ENSOLUM

March 29, 2023

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

Re: 2022 Annual Compliance Monitoring Report
Bisti Landfarm
San Juan County, New Mexico
Western Refining Southwest LLC
NMOCD Permit Number: NM2-10

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Western Refining Southwest LLC (Western), presents this *2022 Annual Compliance Monitoring Report* detailing compliance soil sampling completed between January 2022 and December 2022 in order to monitor soil remediation at the Bisti Landfarm (Site), permit number NM2-10, in rural San Juan County, New Mexico.

SITE BACKGROUND

The Site occupies approximately 28 acres in Section 16, Township 25 North, Range 12 West in San Juan County, New Mexico (Figure 1). It is located on a 640-acre parcel of land, which is privately owned by Western. In 1998, Giant Industries, Arizona (Giant) permitted the Site as a surface waste management facility (commonly referred to as a landfarm) through the New Mexico Oil Conservation Division (NMOCD) under former Rule 711. Petroleum hydrocarbon impacted soil was originally disposed at the Site in three treatment cells based on the origin of the soil: the API Cell, Crude Cell, and Cell 1 (Figure 2). The Crude Cell is further divided into four source zones containing material originating from Pettigrew, East Line, West Line, and Bisti. No new cells or lifts (soil horizons placed on top of previous horizons) 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.

In 2007, the NMOCD promulgated a new rule, Title 19, Chapter 15, Part 36 (19.15.36) of the New Mexico Administrative Code (NMAC, also referred to as Rule 36) pertaining to surface waste management facilities and required compliance with the new transitional provