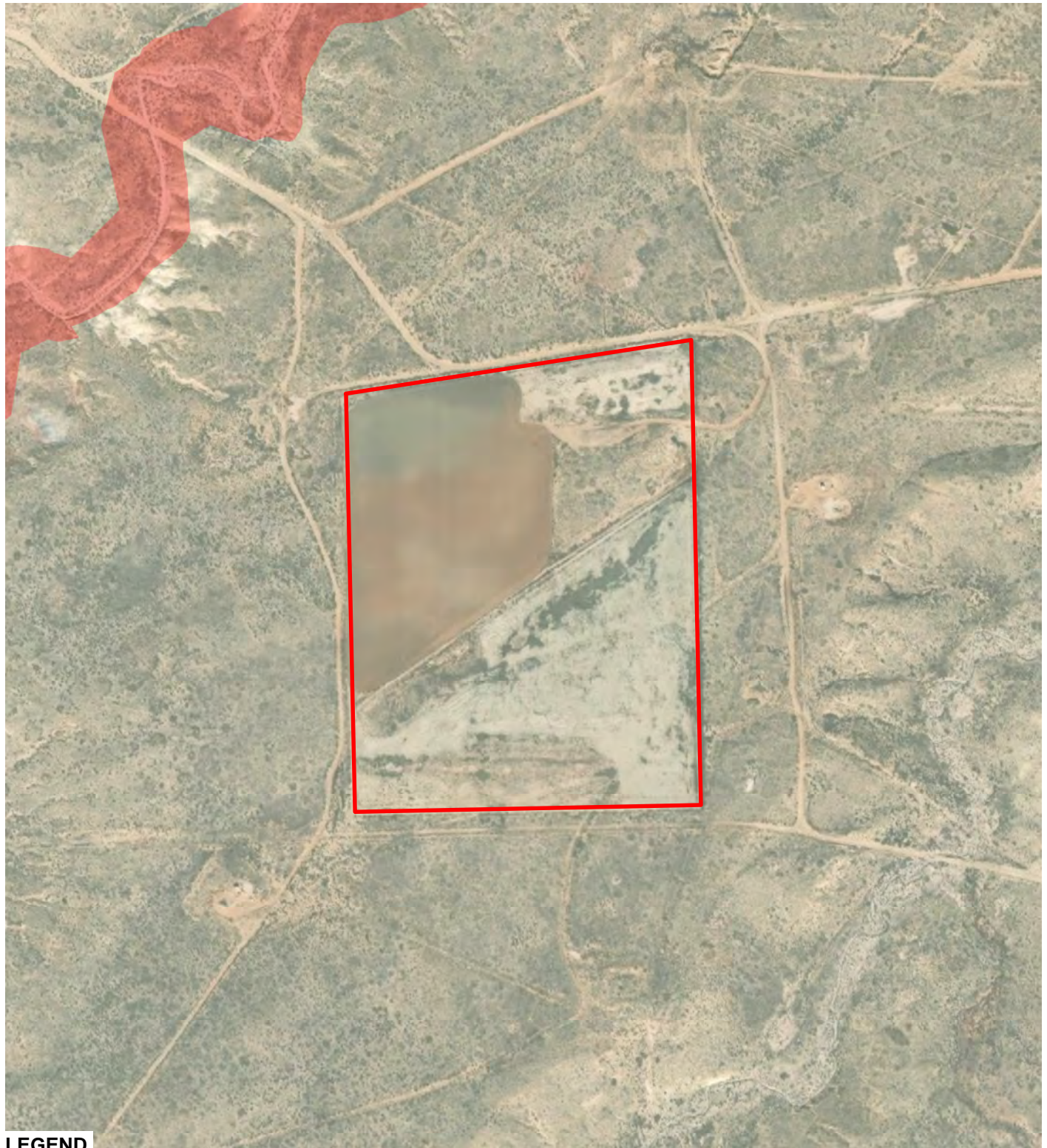


FIGURE 3
 PROXIMITY TO WATERCOURSE, LAKEBED,
 SINKHOLE, OR PLAYA LAKE
 BISTI LANDFARM
 SEC 16 T25N R12W
 SAN JUAN COUNTY, NEW MEXICO
 WESTERN REFINING SOUTHWEST, INC.



**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

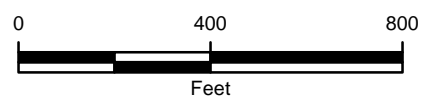


FIGURE 4
PROXIMITY TO 100-YEAR FLOODPLAIN
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.



**LEGEND**

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

IMAGE COURTESY OF ESRI

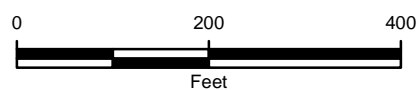
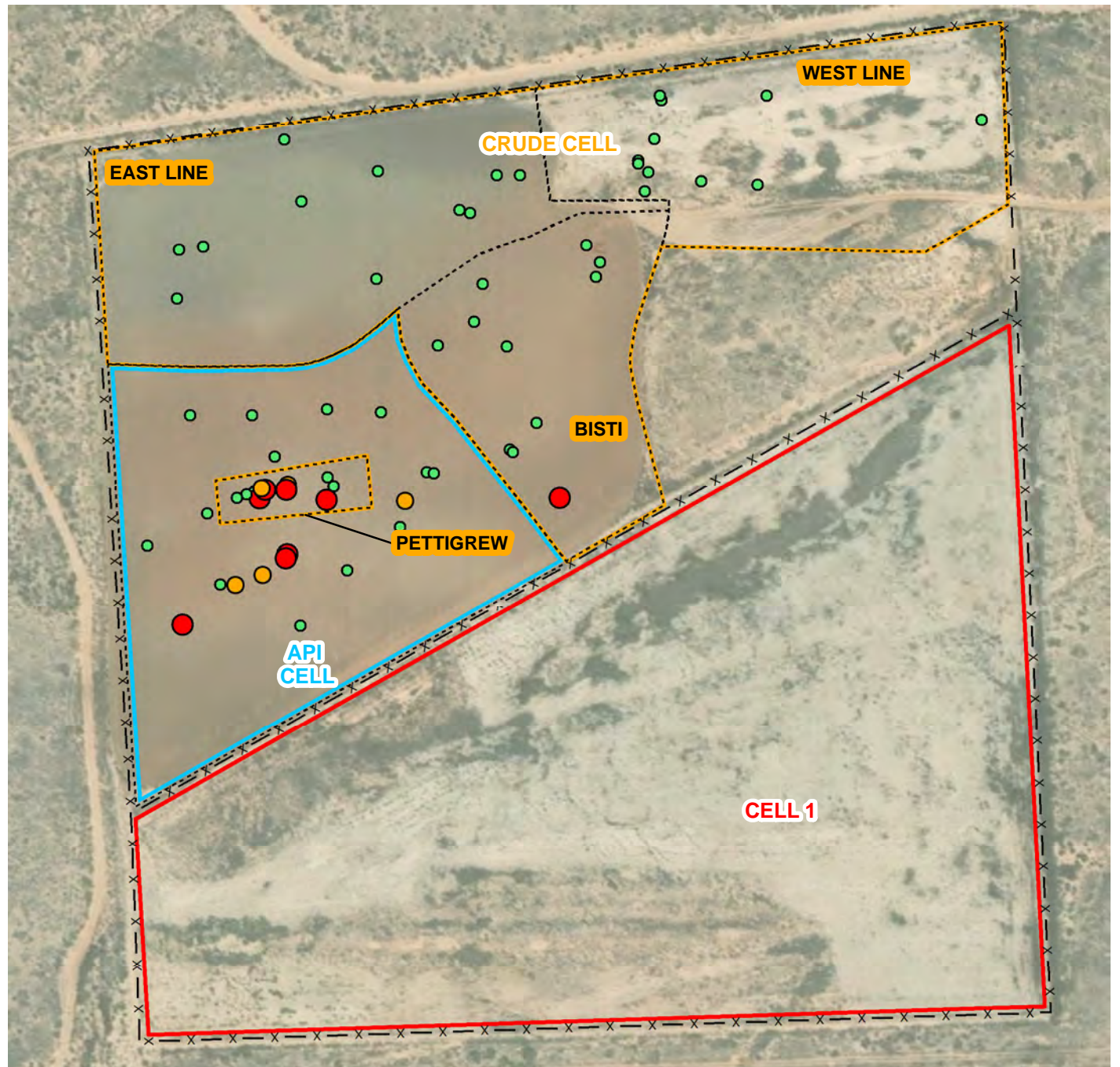


FIGURE 5
SITE MAP
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.



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 BOUNDARY

CHLORIDE SAMPLES WERE COLLECTED BETWEEN 2015-2020

IMAGE COURTESY OF ESRI

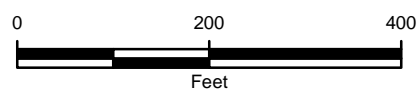
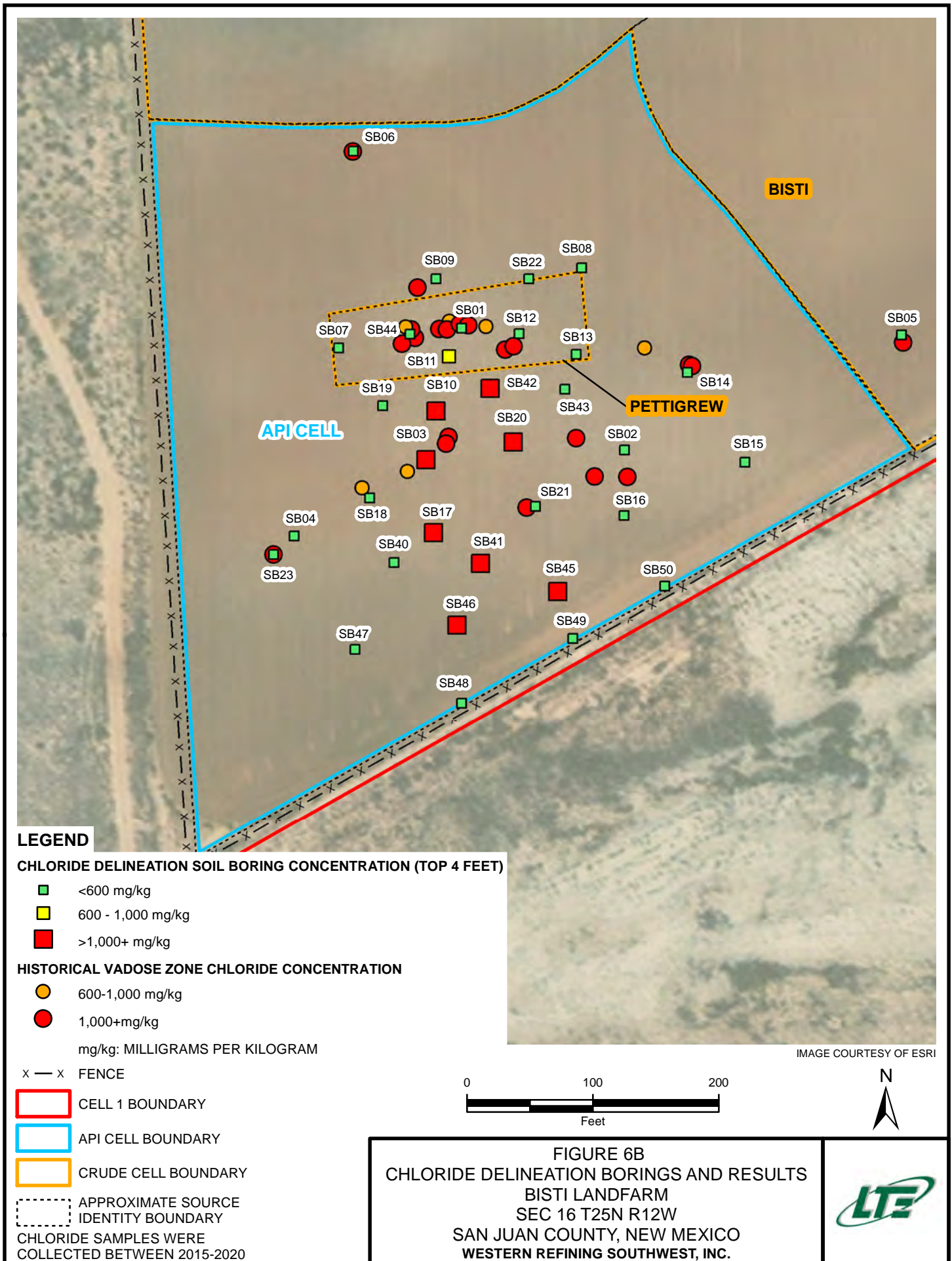
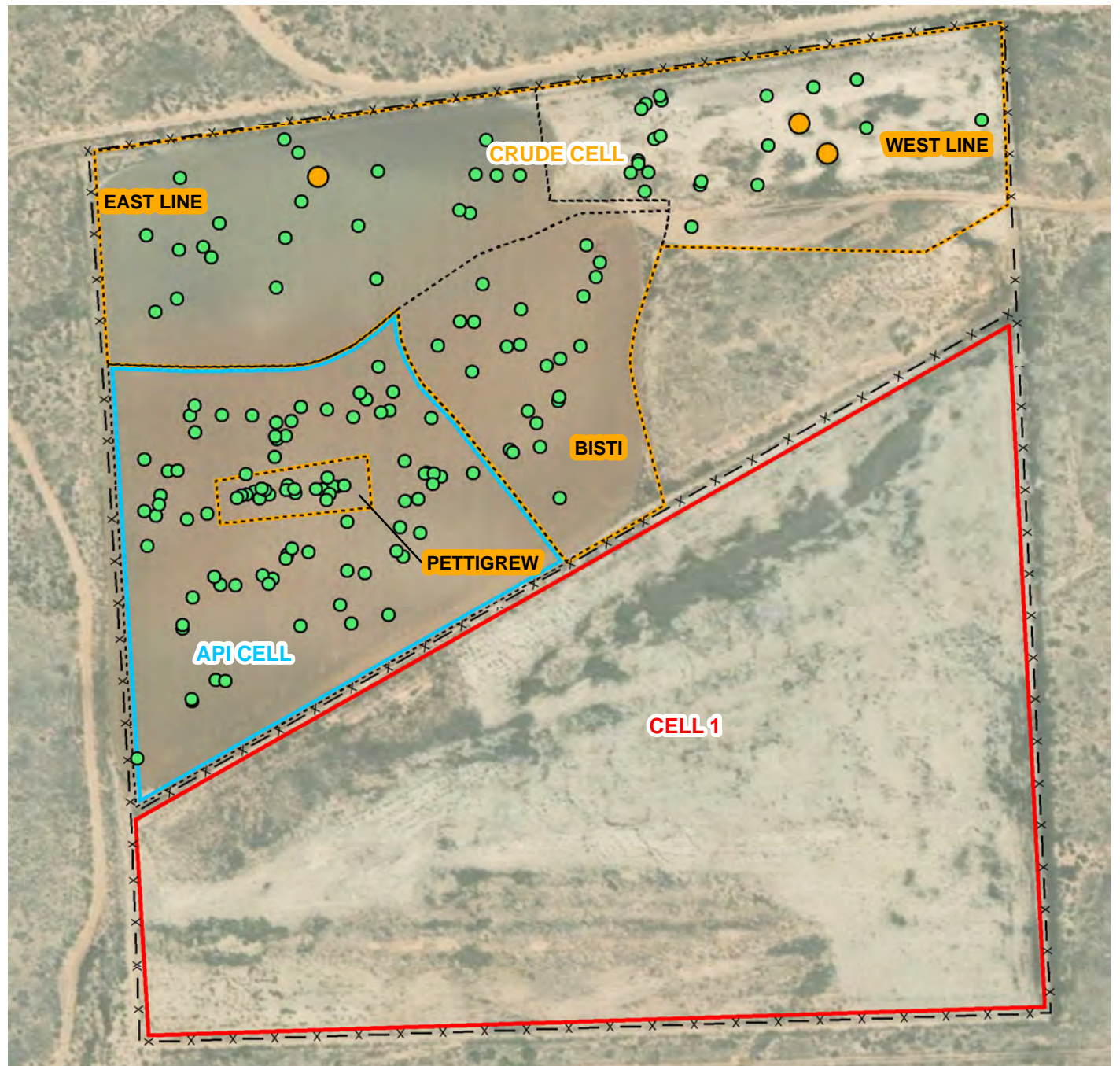


FIGURE 6A
HISTORICAL VADOSE ZONE CHLORIDE RESULTS
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.





P:\Western Refining\GIS\MXD\029520002_BISTI LANDFARM\029520002_BISTI LANDFARM_FIG11B_CHL_DEL_SB_RESULTS_2020.mxd

**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

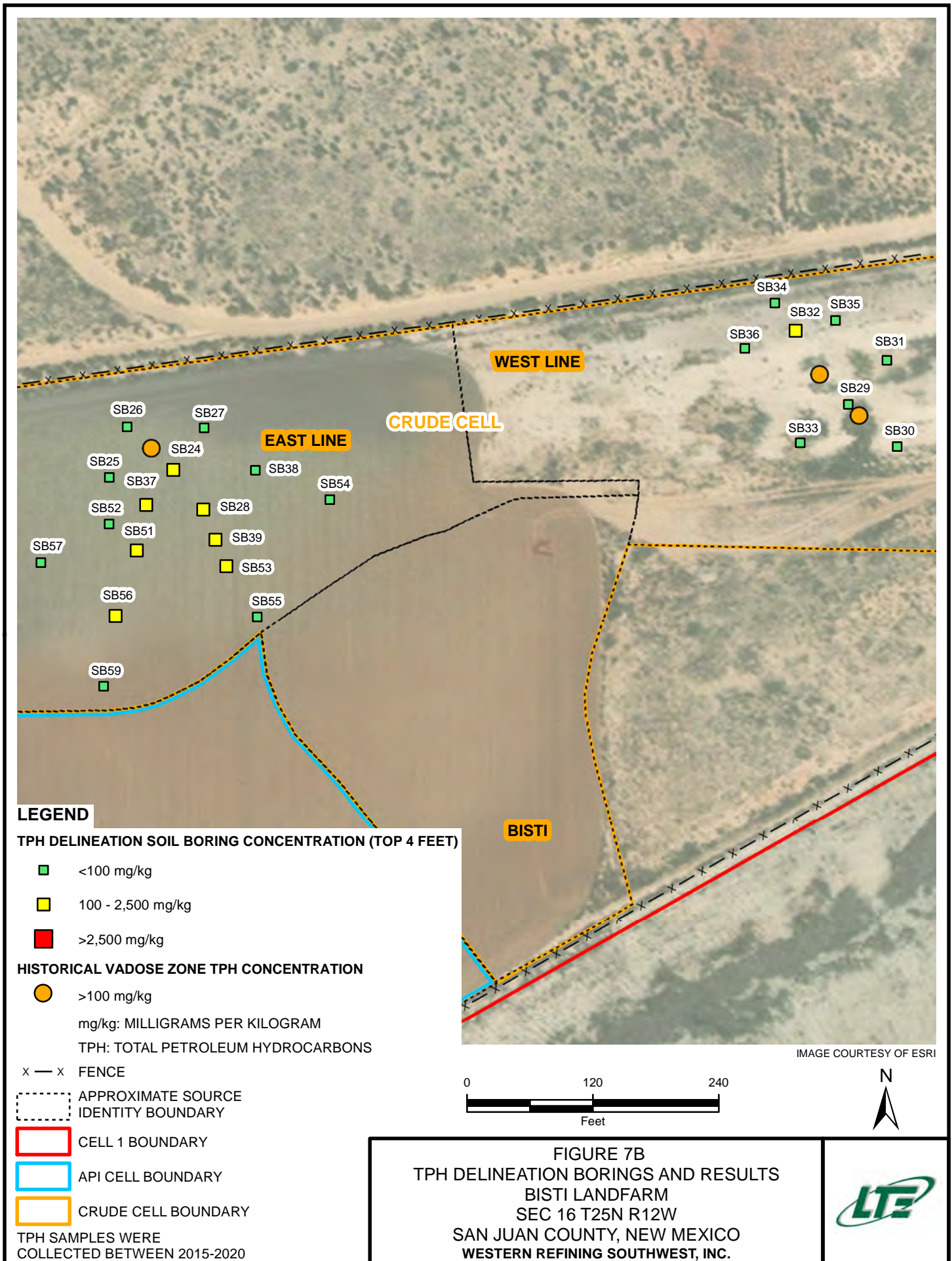
IMAGE COURTESY OF ESRI

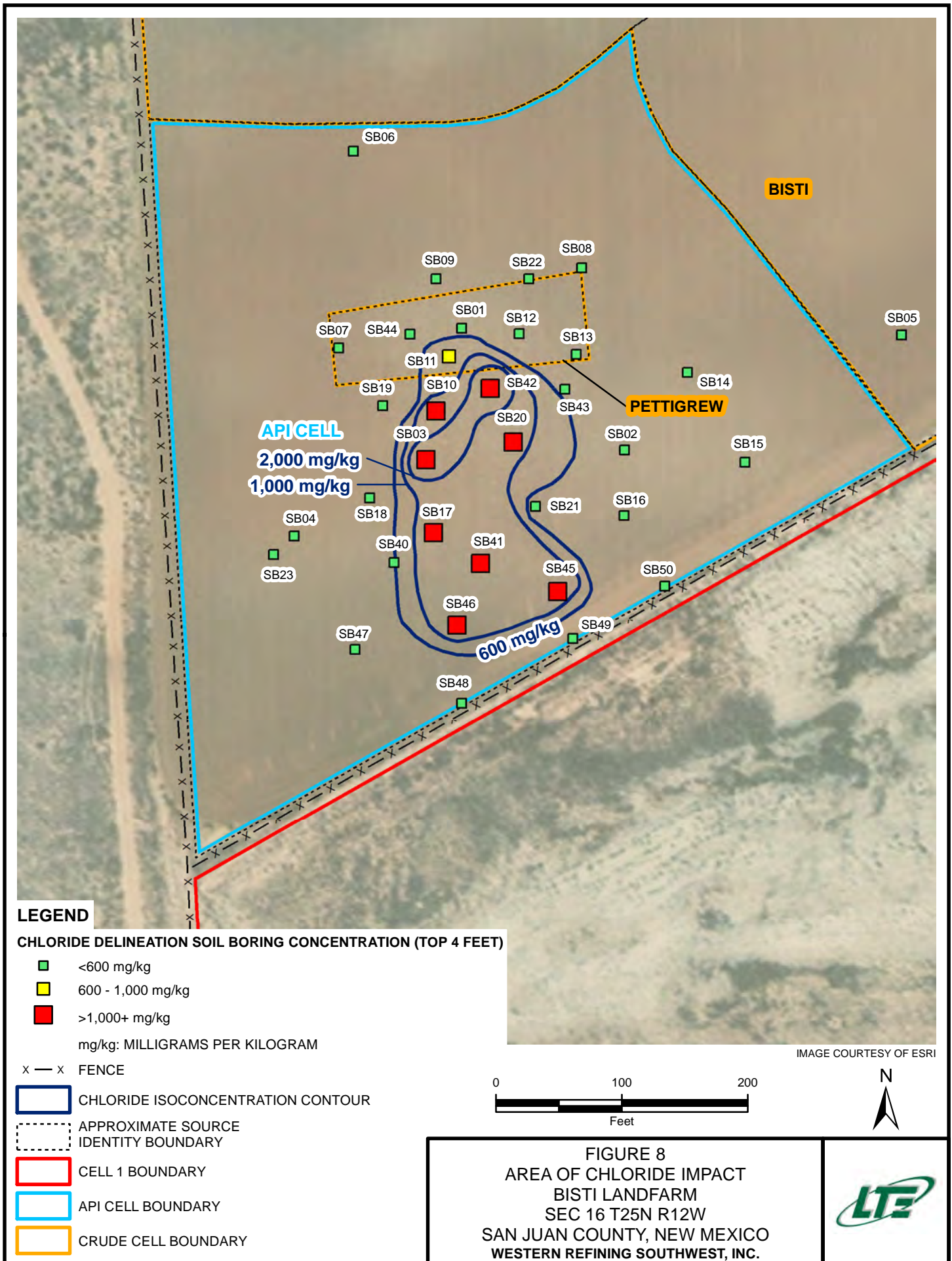


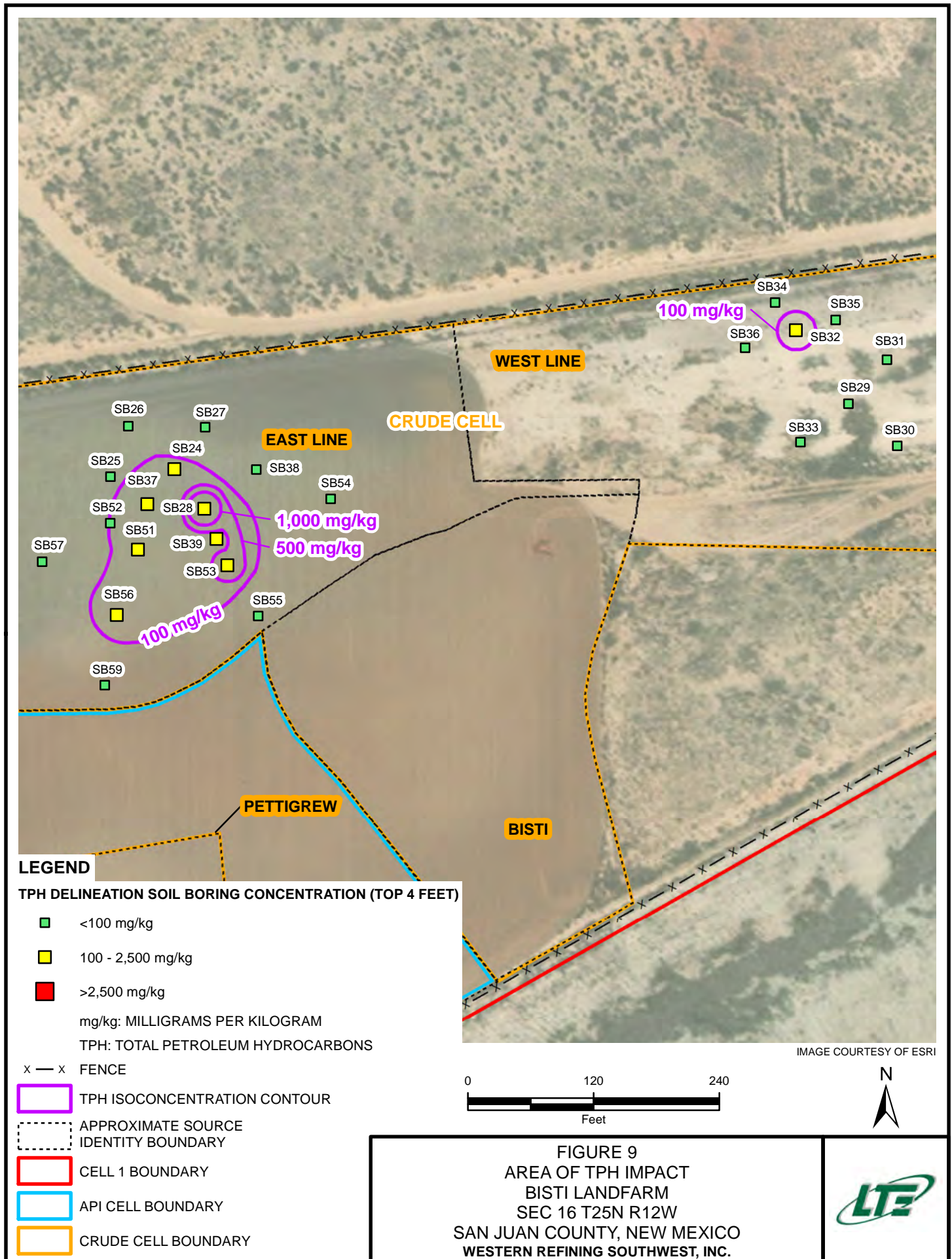
FIGURE 7A
HISTORICAL VADOSE ZONE TPH RESULTS
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

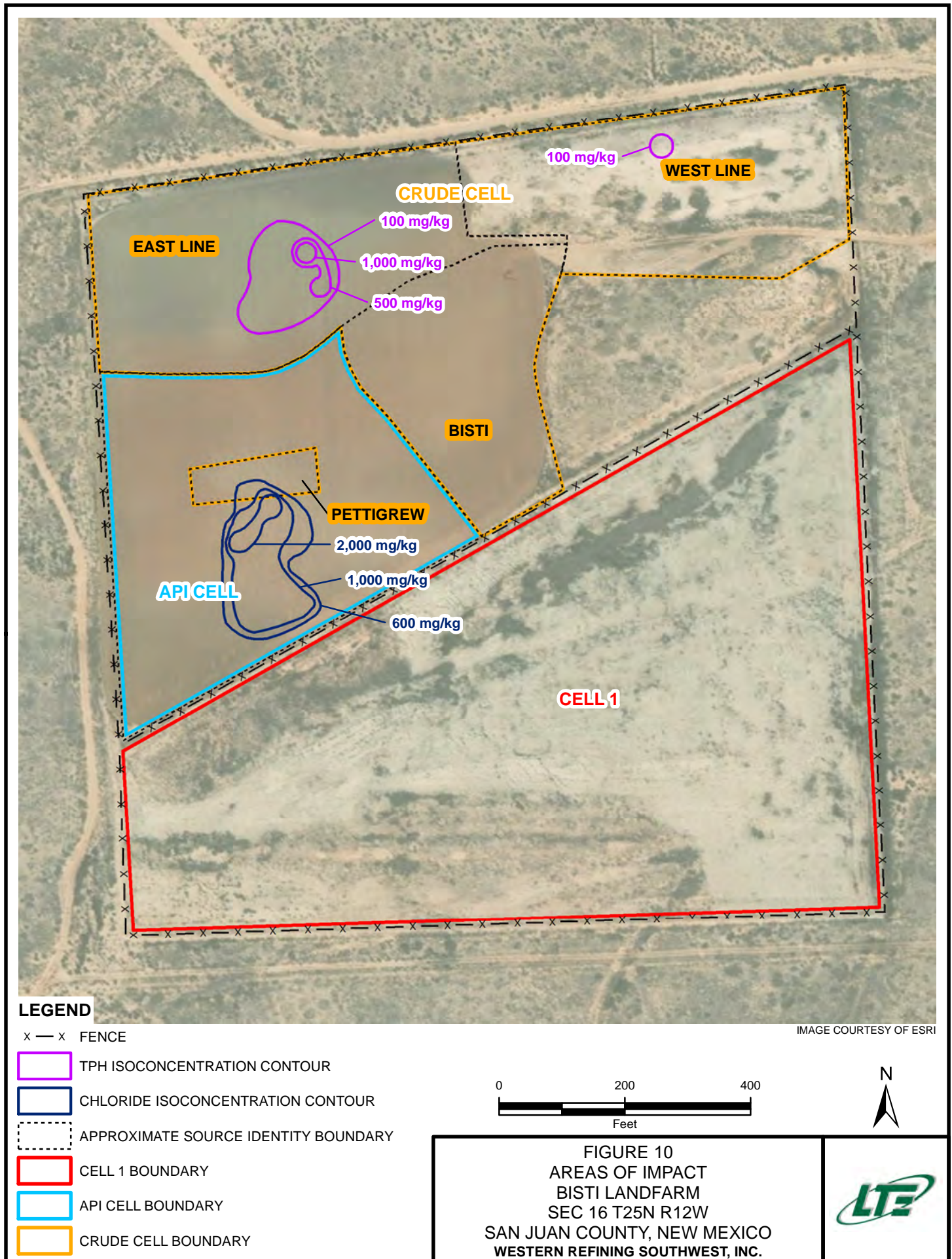


P:\Western Refining\GIS\MXD\029520002_BISTI LANDFARM\029520002_BISTI LANDFARM_FIG07A_TPH_HIST_RESULTS.mxd









P:\Western Refining\GIS\MXD\029520002_BISTI LANDFARM\029520002_BISTI AREAS OF IMPACT_2020.mxd

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)

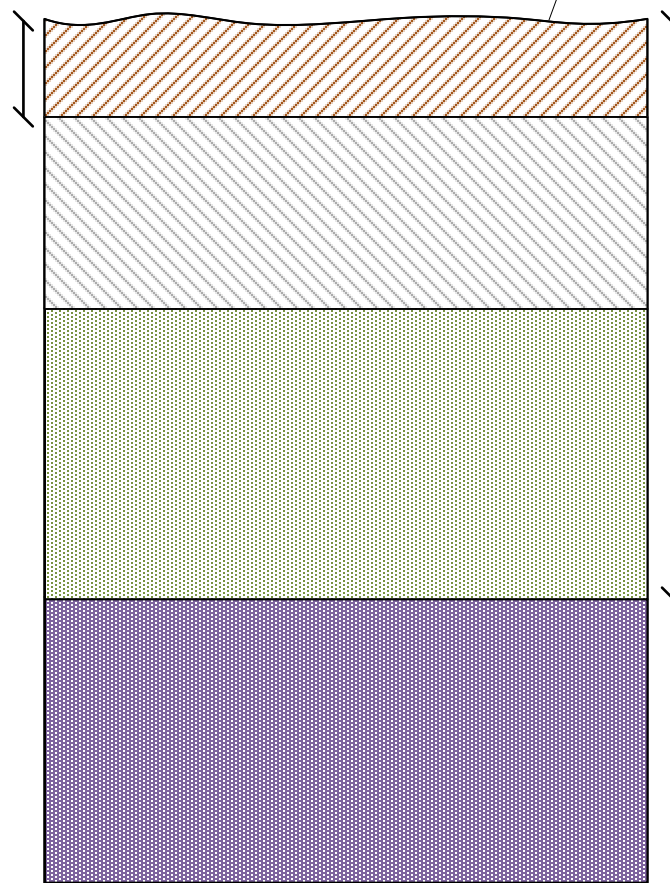
Treatment Zone Closure Performance Standards:

-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
Polycyclic Aromatic Hydrocarbons by EPA Method 8270				
Benzo(a)pyrene	mg/kg	NA	<0.0099	NE
Total Phenol by Method 9066				
Total Phenol	mg/kg	NA	<0.67	NE
Metals by EPA Method 6010/6020				
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
Polychlorinated Biphenyls by EPA Method 8082				
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
Cyanide by Method 9012B				
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	NMOCDC 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
TPH (mg/kg)						
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
BTEX (mg/kg)						
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
General Chemistry (mg/kg)						
Chloride	38	600/20,000 (2)	<50	NE	1.80	4,800
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
Metals (mg/kg)						
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

NMOCDC - 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 NMOCDC 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
TPH (mg/kg)						
TPH Method: 8015	50	100/2,500 (2)	<50	NE	15.0	106
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
BTEX (mg/kg)						
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
General Chemistry (mg/kg)						
Chloride	<50	600/20,000 (2)	<50	NE	1.60	3,500
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
Metals (mg/kg)						
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-Spill 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
SB04	SB03@10'-12'	8/11/2020	10-12	760	640
	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
SB05	---	---	8-10	136	---
	SB04@10'-12'	8/11/2020	10-12	136	100
	---	---	0-1	<112	---
	---	---	1-2	<112	---
	SB05@2'-3'	8/11/2020	2-3	<112	<59
	---	---	3-4	<112	---
	---	---	4-6	<112	---
SB05	SB05@6'-8'	8/11/2020	6-8	<112	<60
	---	---	8-10	<112	---
	---	---	10-12	<112	<60
	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)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	600/20,000 (1)
SB06	---	---	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
SB07	---	---	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
SB08	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
SB09	---	---	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
SB10	---	---	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	---
SB11	---	---	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)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	600/20,000 (1)
SB49	---	---	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
SB50	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

< - 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	---	---	---	---
	SB35@6'	9/1/2020	4-6	0.0	<4.0	<9.4	<47	<47
SB36	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	---	---	---	---
	SB36@6'	9/1/2020	4-6	0.0	<3.5	<8.4	<42	<42
SB37	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	---	---	---	---
	SB37@6'	9/1/2020	4-6	0.4	<3.9	<9.6	<48	<48
SB38	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	---	---	---	---
	SB38@6'	9/1/2020	4-6	0.6	<3.6	<9.9	<50	<50
SB39	---	---	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	---	---	---	---
	SB39@6'	9/1/2020	4-6	0.0	<4.4	<9.9	<49	<49
SB51	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	---	---	---	---
	SB51@4-6'	9/14/2020	4-6	0.0	<3.7	<9.7	<48	<48
SB52	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	---	---	---	---
	SB52@4-6'	9/14/2020	4-6	0.1	<3.9	<9.7	<48	<48
SB53	---	---	0-1	0.0	---	---	---	---
	SB53@1-2'	9/14/2020	1-2	0.0	<3.9	200	450	650**
	---	---	2-3	0.0	---	---	---	---
	---	---	3-4	0.0	---	---	---	---
	SB53@4-6'	9/14/2020	4-6	0.0	<3.8	<10	<50	<50
SB54	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	---	---	---	---
	SB54@4-6'	9/14/2020	4-6	1.3	<3.6	31	89	120
SB55	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@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)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)				NE	NE	NE	NE	100/2,500 (1)
SB56	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
SB57	---	---	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
SB59	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

< - 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

From: Hyde, Stuart <shyde@ltenv.com>
Sent: Friday, September 11, 2020 2:54 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Hencmann, Devin <dhencmann@ltenv.com>; McCartney, Gregory J. <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>

Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; McCartney, Gregory J. <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>

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

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

Cc: Hencmann, Devin <Devin.Hencmann@wsp.com>; McCartney, Gregory J. <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

From: Stuart Hyde <shyde@ltenv.com>

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

To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>

Cc: Devin Hencmann <dhencmann@ltenv.com>; McCartney, Gregory J. <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



Think before you print. [Click for our email disclosure.](#)

NOTICE: This communication and any attachments ("this message") may contain information which is privileged, confidential, proprietary or otherwise subject to restricted disclosure under applicable law. This message is for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on, this message is strictly prohibited. If you have received this message in error, or you are not an authorized or intended recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.

-LAEmHhHzdJzBITWfa4Hgs7pbKI

APPENDIX B: BORING LOGS



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: 5801	Project: Bisti LF Delineation		
Date: 8/11/2020	Project Number: 029520002		
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx		
Elevation: 6.200	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 6'	Depth to Liquid: NA
			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
<112	Dry		NO		0			SM	Dry, loose, light red brown, fine sand, some silt	NO well
<100	D		N		1					
<112	D		N		2		75%			
444	D		N	5801 3'-4'	3					
548	D		N		4					
	D		N		5					
	D		N		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								

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB02		Project: Bisti LF Delineation	
Date: 8/11/2020		Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn		Drilled By: Earthworx	
Elevation: 6266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 16'	Depth to Liquid: NA
			Depth to Water: NA

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								

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB03		Project: Bisti LF Delineation	
Date: 8/11/2020		Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn		Drilled By: Earthworx	
Elevation: C, 266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 12'	Depth to Liquid: NA
			Depth to Water: NA

Qtab (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								

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

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

Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 12'	Depth to Liquid: NA
			Depth to Water: NA

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					3			SM	moist, lt red brown, silty sand	
<122	m		N		4			SM	SAA	
<122	m		N		5					
					6					
					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							



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB05	Project: Bisti LF Delineation
Date: 8/11/2020	Project Number: 029520002
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx
Drilling Method: Direct Push	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: 12'
	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
<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						
<122	M		N		9			SM	moist, yellow brown, fine to med sand, some silt		
<122					10						
<122	M		N	SB05 10'-11'	11			SM	SAA		
					12						
					13						
					14						
					15						
					16						
					17						
					18						

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: 5806	Project: Bisti LF Delineation
Date: 8/11/2020	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: 10'
	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, 12 ped brown, sandy silty	NO well
<124	m		N		1			ML	SAA	
<124	m		N	5806 2'-3'	2			ML	SAA	
<124	m		N		3			SM	moist, 12 brown, silty sand	
<124	m		N		4			SM	SAA	
<124	m		N		5					
					6			SM	SAA	
					7					

									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'	10			SM	SAA				
					11								
					12								
					13								
					14								
					15								
					16								
					17								
					18								



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: 5807	Project: Bisti LF Delineation	
Date: 8/11/2020	Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx	
Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push
Gravel Pack: 10-20 Silica Sand	Seal: Hydrated Bentonite Chips	Sampling Method: Continuous
Casing Type: Schedule 40 PVC	Diameter: 2"	Length: NA
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"
	Length: NA	Hole Diameter: 2"
		Depth to Liquid: NA
		Total Depth: 12'
		Depth to Water: NA

Qtab (ppm)	Moisture Content	Vapor (ppm)	HC Staining?/ Chlordie ppm	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
<124 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:	BISCI 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							

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB08		Project: Bisti LF Delineation	
Date: 8/11/2020		Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn		Drilled By: Earthworx	
Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 12'	Depth to Liquid: NA
			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
152	m		N	SB08 0-1	0			ML	moist, dark red brown, sandy silt	NO well
					1			ML	SAA	
<124	m		N		2			ML	SAA	
<124	m		N		3			ML	moist, lt brown, silty sand	
<124	m		N		4			SM	moist, lt brown, fine sand some silt	
<124	m		N		5			SM	SAA	
<124	m		N	SB08 6-8	7			SM	SAA	

									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						

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB09		Project: Bisti LF Delineation	
Date: 8/11/2020		Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn		Drilled By: Earthworx	
Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 8'	Depth to Liquid: NA
			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
					0			ML	moist, red brown, Sandy Silt	NO well
<124	m		N		1			ML	SAA	
<124	m		N	SB09 2-3	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			SM	SAA	
<124	m		N	SB09 6-8	6			SM	SAA	
<124	m		N		7			SM	SAA	

A proud member
of WSP

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	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
Gravel Pack: 10-20 Silica Sand		Seal: Hydrated Bentonite Chips	Grout: Bentonite-Cement Slurry
Casing Type: Schedule 40 PVC		Diameter: 2"	Length: NA
Screen Type: Schedule 40 PVC		Diameter: 2"	Length: NA
Slot: 0.010"		Total Depth: 8'	Depth to Liquid: NA
		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					



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB11	Project: Bisti LF Delineation
Date: 8/11/20	Project Number: 029520002
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx
Drilling Method: Direct Push	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



Qt (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 silb	no well
<	m		N		1			SM	moist, red brown, sandy silb	
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 silb	
1,424	m		N	SB11 6'-8'	5			SP	SAA	
					6					
					7					

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

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

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

				 A proud member of WSP							
				BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
				Boring/Well Number: <u>SB13</u>				Project: <u>Bisti LF Delineation</u>			
				Date: <u>8/12/2020</u>				Project Number: <u>029520002</u>			
Logged By: <u>E. Carroll/ C. McGinn</u>				Drilled By: <u>Earthworx</u>							
Elevation: <u>6,266</u>		Detector: <u>PID/Quantab</u>		Drilling Method: <u>Direct Push</u>		Sampling Method: <u>Continuous</u>					
Gravel Pack: <u>10-20 Silica Sand</u>				Seal: <u>Hydrated Bentonite Chips</u>		Grout: <u>Bentonite-Cement Slurry</u>					
Casing Type: <u>Schedule 40 PVC</u>				Diameter: <u>2"</u> Length: <u>NA</u>		Hole Diameter: <u>2"</u> Depth to Liquid: <u>NA</u>					
Screen Type: <u>Schedule 40 PVC</u> Slot: <u>0.010"</u>				Diameter: <u>2"</u> Length: <u>NA</u>		Total Depth: <u>8'</u> Depth to Water: <u>NA</u>					
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	
<u>2/22</u>	<u>D</u>		<u>N</u>		1			SM	moist, red brown, Sandy Silt		
<u>164</u> <u>184</u>	<u>m</u>		<u>N</u>		2			SM	SAA		
<u>196</u>	<u>m</u>		<u>N</u>		3			SM	moist, red brown, Silty Sand		
<u>196</u>	<u>m</u>		<u>N</u>	<u>SB13</u> <u>3-4</u>	4			SM	moist, lt brown, Fine Sand Some Silt		
<u>232</u>	<u>m</u>		<u>N</u>	<u>SB13</u> <u>4-6</u>	5			SM	SAA		
<u>444</u>	<u>m</u>		<u>N</u>	<u>SB13</u> <u>6'-8'</u>	7			SM			

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB14		Project: Bisti LF Delineation	
Date: 8/12/20		Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn		Drilled By: Earthworx	
Elevation: C 266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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: 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
<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	





A proud member of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: 5B15	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" Length: NA
Slot: 0.010"	Hole Diameter: 2" Depth to Liquid: NA
	Total Depth: 8' 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
					0			ML	moist, dark red brown, sandy silt	NO well
<122	m		N		1			ML	SAA	
312 312	m		N	5B15 1'-2'	2			SM	moist lt brn red brown, silty sand	
164	m		N		3			SM	SAA	
312 312	m		N		4			SM		
					5			SM	Dry, lt brown, fine sand, some silt	
544	D		N	5B15 4'-6'	6			SM		
760 760	D		N	5B15 6'-8'	7			SM	SAA	

		 A proud member of WSP		BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
				Boring/Well Number: SB16				Project: Bisti LF Delineation			
				Date: 8/12/20				Project Number: 029520002			
				Logged By: E. Carroll/ C. McGinn				Drilled By: Earthworx			
Elevation: 6,266		Detector: PID/Quantab		Drilling Method: Direct Push		Sampling Method: Continuous					
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: 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	
					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		

A proud member
of WSP**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: SB17		Project: Bisti LF Delineation	
Date: 8/12/20		Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn		Drilled By: Earthworx	
Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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: 8' Depth to Water: NA

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		BORING LOG/MONITORING WELL COMPLETION DIAGRAM											
				Boring/Well Number: SB18					Project: Bisti LF Delineation						
Date: 8/12					Project Number: 029520002										
Logged By: E. Carroll/ C. McGinn					Drilled By: Earthworx										
Elevation: 6,266		Detector: PID/Quantab			Drilling Method: Direct Push			Sampling Method: Continuous							
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				
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							
					6										
134	m		N	SB18 6'-8'	7			SP-SM	SAA						





A proud member of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB19	Project: Bisti LF Delineation		
Date: 8/12/20	Project Number: 029520002		
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx		
Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 8'	Depth to Liquid: NA
			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
					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	

		 A proud member of WSP		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
				Boring/Well Number: SB20				Project: Bisti LF Delineation				
				Date: 8/12/20				Project Number: 029520002				
				Logged By: E. Carroll/ C. McGinn				Drilled By: Earthworx				
Elevation: 6,266		Detector: PID/Quantab		Drilling Method: Direct Push		Sampling Method: Continuous						
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: 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	
					0			ML	moist, red brown, sandy silt		NO WELL	
					1			ML	SAA			
					2			SM	moist red brown, silty sand			
					3			SM	SAA			
					4			SM	moist, lt brown, fine sand some silt			
					5			SM	SAA			
					6			SM	SAA			
					7			SM	SAA			



A proud member
of WSP

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 sil	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 sil	
					5			SM	maxed out low range Qtab used high range	
648					6			SM	SAA	
					7			SM	low range Qtab	

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

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

		 A proud member of WSP		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
				Boring/Well Number: SB23				Project: Bisti LF Delineation				
Date: 8/12/20				Project Number: 029520002								
Logged By: E. Carroll/ C. McGinn				Drilled By: Earthworx								
Elevation: 6,266		Detector: PID/Quantab		Drilling Method: Direct Push				Sampling Method: Continuous				
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: 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	
<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			



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB24	Project: Bisti LF Delineation
Date: 8/12/20	Project Number: 029520002
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx
Drilling Method: Direct Push	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
	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	



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB25	Project: Bisti LF Delineation		
Date: 8/12/20	Project Number: 029520002		
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx		
Elevation: 6.266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 8'	Depth to Liquid: NA
			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
	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	dry, gray brown moist, lt. brown, fine sand some silt	
	M	1.7	N	SB25 4'-6'	6					
					7			SP-SM	moist, red brown, fine sand few silt	
	M	1.3	N	SB25 6'-8'						

A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB26	Project: Bisti LF Delineation		
Date: 6/12/2020	Project Number: 029520002		
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx		
Elevation: 6,266	Detector: PID/Quantab	Drilling Method: Direct Push	Sampling Method: Continuous
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"
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2"	Length: NA
		Total Depth: 8'	Depth to Liquid: NA
			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
					0			ML	dry, gray, silt, some sand	NO WELL
					1			SM	dry, red brown, sea silty sand	
					2			SM	SAA	
					3			SM	SAA	
				SB26 3'-4'	4					
					5			SPSM	moist, lt brown, fine to med sand, few silt	
				SB26 4'-6'	6					
					7			SP-SM	moist, red brown, fine to med sand little silt	
				SB26 6'-8'						



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

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



A proud member
of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB28	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
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?/ Chlordie 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	
					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	
					6					
	D	2.6	N	SB28 6'-8'	7			SP	moist, dark red brown, fine sand, few silts	



A proud member of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

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

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'	5			SP	Dry, light brown, fine sand trace silt	
	D	1.7	N	SB29 6'-8'	7			SP	SAA	





A proud member of WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB 30	Project: Bisti LF Delineation	
Date: 8/12/20	Project Number: 029520002	
Logged By: E. Carroll/ C. McGinn	Drilled By: Earthworx	
Drilling Method: Direct Push	Sampling Method: Continuous	
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

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					

		 A proud member of WSP		BORING LOG/MONITORING WELL COMPLETION DIAGRAM									
				Boring/Well Number: SB31					Project: Bisti LF Delineation				
				Date: 8/12/2020					Project Number: 029520002				
				Logged By: E. Carroll/ C. McGinn					Drilled By: Earthworx				
Elevation: 6,266		Detector: PID/Quantab			Drilling Method: Direct Push			Sampling Method: Continuous					
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: 8'	Depth to Water: NA
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								

A proud member
of WSP

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, few 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	
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	
M	2.0	N		SB32 6'-8'	7			SM	moist, brown, med. sand, few silt, rust mottling	

		 A proud member of WSP		BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
				Boring/Well Number: SB33				Project: Bisti LF Delineation			
				Date: 8/10/2020				Project Number: 029520002			
				Logged By: E. Carroll/ C. McGinn				Drilled By: Earthworx			
Elevation: 6,266		Detector: PID/Quantab		Drilling Method: Direct Push		Sampling Method: Continuous					
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: 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	
	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'		



 Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301				BORING LOG/MONITORING WELL COMPLETION DIAGRAM						
Elevation: 6,266		Detector: PID		Boring/Well Number: SB34		Project: Bisti Landfarm				
Gravel Pack:		Seal: Bentonite		Date: 9/1/2020		Project Number: 029520002				
Casing Type:		Drilling Method: Hand Auger		Logged By: EC		Drilled By: LTE				
Screen Type:		Diameter:		Length:		Sampling Method: Continuous				
Slot:		Diameter:		Length:		Grout: Bentonite				
Hole Diameter: 3"		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
		4.0		SB34 @ 0-1'	0			0-6" SM	Dry, brown/gray, silty sand, no odor, some rocks	No well
		1.6			1			6"-6'		
		1.2			2					
		0.7			3					
		0.5		SB34 @ 4-6'	4			SM	Dry, red-brown, silty sand, no odor, some gray/white clay in last 2"	
					5					
					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: 5B35				Project: Bisti Landfarm			
Date: 9/1/2020				Project Number: 029520002			
Logged By: EC				Drilled By: LTE			
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:				Seal: Bentonite		Grout: Bentonite	
Casing Type:				Diameter: Length:		Hole Diameter: 3" 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
		0.0			0			SM	0'-6": Dry, brown/gray silty sand, no odor	No well?
		0.0			1					
		0.0			2					
		0.0		5B35 @ 2-3'	3			SM	6"-6' Dry red-brown, silty sand, no odor, clay in last 2"	
		0.0			4					
		0.0		5B35 @ 5-6'	5					
		0.0			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: SB36				Project: Bisti Landfarm			
Date: 9/1/2020				Project Number: 029520002			
Logged By: EC				Drilled By: LTE			
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:		Seal: Bentonite		Grout: Bentonite			
Casing Type:		Diameter:		Length:		Hole Diameter: 3"	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
		0.0		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: SB37			Project: Bisti Landfarm							
Date: 9/1/2020			Project Number: 029520002							
Logged By: EC			Drilled By: LTE							
Elevation: 6,266	Detector: PID		Drilling Method: Hand Auger		Sampling Method: Continuous					
Gravel Pack:		Seal: Bentonite		Grout: Bentonite						
Casing Type:		Diameter:	Length:	Hole Diameter: 3"	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
		0.6		SB37 @ 0-1'	0			SM	0-6": Lt brown silty sand, no odor	No Well
		0.2			1					
		0.1			2				6"-31": Red-brown silty sand, no odor	
		0.0			3					
		0.4			4			ML	3'-5': Dark red-brown sandy silt, no odor	
				SB37 @ 5-6'	5			SM	5-6': Lt brown silty sand, no odor	
					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: 9B38	Project: Bisti Landfarm
Date: 9/1/2020	Project Number: 029520002
Logged By: EC	Drilled By: LTE
Drilling Method: Hand Auger	Sampling Method: Continuous
Seal: Bentonite	Grout: Bentonite
Casing Type:	Diameter: Length: Hole Diameter: 3" 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
		2.8		9B38 0-1'	0				0-6": lt brown silty sand no odor	No well
		1.3			1			SM	6"-3': red-brown, silty sand, no odor	
		1.0			2					
		1.0			3					
		1.0			4			ML	3'-5': Dark red-brown, sandy silt, no odor	
		0.6		9B38 @ 4-6'	5			SM	5'-6': lt brown silty sand, no odor	
					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: SB39			Project: Bisti Landfarm		
Date: 9/1/2020			Project Number: 029520002		
Logged By: EC			Drilled By: LTE		
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger	
Gravel Pack:		Seal: Bentonite		Sampling Method: Continuous	
Casing Type:		Diameter:		Grout: Bentonite	
Screen Type:		Length:		Hole Diameter: 3"	
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		SB39 6-12	0				0-6", lt brown silty sand	No well
		1.0		SB39 0-12	1			SM	no odor	
		0.4			2				6"-3' = Red-brown, silty sand, no odor	
		0.1			3					
					4			ML	3'-5': Dark red-brown sandy silt, no odor	
		0.0		SB39 0-6'	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: SB40	Project: Bisti Landfarm
Date: 9/1/2020	Project Number: 029520002
Logged By: EC	Drilled By: LTE
Elevation: 6,266	Detector: PID Quantas
Gravel Pack:	Drilling Method: Hand Auger
Casing Type:	Seal: Bentonite
Screen Type:	Grout: Bentonite
Slot:	Hole Diameter: 3"
Diameter:	Depth to Liquid:
Length:	Depth to Water:
Total Depth:	

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			SM	0-1' Lt brown silty sand no odor	None
145		0.0			1					
148		0.0			2				1'-4': Red-brown silty sand, no odor	
		0.0			3					
2,124		0.0			4				4'-6': Lt brown silty sand	
1172		0.0		SB40 @ 5-6'	5			SM	no odor	
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: 51341

Project: Bisti Landfarm

Date: 9/1/2020

Project Number: 029520002

Logged By: EC

Drilled By: LTE

Elevation: 6266

Detector: PHD Quantity

Drilling Method: Hand Auger

Sampling Method: Continuous

Gravel Pack:

Seal: Bentonite

Grout: Bentonite

Casing Type:

Diameter: Length:

Hole Diameter: 3"

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
148		0.0		SBH1 @ 1-2'	0			SM	0-1': Lt brown silty sand no odor	No well
316		0.0		SBH1 @ 1-2'	1					
148		0.1			2				1-4': Red-brown silty sand no odor	
1860		0.0			3					
					4					
				SBH1 @ 4-6'	5			SM	4-6': Lt brown, silty sand, no odor	
1016		0.0			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: SB40				Project: Bisti Landfarm											
				Date: 9/1/2020				Project Number: 029520002											
Elevation: 6,266				Detector: PID Quantity				Logged By: EC				Drilled By: LTE							
Gravel Pack:				Drilling Method: Hand Auger				Sampling Method: Continuous											
Casing Type:				Seal: Bentonite				Grout: Bentonite											
Screen Type:				Diameter:				Length:				Hole Diameter: 3"				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		
268					0				0-2': Lt brown silty sand, no odor 2-4': Red-brown silty sand, no odor 4-6': Lt brown silty sand, no odor								No Well		
					1														
464					2														
1020					3														
2440				SB40 2-4'	4														
					5														
2440				SB40 4-6'	6														
					7														
					8														
					9														
					10														
					11														
					12														
					13														
					14														
					15														

 N		Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301								
		BORING LOG/MONITORING WELL COMPLETION DIAGRAM								
		Boring/Well Number: SB43	Project: Bisti Landfarm							
		Date: 9/1/2020	Project Number: 029520002							
Elevation: 6,266		Detector: PHD Quantek	Drilling Method: Hand Auger	Sampling Method: Continuous						
Gravel Pack:		Seal: Bentonite	Grout: Bentonite							
Casing Type:		Diameter:	Length:	Hole Diameter: 3"	Depth to Liquid:					
Screen Type:		Slot:	Diameter:	Length:	Depth to Water:					
Penetration Resistance	Moisture Content	Vapor (ppm) Clay	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<120			0					No Well
		2120			1			SM	0'-2': Lt brown silty sand, no odor	
		2120			2					
		2120		SB43 @ 2-3'	3				2'-4': Red-brown, silty sand, no odor	
		2120			4					
		365		SB43 @ 4-6'	5			SM	4'-6': Lt brown, silty sand, no odor	
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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

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

Handwritten notes in the log:

- At 0-6': Lt brown / red-brown silty sand, no odor
- At 6'-13': Yellow-brown, fine to medium sand, no odor
- Soil/Rock Type: SM (0-6'), SP (6'-13')
- Well Completion: No well

 Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301				BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
				Boring/Well Number: 51345				Project: Bisti Landfarm			
				Date: 9/8/2020				Project Number: 029520002			
				Logged By: CM				Drilled By: LTE			
Elevation: 6,266		Detector: PHD Quantal		Drilling Method: Hand Auger				Sampling Method: Continuous			
Gravel Pack:				Seal: Bentonite				Grout: Bentonite			
Casing Type:				Diameter:		Length:		Hole Diameter: 3"	Depth to Liquid:		
Screen Type:				Slot:		Diameter:		Length:			
								Total Depth:	Depth to Water:		

Penetration Resistance	Moisture Content	Vapor (ppm) <i>(ppm)</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		628		SB45 C01	0				0-1': Red/Lt brown silty sand, no odor SNA ↓	No well
		464			1			SM		
		268			2					
		184			3					
		418		SB45 C6'	4			SM		
					5					
					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: SB46		Project: Bisti Landfarm	
Date: 9/8/2020		Project Number: 029520002	
Logged By: EM		Drilled By: LTE	
Elevation: 6126	Detector: PHD Quanta	Drilling Method: Hand Auger	Sampling Method: Continuous
Gravel Pack:		Seal: Bentonite	Grout: Bentonite
Casing Type:		Diameter: Length:	Hole Diameter: 3" 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
		184			0					
		268			1			ML	0-1': Red-brown sandy silt, no odor	new well
		688			2					
		748		SB46 @ 4'	3			SM	2-4': Red-brown silty sand, no odor	
		948		SB46 @ 6'	4			SM	4-6': Lt brown-red silty sand, no odor	
					5					
					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: SB47					Project: Bisti Landfarm					
		Date: 9/8/2020					Project Number: 029520002					
		Logged By: CM					Drilled By: LTE					
Elevation: 6,266		Detector: PHD Quanta		Drilling Method: Hand Auger			Sampling Method: Continuous					
Gravel Pack:				Seal: Bentonite			Grout: Bentonite					
Casing Type:				Diameter:			Length:			Hole Diameter: 3"		Depth to Liquid:
Screen Type:				Slot:			Diameter:			Length:		
										Total Depth:		Depth to Water:
Penetration Resistance	Moisture Content	Vapor (ppm) <i>61 (Grain)</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks			Well Completion
		<120		SB47 @ 1'	0			ML	0-1': Red-brown silty sand, no odor			No Well
		<120			1							
		<120			2							
		<120			3			SM	1'-3': Red-brown silty sand			
		<120			4							
		<120		SB47 @ 6'	5			SM	3-6': Lt brown-red silty sand, no odor			
					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: SB48				Project: Bisti Landfarm			
Date: 7/8/2020				Project Number: 029520002			
Logged By: CM				Drilled By: LTE			
Elevation: 6,266		Detector: PHD Quantus		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:		Seal: Bentonite		Grout: Bentonite			
Casing Type:		Diameter:		Length:		Hole Diameter: 3"	Depth to Liquid:
Screen Type:		Slot:		Diameter:		Length:	Total Depth:
Depth to Water:							

Penetration Resistance	Moisture Content	Vapor (ppm) <i>(Vapor)</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		<126			0				0-3': Red/brown sandy silt, no odor	No Well
		<120			1			ML		
		<120			2					
		<120		SB48 @ 3'	3			ML	3-6': Lt brown sandy silt, no odor	
		<126			4					
		<120		SB48 @ 6'	5					
					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: SB49					Project: Bisti Landfarm				
		Date: 9/14/2020					Project Number: 029520002				
		Logged By: EC					Drilled By: LTE				
Elevation: 6,266		Detector: PID Quantix			Drilling Method: Hand Auger			Sampling Method: Continuous			
Gravel Pack:		Seal: Bentonite			Grout: Bentonite						
Casing Type:		Diameter:			Length:			Hole Diameter: 3"		Depth to Liquid:	
Screen Type:		Slot:			Diameter:			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	
		<120			0					No well.	
		<120			1			SM	0-6', brown-red silty sand, no odor		
		126			2						
		184		SB49 @ 3-4'	3						
		<126		SB49 @ 4-6'	4			SM			
					5						
					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: SB 50				Project: Bisti Landfarm			
Date: 9/14/2020				Project Number: 029520002			
Logged By: EC				Drilled By: LTE			
Elevation: 6,266		Detector: PHD Quantab		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:		Seal: Bentonite		Grout: Bentonite			
Casing Type:		Diameter:		Length:		Hole Diameter: 3"	Depth to Liquid:
Screen Type:		Slot:		Diameter:		Total Depth:	Depth to Water:



Penetration Resistance	Moisture Content	Vapor (ppm) <i>< 1 (ppm)</i>	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		148			0					No well
		< 120			1			SM	0-2': Red-brown silty sand, no odor	
		< 120			2					
		< 120			3				2-6': Lt brown silty sand, no odor	
		< 120			4					
		< 120			5			SM		
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

<div style="display: inline-block; vertical-align: middle; text-align: left;"> <div style="text-align: center; margin-bottom: 10px;"> N </div> <div> Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301 </div> </div>				BORING LOG/MONITORING WELL COMPLETION DIAGRAM			
				Boring/Well Number: JB51		Project: Bisti Landfarm	
				Date: 9/14/2020		Project Number: 029520002	
				Logged By: EC		Drilled By: LTE	
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:				Seal: Bentonite		Grout: Bentonite	
Casing Type:				Diameter:		Length:	
Screen Type:				Slot:		Diameter:	
						Hole Diameter: 3"	
						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				0-6': Lt brown-red silty sand, no odor	No well
		0.0			1			SM		
		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					

 Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301					
BORING LOG/MONITORING WELL COMPLETION DIAGRAM					
Boring/Well Number: SB52			Project: Bisti Landfarm		
Date: 9/14/2020			Project Number: 029520002		
Logged By: EC			Drilled By: LTE		
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger	
Gravel Pack:		Seal: Bentonite		Sampling Method: Continuous	
Casing Type:		Grout: Bentonite			
Screen Type:		Diameter:		Length:	
Slot:		Diameter:		Length:	
		Hole Diameter: 3"		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
		0.7		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					

 Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301							
BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
Boring/Well Number: SB53				Project: Bisti Landfarm			
Date: 9/14/2020				Project Number: 029520002			
Logged By: EC				Drilled By: LTE			
Elevation: 6126		Detector: PID		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:		Seal: Bentonite		Grout: Bentonite			
Casing Type:		Diameter:		Length:		Hole Diameter: 3"	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
		0.0			0					
		0.0		SB53 c. 1-2'	1			ML	0-3': Lt brown-red sandy silt, no odor	
		0.0			2					
		0.0			3					
		0.0			4					
		0.0		SB53 c. 4-6'	5			SM	3-6': red-brown silty sand, no odor	
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

 Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301				 N	
BORING LOG/MONITORING WELL COMPLETION DIAGRAM					
Boring/Well Number: SB54			Project: Bisti Landfarm		
Date: 9/14/2020			Project Number: 029520002		
Logged By: EL			Drilled By: LTE		
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger	
Gravel Pack:		Seal: Bentonite		Sampling Method: Continuous	
Casing Type:		Diameter:		Hole Diameter: 3"	
Screen Type:		Slot:		Depth to Liquid:	
		Diameter:		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
		1.7		SB54 @ 0-1'	0				0-6': Lt brown-red silty sand, no odor	No well
		1.5			1			SM		
		1.7			2					
		1.3			3					
		1.3			4					
		1.3		SB54 @ 4-6'	5			SM		
					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: SBSS				Project: Bisti Landfarm			
Date: 9/25/2020				Project Number: 029520002			
Logged By: JH				Drilled By: LTE			
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger		Sampling Method: Continuous	
Gravel Pack:				Seal: Bentonite		Grout: Bentonite	
Casing Type:				Diameter:		Length:	
Screen Type:				Slot:		Diameter:	
						Hole Diameter: 3"	
						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					

 Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301					
BORING LOG/MONITORING WELL COMPLETION DIAGRAM					
Boring/Well Number: SB56			Project: Bisti Landfarm		
Date: 9/29/2020			Project Number: 029520002		
Logged By: SH			Drilled By: LTE		
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger	
Gravel Pack:		Seal: Bentonite		Sampling Method: Continuous	
Casing Type:		Diameter:		Hole Diameter: 3"	
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					

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

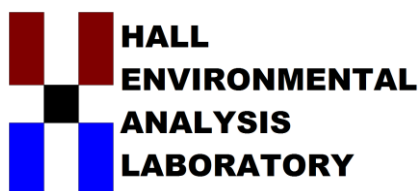
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
		0.9			0					No well
					1			SM	0-3' : Lt brown, silty sand, no odor	
		1.1		SB57 @ 1-3'	2					
		0.8			3					
		0.7			4					
		0.5			5			SM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

Advancing Opportunity 848 E. 2nd Ave Durango, Colorado 81301				N	
BORING LOG/MONITORING WELL COMPLETION DIAGRAM					
Boring/Well Number: SB59			Project: Bisti Landfarm		
Date: 9/25/2020			Project Number: 029520002		
Logged By: SH			Drilled By: LTE		
Elevation: 6,266		Detector: PID		Drilling Method: Hand Auger	
Gravel Pack:		Seal: Bentonite		Sampling Method: Continuous	
Casing Type:		Grout: Bentonite			
Screen Type:		Diameter:		Length:	
Slot:		Diameter:		Length:	
		Hole Diameter: 3"		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
				SB59	0					no well
		2.0		00-1'	1					
		1.9			2			SM	0-3': Lt brown silty sand, no odor	
		1.9			3					
		1.6			4					
		1.5			5			SM	3-6': red-brown, silty sand, no odor	
		0.9		SB59	6					
				C4-6'	6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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 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".

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		

Page 3 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 @ 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		

Page 4 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 @ 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		

Page 6 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: 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		

Page 7 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: 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		

Page 8 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: 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		

Page 9 of 10

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2008618
13-Aug-20

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

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

Sample ID: LCS-54358	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 54358	RunNo: 71009								
Prep Date: 8/12/2020	Analysis Date: 8/12/2020	SeqNo: 2475211 Units: mg/Kg								
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

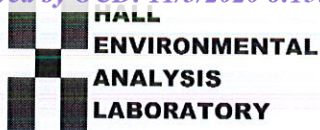
Analyte detected in the associated Method Blank
- E

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°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
Craig McCarnes
 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

Turn-Around Time: _____
☐ Standard ☒ Rush Same Day
 Project Name: Bisbi LF
 Project #: PO # 4500183756
 Project Manager: Stuart Hyde
 Sampler: E. Carroll / C McGinn
 On Ice: ☒ Yes ☐ No
 # of Coolers: 1
 Cooler Temp (including CF): 0.2 °D per 0.2 °C

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
8/11	1040	Soil	SB01 @ 3'-4'	1402	cool	2008618
	1109		SB01 @ 6'-8'			001
	1105		SB01 @ 14'-16'			002
	1145		SB02 @ 3'-4'			003
	1155		SB02 @ 4'-6'			004
	1200		SB02 @ 14'-16'			005
	1230		SB03 @ 3'-4'			006
	1231		SB03 @ 8'-10'			007
	1232		SB03 @ 10'-12'			008
						009

Relinquished by: Eddie Carroll Date: 8/11/2020 Time: 1515
 Relinquished by: Craig McCarnes Date: 8/12/20 Time: 0800



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 / 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 ⁻ , Br ⁻ , NO ₃ ⁻ , NO ₂ ⁻ , PO ₄ ³⁻ , SO ₄ ²⁻	X
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks:

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

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 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".

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		

Page 2 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@ 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		

Page 3 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: 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		

Page 4 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: 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		

Page 5 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: 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		

Page 6 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@ 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		

Page 7 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@ 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		

Page 9 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: 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		

Page 10 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: 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		

Page 11 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: 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		

Page 12 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: 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		

Page 13 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: 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		

Page 14 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: 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		

Page 15 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: 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		

Page 16 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: 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		

Page 17 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: 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		

Page 18 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: 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		

Page 19 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: 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		

Page 20 of 21

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

WO#: 2008667

19-Aug-20

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

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

Sample ID: LCS-54448	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 54448	RunNo: 71150								
Prep Date: 8/16/2020	Analysis Date: 8/16/2020	SeqNo: 2480690 Units: mg/Kg								
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: MB-54460	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 54460	RunNo: 71156								
Prep Date: 8/17/2020	Analysis Date: 8/17/2020	SeqNo: 2480954 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

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

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

Sample ID: LCS-54477	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 54477	RunNo: 71156								
Prep Date: 8/17/2020	Analysis Date: 8/17/2020	SeqNo: 2480990 Units: mg/Kg								
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

IOX

Completed By: **Leah Baca**

8/12/2020 2:45:11 PM

Leah Baca

Reviewed By: *SJA 8.12.20*

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°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 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 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		

Page 1 of 35

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		

Page 2 of 35

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		

Page 3 of 35

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		

Page 4 of 35

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		

Page 5 of 35

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		

Page 6 of 35

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		

Page 7 of 35

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		

Page 8 of 35

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		

Page 9 of 35

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		

Page 10 of 35

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		

Page 11 of 35

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		

Page 12 of 35

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
EPA METHOD 300.0: ANIONS							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.

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 13 of 35

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		

Page 14 of 35

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
EPA METHOD 300.0: ANIONS							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.

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 15 of 35

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		

Page 16 of 35

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		

Page 17 of 35

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		

Page 18 of 35

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		

Page 19 of 35

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		

Page 20 of 35

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		

Page 21 of 35

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		

Page 22 of 35

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		

Page 23 of 35

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		

Page 24 of 35

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		

Page 25 of 35

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		

Page 26 of 35

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
EPA METHOD 300.0: ANIONS							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.

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 27 of 35

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
EPA METHOD 300.0: ANIONS							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.

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 28 of 35

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		

Page 29 of 35

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		

Page 30 of 35

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		

Page 31 of 35

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		

Page 32 of 35

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		

Page 33 of 35

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		

Page 34 of 35

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

WO#: 2008700

20-Aug-20

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

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

Sample ID: LCS-54477	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 54477	RunNo: 71156								
Prep Date: 8/17/2020	Analysis Date: 8/17/2020	SeqNo: 2480990	Units: mg/Kg							
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			

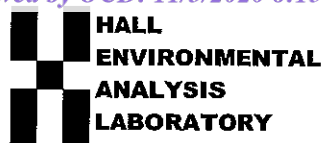
Sample ID: MB-54484	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 54484	RunNo: 71156								
Prep Date: 8/17/2020	Analysis Date: 8/17/2020	SeqNo: 2481027	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride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

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



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°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			

Chain-of-Custody Record

Client: Western Refining
Greg McCartney
 Mailing Address: 539 Main St.
Findlay, OH
 Phone #: _____
 email or Fax#: _____
 QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ AZ Compliance
☐ NELAC ☐ Other
☒ EDD (Type) PDF

Date	Time	Matrix	Sample Name
8/10/20	1324	Soil	SB2004'-8'
	1340		SB2102'-3'
	1343		SB2104'-6'
	1342		SB2104'-8'
	1410		SB2202'-3'
	1413		SB2204'-6'
	1415		SB2204'-8'
	1437		SB2302'-3'
	1428		SB2304'-6'
	1429		SB2304'-8'

Date: 8/10/20 Relinquished by: Greg Carver
 Date: 8/10/20 Relinquished by: Greg Carver
 Date: 8/10/20 Relinquished by: Greg Carver

Turn-Around Time:

☒ Standard ☐ RushProject Name: 2020Bisti TF Landfarm

Project #: _____

4500183750Project Manager: Stuart HydeSampler: C. McGinnis, E. CarrollOn Ice: ☒ Yes ☐ No# of Coolers: 4Cooler Temp (including O/F): See Remarks (°C)

Container Type and #

Preservative Type

HEAL No.

2008700

025

026

027

028

029

030

031

032

033

034

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

↓

Received by: Stuart Hyde Date: 8/10/20 Time: 1800Received by: Greg Carver Date: 8/10/20 Time: 0755Received by: Greg Carver Date: 8/10/20 Time: 0755Received by: Greg Carver Date: 8/10/20 Time: 0755Received by: Greg Carver Date: 8/10/20 Time: 0755Received by: Greg Carver Date: 8/10/20 Time: 0755Received by: Greg Carver Date: 8/10/20 Time: 0755Received by: Greg Carver Date: 8/10/20 Time: 0755

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)
 TPH:8015D(GRO / DRO / MRO)
 8081 Pesticides/8082 PCB's
 EDB (Method 504.1)
 PAHs by 8310 or 8270SIMS
 RCRA 8 Metals
 (C, F, Br, NO₃, NO₂, PO₄, SO₄)
 8260 (VOA)
 8270 (Semi-VOA)
 Total Coliform (Present/Absent)

Remarks:

Please cc: Shyde@henv.com
ecarroll@henv.com



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: 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 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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 3 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 4 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 6 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 7 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 9 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 10 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 11 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 12 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 13 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 14 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 15 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 16 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 17 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 18 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 19 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 20 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 21 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 22 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 23 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 24 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 25 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 26 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 27 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 28 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 29 of 34

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 30 of 34

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-54431	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 54431	RunNo: 71115								
Prep Date: 8/14/2020	Analysis Date: 8/17/2020	SeqNo: 2478838 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	11		10.00		105	30.4	154			

Sample ID: LCS-54431	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 54431	RunNo: 71115								
Prep Date: 8/14/2020	Analysis Date: 8/17/2020	SeqNo: 2479491 Units: mg/Kg								
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: LCS-54410	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 54410	RunNo: 71142								
Prep Date: 8/13/2020	Analysis Date: 8/14/2020	SeqNo: 2480451 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.7	70	130			
Surr: DNOP	2.4		5.000		47.2	30.4	154			

Sample ID: MB-54410	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 54410	RunNo: 71142								
Prep Date: 8/13/2020	Analysis Date: 8/14/2020	SeqNo: 2480454 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	6.0		10.00		60.2	30.4	154			

Sample ID: LCS-54467	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 54467	RunNo: 71149								
Prep Date: 8/17/2020	Analysis Date: 8/18/2020	SeqNo: 2482199 Units: mg/Kg								
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

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: mb-54403	SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: PBS	Batch ID: 54403			RunNo: 71094						
Prep Date: 8/13/2020	Analysis Date: 8/15/2020			SeqNo: 2477848		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	510		500.0		102	70	130			

Sample ID: lcs-54403	SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: LCSS	Batch ID: 54403			RunNo: 71094						
Prep Date: 8/13/2020	Analysis Date: 8/15/2020			SeqNo: 2477849		Units: mg/Kg				
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: mb-54415	SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: PBS	Batch ID: 54415			RunNo: 71105						
Prep Date: 8/13/2020	Analysis Date: 8/15/2020			SeqNo: 2478196		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	530		500.0		106	70	130			

Sample ID: lcs-54415	SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: LCSS	Batch ID: 54415			RunNo: 71105						
Prep Date: 8/13/2020	Analysis Date: 8/15/2020			SeqNo: 2478197		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.5	70	130			
Surr: BFB	540		500.0		107	70	130			

Sample ID: 2008697-016ams	SampType: MS			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: SB29 @ 0'-1'	Batch ID: 54415			RunNo: 71105						
Prep Date: 8/13/2020	Analysis Date: 8/15/2020			SeqNo: 2478199		Units: mg/Kg				
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: 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

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

Page 33 of 34

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

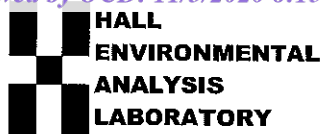
Analyte detected in the associated Method Blank
- E

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°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			

Chain-of-Custody Record

Client: Western Refining
Greg McCartney
 Mailing Address: 539 Main St
Findlay, OH
 Phone #: _____

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

Turn-Around Time:

☒ Standard ☐ Rush

Project Name:

2000 Bisti Landfarm

Project #:

4500183750

Project Manager:

Stuart HydeSampler: C. McGinnis, E. CarrollOn Ice: ☒ Yes ☐ No# of Coolers: 4Cooler Temp (including CP): See Remarks (°C)

Container Type and #

Preservative Type

HEAL No

2008697

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

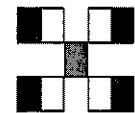
Time

Matrix

Sample Name

Date

Time



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

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

Remarks:

3.350 = 3B2
 3.950 = 3B2
 0.850205 Please CC!
 0.650 = 0.650

shyde@ibenr.com
 ecarroll@ibenr.com

Received by: Jim WaltDate: 8/12/2020Time: 1810Received by: Jim WaltDate: 8/13/2020Time: 0755

Chain-of-Custody Record

Client: Western Refining
Greg McCartney
 Mailing Address: 539 Main St.
Firdley, OH
 Phone #: _____
 email or Fax#: _____
 QA/QC Package: _____
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other _____
☒ EDD (Type) DNF

Date	Time	Matrix	Sample Name
8/12/20	1537	Soil	SB280 1'-2'
	1536		SB280 4'-6'
	1535		SB280 6'-8'
	1550		SB290 0'-1'
	1552		SB290 4'-6'
	1554		SB290 6'-8'
	1600		SB300 2'-3'
	1602		SB300 4'-6'
	1601		SB300 6'-8'
	1610		SB310 3'-4'
	1612		SB310 4'-6'
	1611		SB310 6'-8'

Relinquished by: Eddie Carroll
 Date: 8/12/20 Time: 1810
 Relinquished by: Chadwick
 Date: 8/12/20 Time: 1914

Turn-Around Time: ☒ Standard ☐ Rush
 Project Name: 2020 Bisti Landfill
 Project #: 4500183750
 Project Manager: Stuart Hyde

Sampler: C. McCartney, E. Carroll
 On Ice: ☒ Yes ☐ No
 # of Coolers: 1
 Cooler Temp (including CF): See Remarks (°C)
 Container Type and #
 Preservative Type
 HEAL No
2008097

Container Type and #	Preservative Type	HEAL No
4 oz jar	COOL	013
		014
		015
		016
		017
		018
		019
		020
		021
		022
		023
		024

Received by: Chadwick
 Date: 8/12/20 Time: 1810
 Received by: Chadwick
 Date: 8/13/20 Time: 0755



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

BTX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								
X	X								

Remarks: cc: sh Hyde@tenv.com
 ecarroll@tenv.com

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Chain-of-Custody Record									
Client: <u>Western Refining</u>		Turn-Around Time: <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush		Project Name: <u>Bisbi LF</u>					
Mailing Address: <u>539 main st.</u>		Project #: <u>4500183750</u>		Project Manager: <u>Stuart Hyde</u>					
Phone #: _____		Project Manager: <u>Stuart Hyde</u>		Sampler: <u>E. Carroll / C. McGinn</u>					
QA/QC Package: <u>Level 4 (Full Validation)</u>		On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		# of Coolers: <u>4</u>		Cooler Temp (including CF): <u>See Remarks</u> (°C)		Container Type and #	
Accreditation: <input type="checkbox"/> Az Compliance <input type="checkbox"/> NELAC		Cooler Temp (including CF): <u>See Remarks</u> (°C)		Container Type and #		Preservative Type		HEAL No	
<input checked="" type="checkbox"/> EDD (Type) <u>PDE</u>		Cooler Temp (including CF): <u>See Remarks</u> (°C)		Container Type and #		Preservative Type		HEAL No	
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No			
8/17	1620	Soil	SB320 1'-2'	1402	Coal	025			
	1618		SB320 4'-6'			026			
	1615		SB320 6'-8'			027			
	1630		SB330 3'-4'			028			
	1628		SB330 4'-6'			029			
	1627		SB330 6'-8'			030			
<div style="position: absolute; bottom: 10px; right: 10px; text-align: right;"> Received by: <u>Stuart Wade</u> Date: <u>8/12/2020</u> Time: <u>1810</u> Received by: <u>Mr. Carroll</u> Date: <u>8/13/20</u> Time: <u>0750</u> </div>									

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



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: 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 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 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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 3 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 4 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 6 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 7 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 9 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 10 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 11 of 26

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 12 of 26

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		

Page 13 of 26

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		

Page 14 of 26

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		

Page 15 of 26

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		

Page 16 of 26

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
EPA METHOD 300.0: ANIONS							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.

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 17 of 26

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
EPA METHOD 300.0: ANIONS							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.

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 18 of 26

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		

Page 19 of 26

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		

Page 20 of 26

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		

Page 21 of 26

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		

Page 22 of 26

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

WO#: 2009086

09-Sep-20

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

Sample ID: MB-54886	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 54886	RunNo: 71554								
Prep Date: 9/2/2020	Analysis Date: 9/2/2020	SeqNo: 2501564	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-54886	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 54886	RunNo: 71554								
Prep Date: 9/2/2020	Analysis Date: 9/2/2020	SeqNo: 2501565	Units: mg/Kg							
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: 2009086-001AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: SB34 @1'	Batch ID: 54891	RunNo: 71526								
Prep Date: 9/2/2020	Analysis Date: 9/2/2020	SeqNo: 2500726 Units: mg/Kg								
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: 2009086-001AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: SB34 @1'	Batch ID: 54891	RunNo: 71526								
Prep Date: 9/2/2020	Analysis Date: 9/2/2020	SeqNo: 2500727 Units: mg/Kg								
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: LCS-54891	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 54891	RunNo: 71526								
Prep Date: 9/2/2020	Analysis Date: 9/2/2020	SeqNo: 2500763 Units: mg/Kg								
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: MB-54891	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 54891	RunNo: 71526								
Prep Date: 9/2/2020	Analysis Date: 9/2/2020	SeqNo: 2500765 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.2		10.00		92.2	30.4	154			

Sample ID: LCS-54907	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 54907	RunNo: 71526								
Prep Date: 9/2/2020	Analysis Date: 9/4/2020	SeqNo: 2502752 Units: %Rec								
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: 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

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

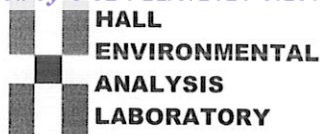
Sample ID: mb-54841	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 54841	RunNo: 71546								
Prep Date: 9/1/2020	Analysis Date: 9/2/2020	SeqNo: 2500649	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.1	75.3	105			

Sample ID: lcs-54841	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 54841	RunNo: 71546								
Prep Date: 9/1/2020	Analysis Date: 9/2/2020	SeqNo: 2500650	Units: mg/Kg							
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°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

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 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: 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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	1500	60		mg/Kg	20	9/9/2020 10:14:03 AM	55039
----------	------	----	--	-------	----	----------------------	-------

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	370	59		mg/Kg	20	9/9/2020 10:26:23 AM	55039
----------	-----	----	--	-------	----	----------------------	-------

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	1600	60		mg/Kg	20	9/9/2020 10:38:43 AM	55039
----------	------	----	--	-------	----	----------------------	-------

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	1900	60		mg/Kg	20	9/9/2020 10:51:04 AM	55039
----------	------	----	--	-------	----	----------------------	-------

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	82	60		mg/Kg	20	9/9/2020 11:03:23 AM	55039
----------	----	----	--	-------	----	----------------------	-------

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

Page 1 of 3

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	63	60		mg/Kg	20	9/9/2020 11:15:44 AM	55039
----------	----	----	--	-------	----	----------------------	-------

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	60		mg/Kg	20	9/9/2020 11:28:05 AM	55039
----------	----	----	--	-------	----	----------------------	-------

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
----------	--------	----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	60		mg/Kg	20	9/9/2020 11:40:26 AM	55039
----------	----	----	--	-------	----	----------------------	-------

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

Page 2 of 3

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

WO#: 2009470

11-Sep-20

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

Sample ID: MB-55039	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 55039	RunNo: 71694								
Prep Date: 9/9/2020	Analysis Date: 9/9/2020	SeqNo: 2509421	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-55039	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 55039	RunNo: 71694								
Prep Date: 9/9/2020	Analysis Date: 9/9/2020	SeqNo: 2509422	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.8	90	110			

Qualifiers:

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

Page 3 of 3



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: *ma* 9/9/20

Hansen

Chain of Custody

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

Log In

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

of preserved
bottles checked
for pH:
(<2 or >12 unless noted)
Adjusted? _____

Checked by: *je 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

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 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 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		

Page 1 of 15

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		

Page 2 of 15

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		

Page 3 of 15

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
EPA METHOD 300.0: ANIONS							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.

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 4 of 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 6 of 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 7 of 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 9 of 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 10 of 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 11 of 15

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
EPA METHOD 8015D MOD: GASOLINE RANGE							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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							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.

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 12 of 15

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

WO#: 2009752

17-Sep-20

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

Sample ID: MB-55172	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 55172	RunNo: 71878								
Prep Date: 9/15/2020	Analysis Date: 9/15/2020	SeqNo: 2515816	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-55172	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 55172	RunNo: 71878								
Prep Date: 9/15/2020	Analysis Date: 9/15/2020	SeqNo: 2515817	Units: mg/Kg							
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: LCS-55169	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 55169		RunNo: 71855							
Prep Date: 9/15/2020	Analysis Date: 9/15/2020		SeqNo: 2514989		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.8	70	130			
Surr: DNOP	4.4		5.000		88.4	30.4	154			

Sample ID: MB-55169	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 55169		RunNo: 71855							
Prep Date: 9/15/2020	Analysis Date: 9/15/2020		SeqNo: 2514990		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.1	30.4	154			

Sample ID: 2009752-005AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: SB51 @ 0'-1'	Batch ID: 55169		RunNo: 71855							
Prep Date: 9/15/2020	Analysis Date: 9/15/2020		SeqNo: 2515495		Units: mg/Kg					
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: 2009752-005AMSD	SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: SB51 @ 0'-1'	Batch ID: 55169		RunNo: 71855							
Prep Date: 9/15/2020	Analysis Date: 9/15/2020		SeqNo: 2515496		Units: mg/Kg					
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

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

WO#: 2009752

17-Sep-20

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

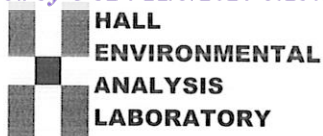
Sample ID: lcs-55150	SampType: LCS				TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID: LCSS	Batch ID: 55150				RunNo: 71876					
Prep Date: 9/14/2020	Analysis Date: 9/15/2020				SeqNo: 2515733	Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.0	70	130			
Surr: BFB	500		500.0		99.1	70	130			

Sample ID: mb-55150	SampType: MBLK				TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID: PBS	Batch ID: 55150				RunNo: 71876					
Prep Date: 9/14/2020	Analysis Date: 9/15/2020				SeqNo: 2515734	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	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

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 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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: mb
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
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.

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 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: mb
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
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.

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 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: mb
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
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.

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 3 of 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: mb
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
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.

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 4 of 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: mb
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
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.

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 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: mb
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
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.

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 6 of 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 7 of 12

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
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: BRM
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
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
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.

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 12

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

WO#: 2009G46

05-Oct-20

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

Sample ID: 2009G46-001AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: SB55@0-1'	Batch ID: 55461	RunNo: 72183								
Prep Date: 9/26/2020	Analysis Date: 9/28/2020	SeqNo: 2530695 Units: mg/Kg								
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: 2009G46-001AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: SB55@0-1'	Batch ID: 55461	RunNo: 72183								
Prep Date: 9/26/2020	Analysis Date: 9/28/2020	SeqNo: 2530696 Units: mg/Kg								
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: LCS-55461	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 55461	RunNo: 72183								
Prep Date: 9/26/2020	Analysis Date: 9/28/2020	SeqNo: 2530703 Units: mg/Kg								
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: MB-55461	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 55461	RunNo: 72183								
Prep Date: 9/26/2020	Analysis Date: 9/28/2020	SeqNo: 2530704 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	8.8		10.00		88.1	30.4	154			

Sample ID: LCS-55574	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 55574	RunNo: 72293								
Prep Date: 9/30/2020	Analysis Date: 9/30/2020	SeqNo: 2535442 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.5	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: 2.5ug gro lcs	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: G72180			RunNo: 72180						
Prep Date:	Analysis Date: 9/26/2020			SeqNo: 2530540		Units: mg/Kg				
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: 2009g46-001ams	SampType: MS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: SB55@0-1'	Batch ID: G72180			RunNo: 72180						
Prep Date:	Analysis Date: 9/26/2020			SeqNo: 2530559		Units: mg/Kg				
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: 2009g46-001amsd	SampType: MSD			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: SB55@0-1'	Batch ID: G72180			RunNo: 72180						
Prep Date:	Analysis Date: 9/26/2020			SeqNo: 2530560		Units: mg/Kg				
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: mb1	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch ID: G72180			RunNo: 72180						
Prep Date:	Analysis Date: 9/26/2020			SeqNo: 2530568		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	950		1000		95.4	75.3	105			

Sample ID: lcs-55562	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: 55562			RunNo: 72298						
Prep Date: 9/30/2020	Analysis Date: 10/1/2020			SeqNo: 2537035		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.4	72.5	106			
Surr: BFB	960		1000		95.7	75.3	105			

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

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-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

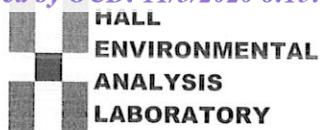
Analyte detected in the associated Method Blank
- E

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°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:

(≤ 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		Turn-Around Time:
Client:	Western Refining Southwest	<input type="checkbox"/> Standard <input checked="" type="checkbox"/> Rush <u>Next Day</u>
	Greg McCartney	Project Name:
Mailing Address:		Bighi Landfarm

Turn-Around Time: ☐ Standard ☒ Rush Next Day

Project Name: Bisti Landform

Phone #:		Project #:	PO # 4500183750
----------	--	------------	-----------------

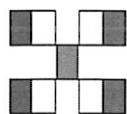
email or Fax#:	Project Manager:
QA/QC Package:	Stuart Hyde, UTE
<input checked="" type="checkbox"/> Standard	
<input type="checkbox"/> Level 4 (Full Validation)	

Accreditation:	<input type="checkbox"/> Az Compliance
<input type="checkbox"/> NELAC	<input type="checkbox"/> Other _____
<input type="checkbox"/> EDD (Type) _____	
Sampler:	
On Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
# of Coolers:	1

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	Cooler Temp (including CF): 1.6 ± 0.1.6 (°C)
9/15/00	1030	Soil	SB55 C 0-1'	9140765	---	2009646	
	1035		SB55 C 5-6'			-001	
	1100		SB56 C 0-1'			-002	
	1110		SB56 C 5-6'			-003	
	1120		SB57 C 1-2'			-004	
	1125		SB57 C 5-6'			-005	
	1145		SB58 C 0-1'			-006	
	1150		SB58 C 5-6'			-007	
	1210		SB59 C 0-1'			-008	
	1215		SB59 C 5-6'			-009	
	1230		SB60 C 1-2'			-010	
	1235		SB60 C 5-6'			-011	
						-012	

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9/15/2020	1331				9/25/2020	1331
9/25/2020	1503				9/26/2020	0924

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



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

[illegible]

Remarks:

Please Hold
0935-8525
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 _x Emissions	Onsite SO _x Emissions	Onsite PM ₁₀ Emissions	Total NO _x Emissions	Total SO _x Emissions	Total PM ₁₀ 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

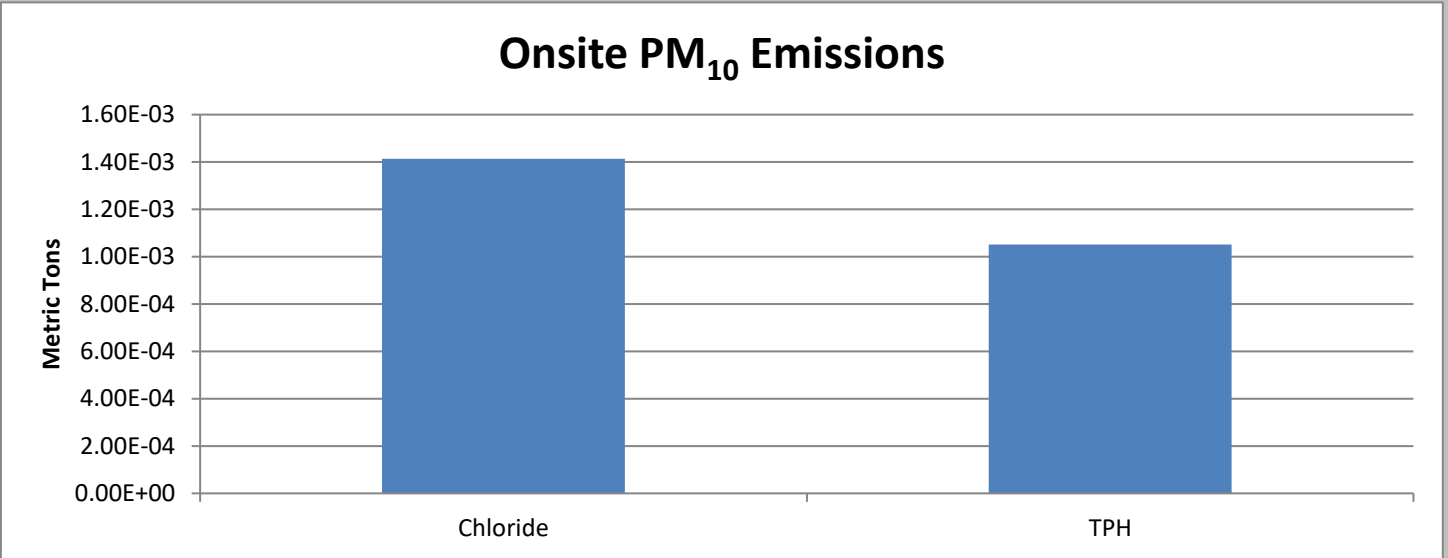
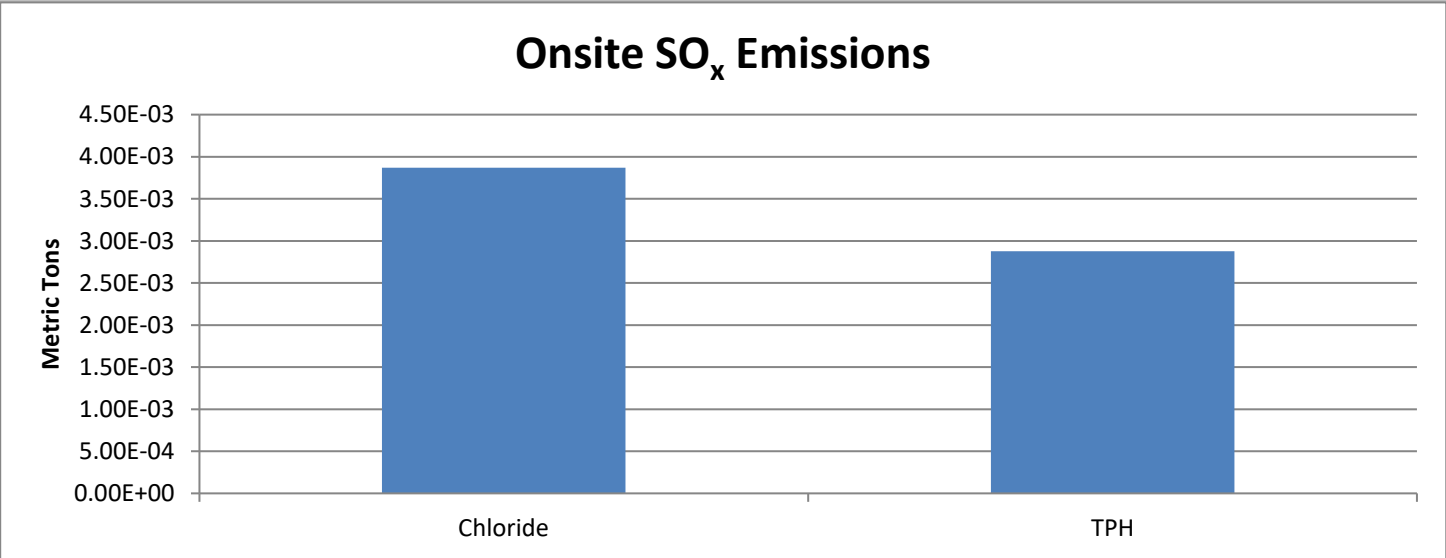
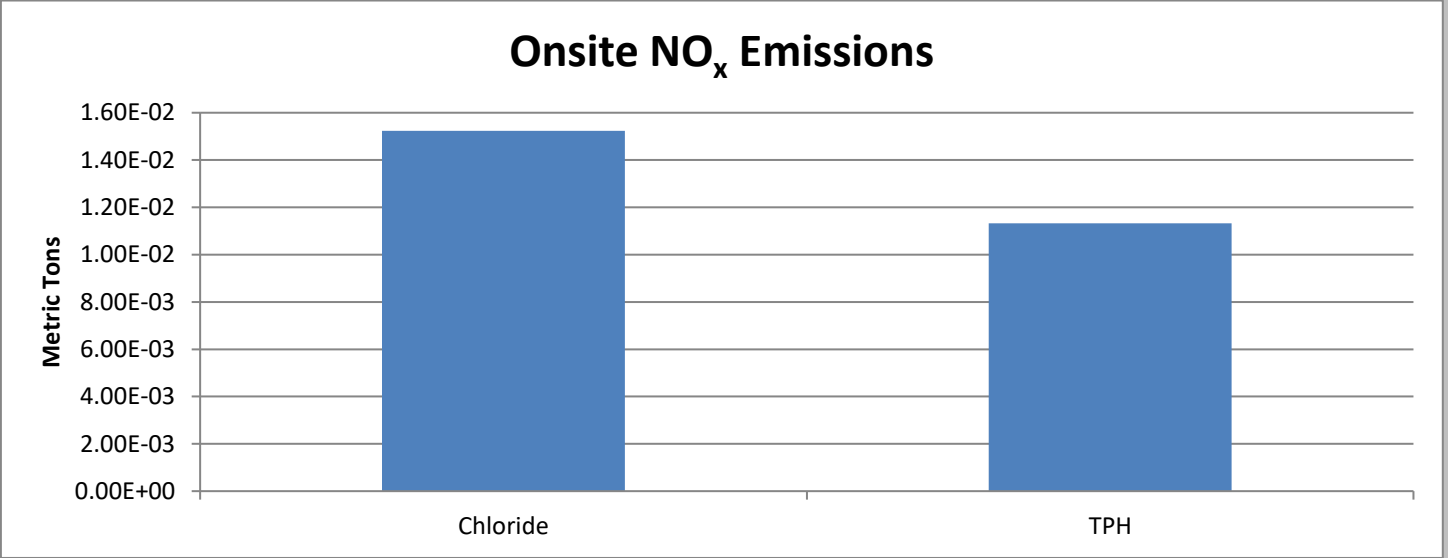
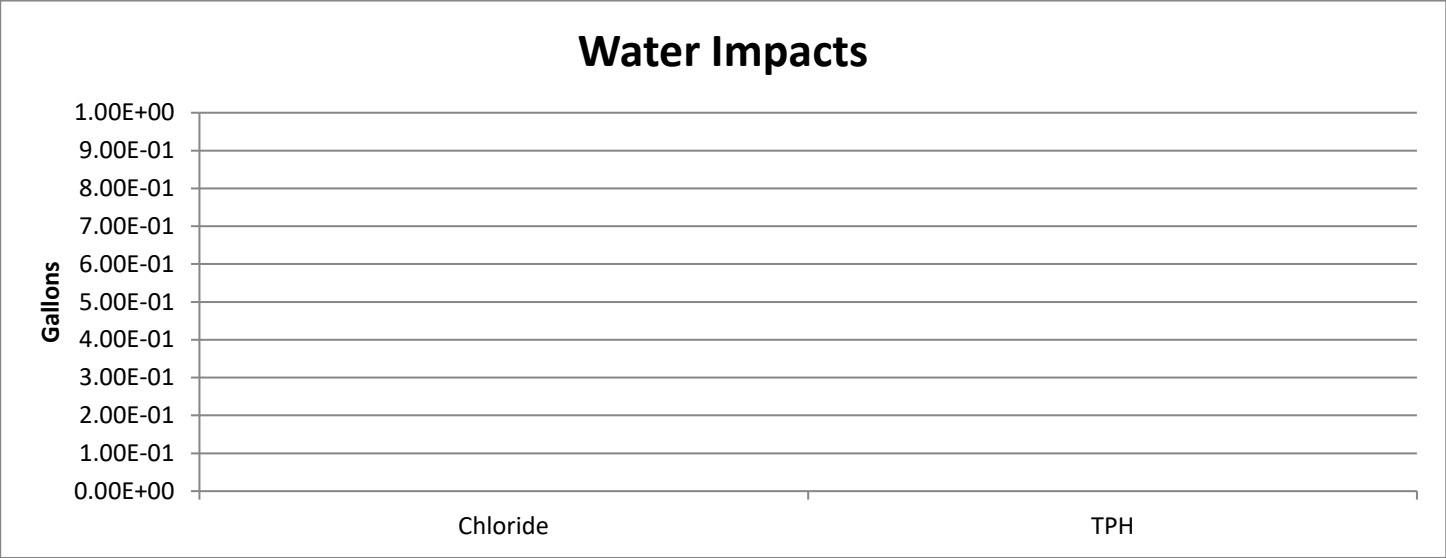
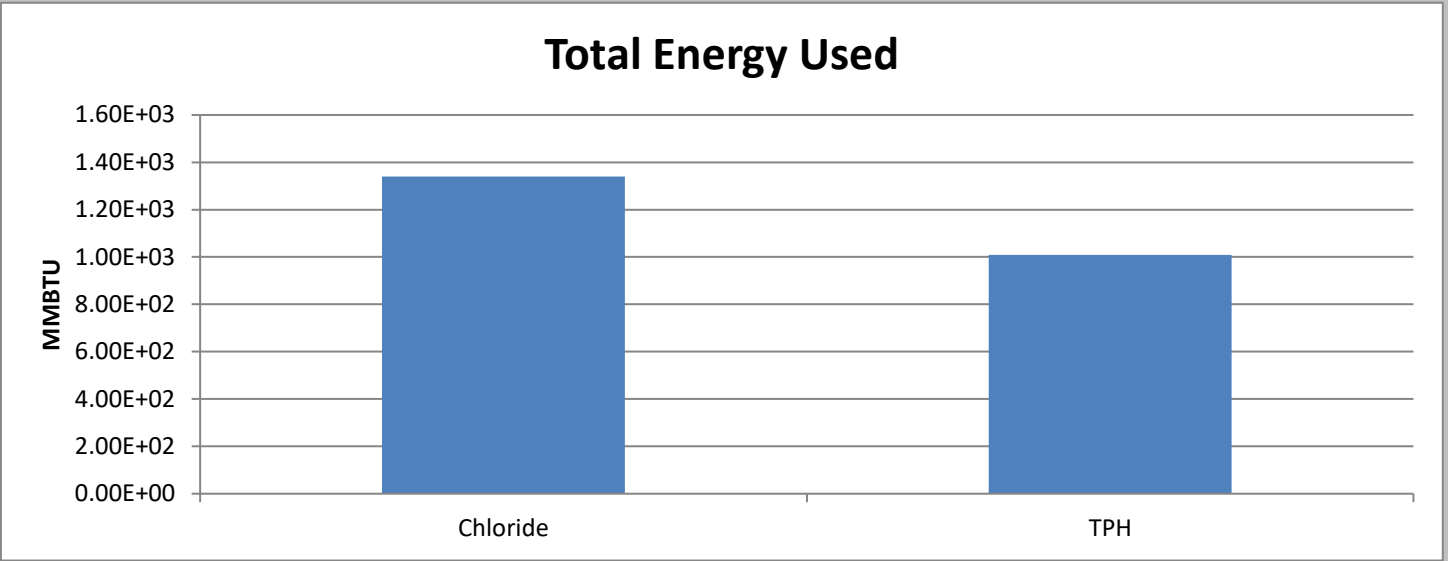
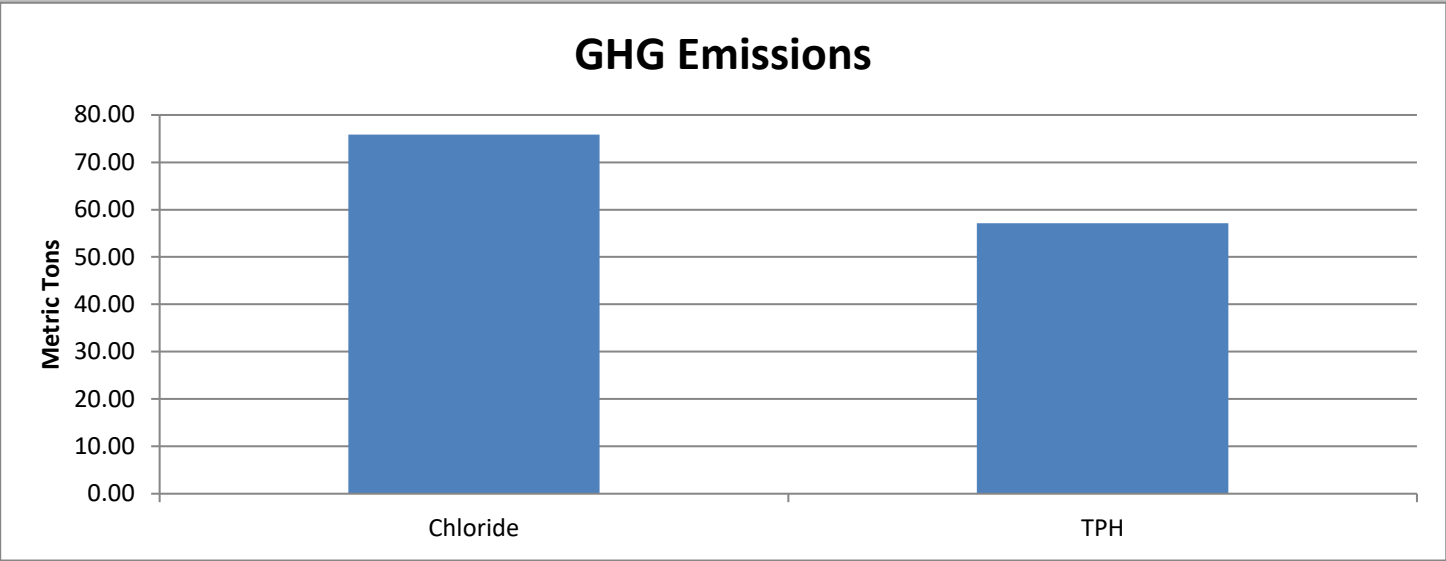
Relative Impact

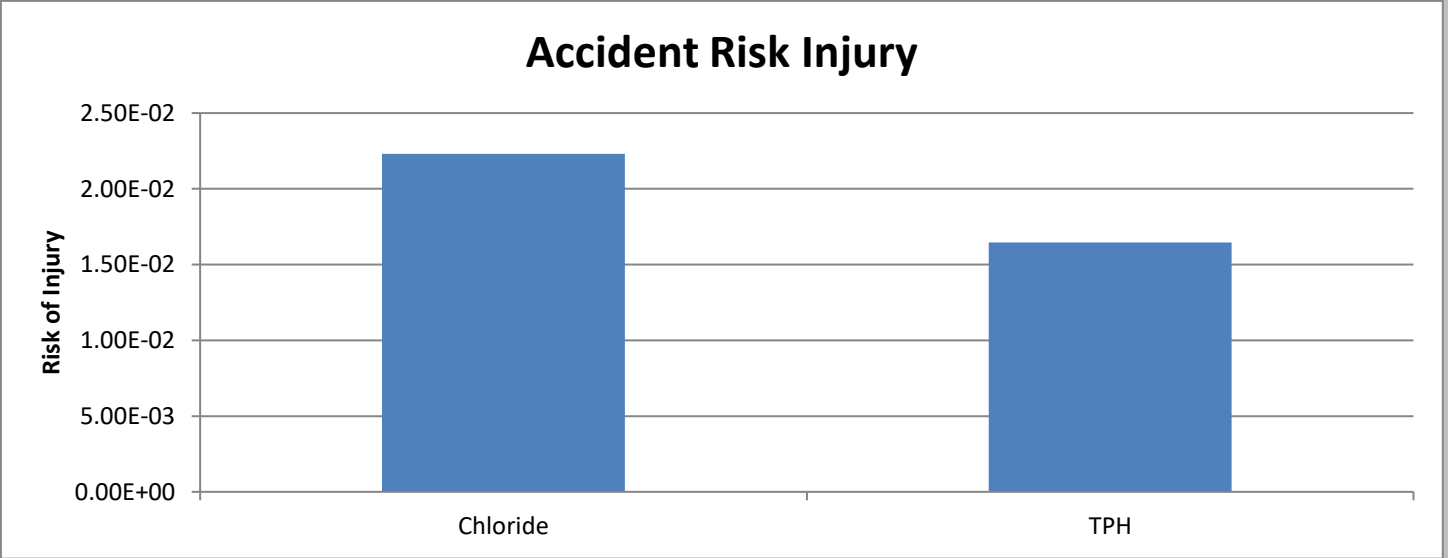
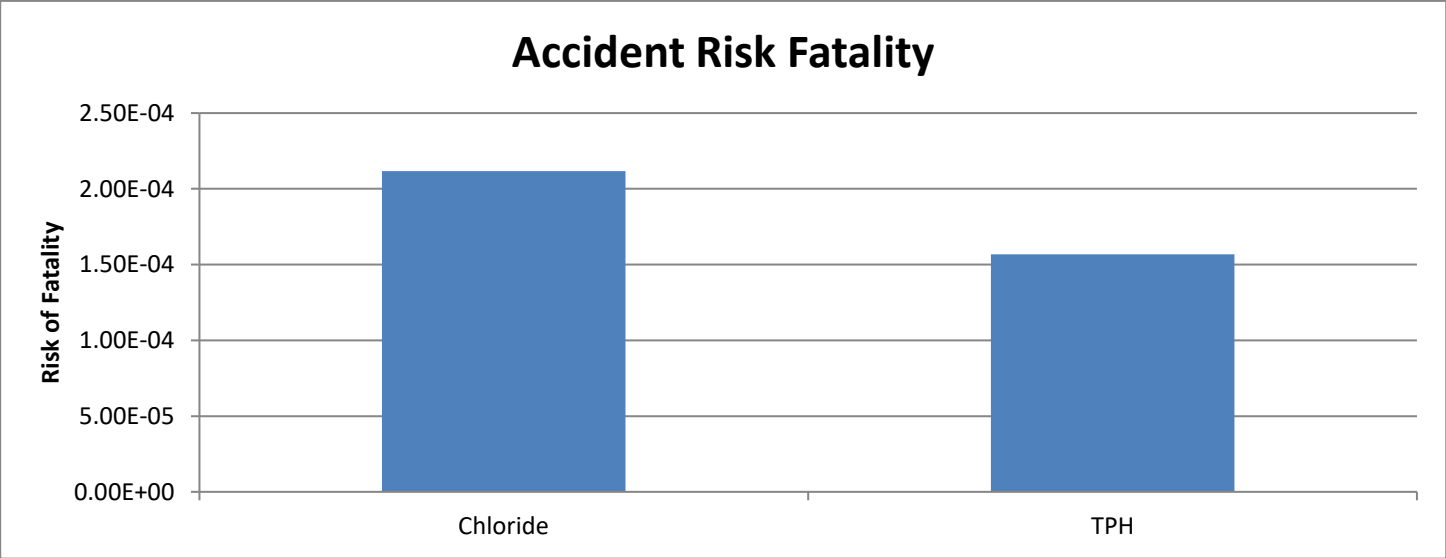
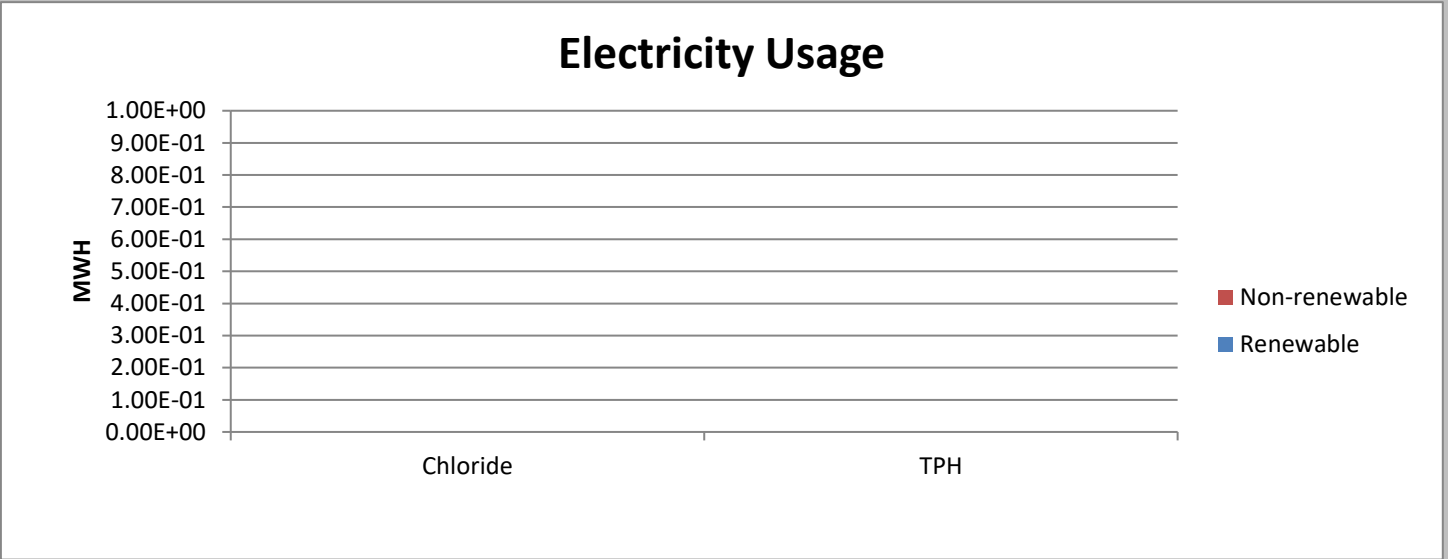
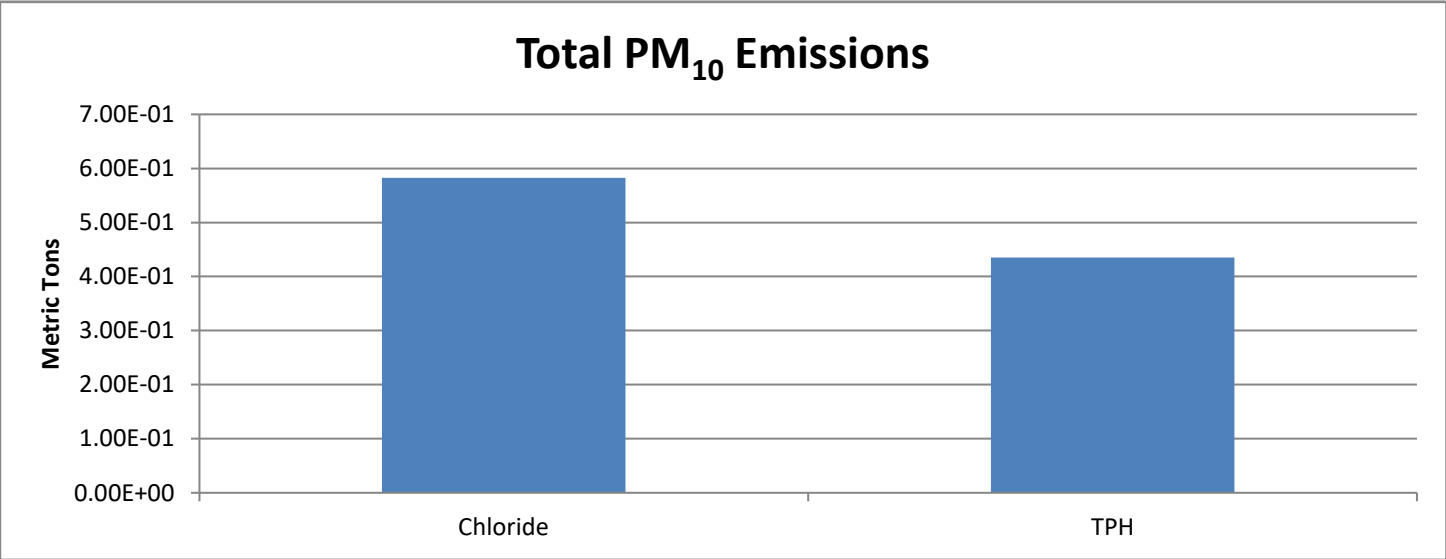
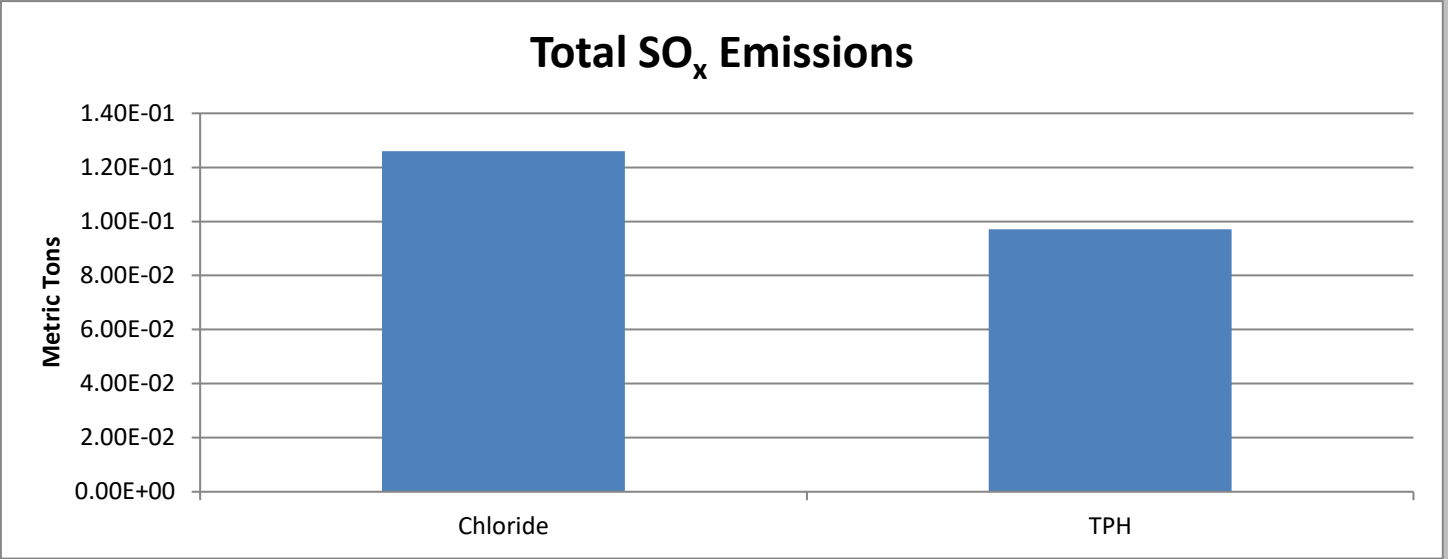
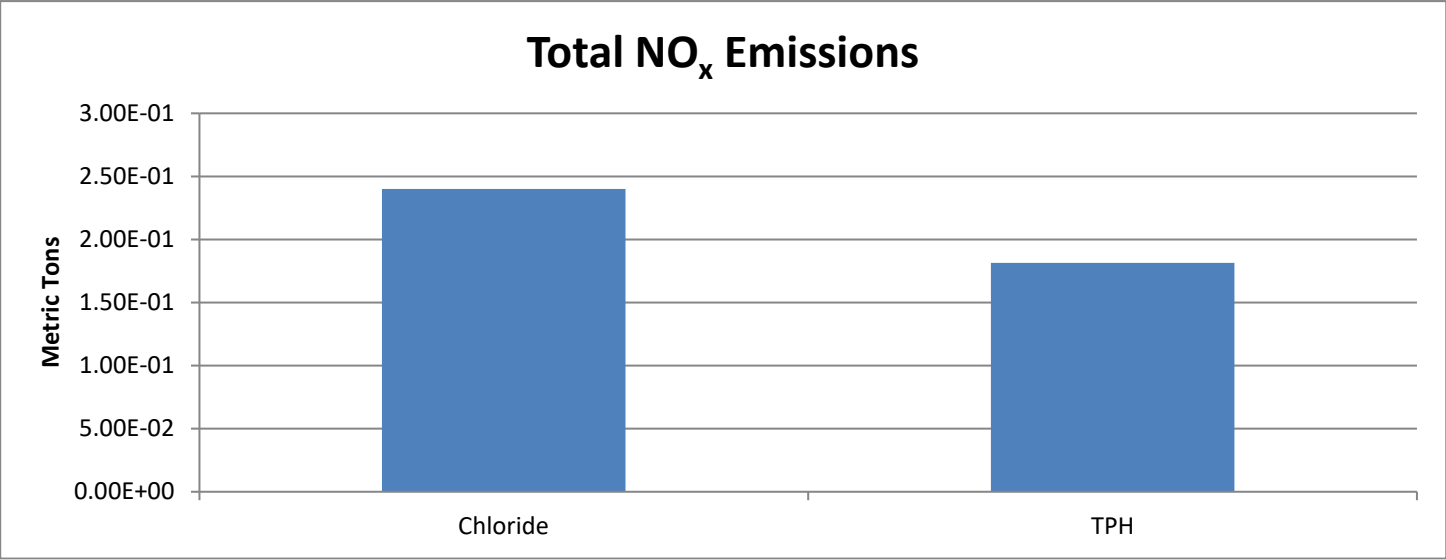
Remedial Alternatives	GHG Emissions	Energy Usage	Water Usage	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx emissions	Total SOx Emissions	Total PM10 Emissions	*Accident Risk Fatality	*Accident Risk Injury	Community Impacts	Resources Lost
Chloride	High	High	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)

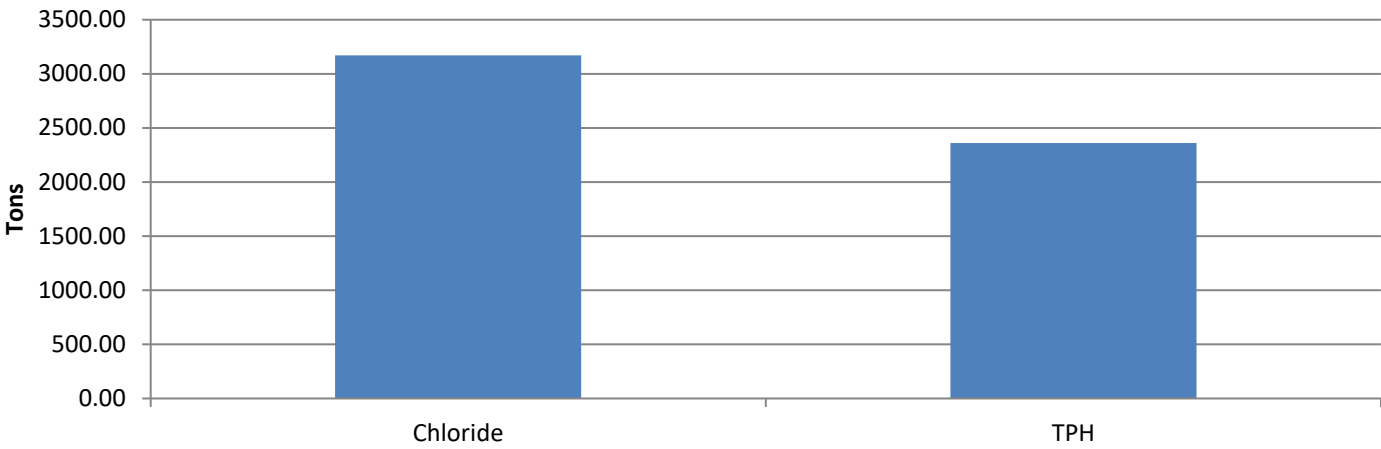
Remedial Alternatives	GHG Emissions	Energy Usage	Water Usage	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx Emissions	Total SOx Emissions	Total PM10 Emissions	*Accident Risk Fatality	*Accident Risk Injury	Community Impacts	Resources Lost
Chloride	High	High	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.

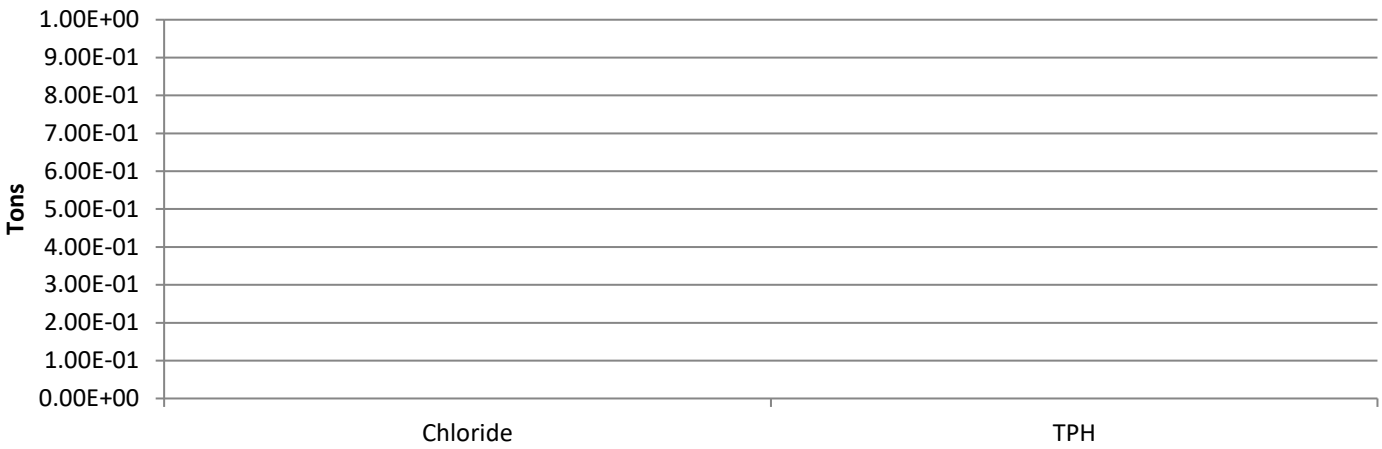




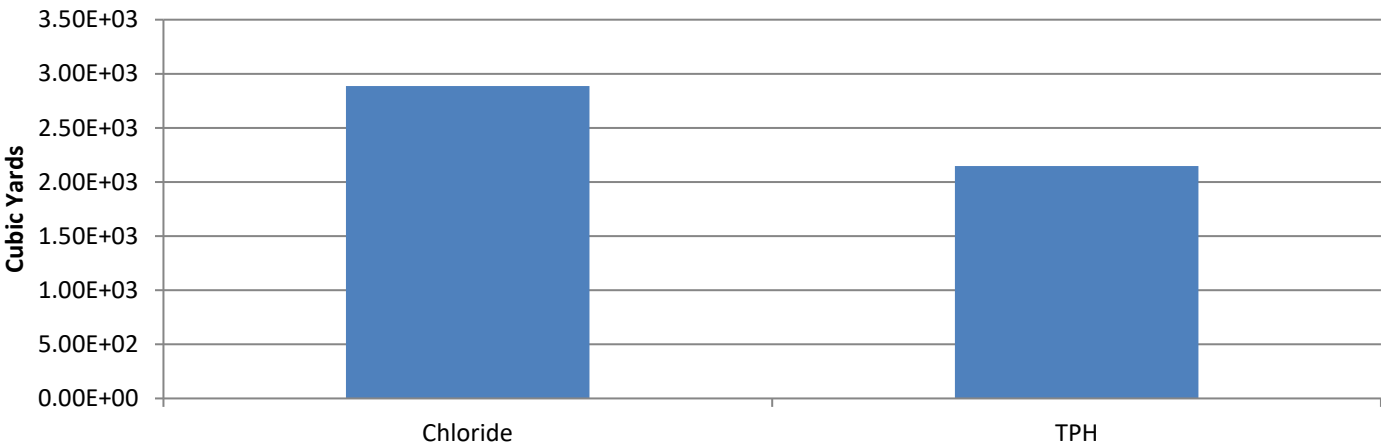
Non-Hazardous Waste Landfill Space



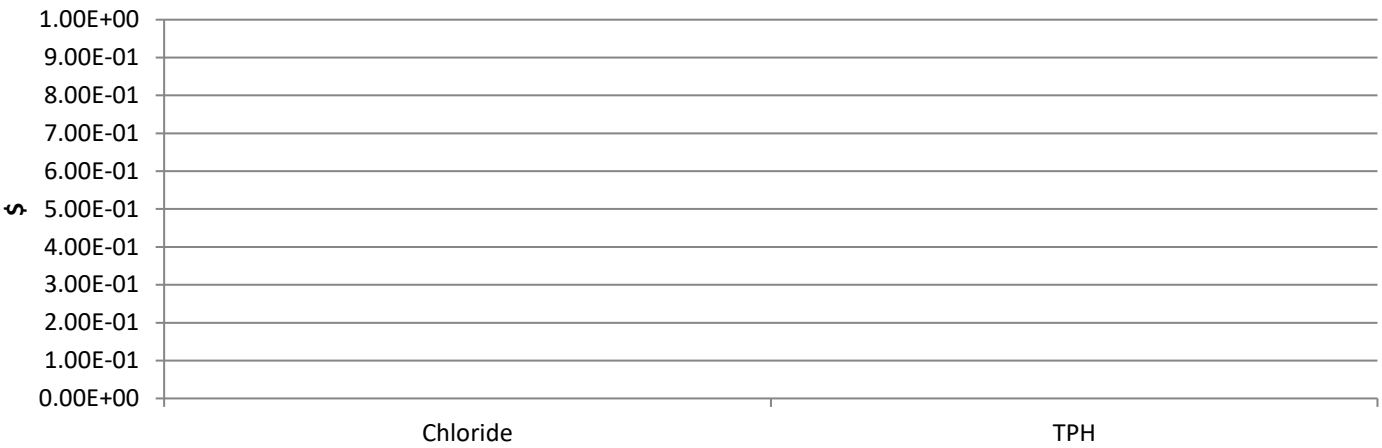
Hazardous Waste Landfill Space



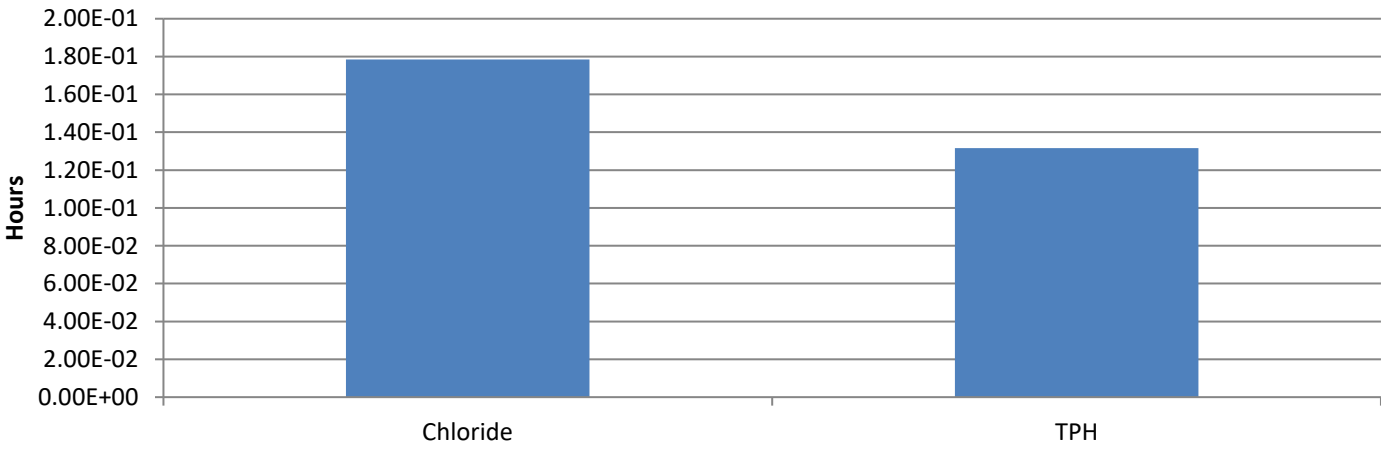
Topsoil Consumption



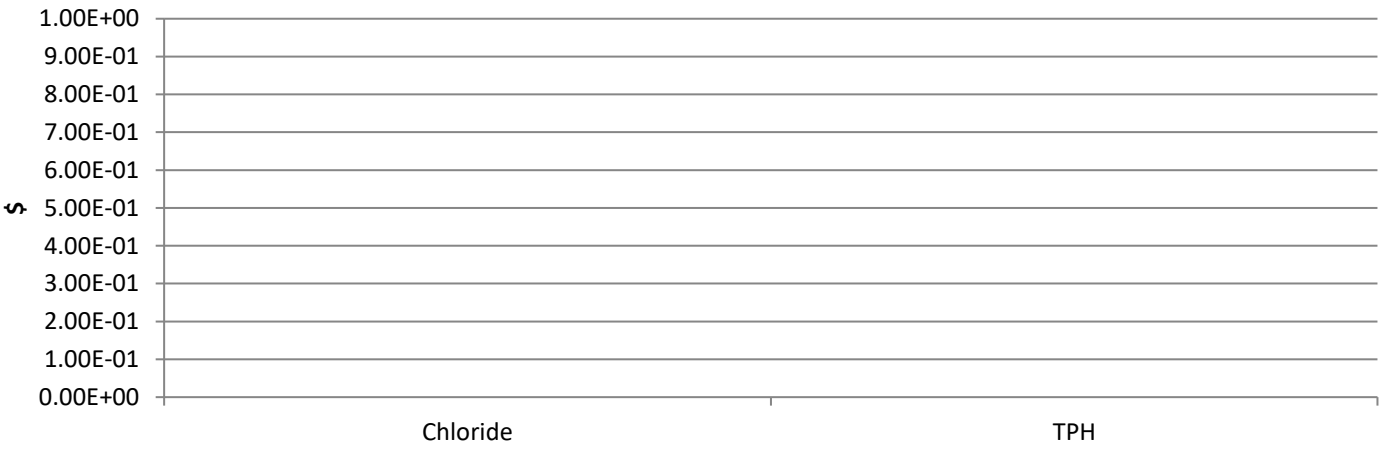
Costing

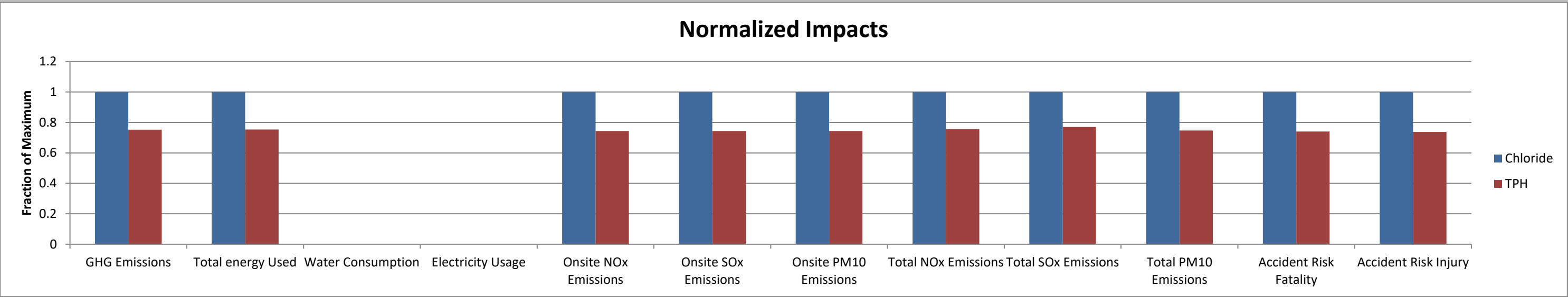


Lost Hours - Injury



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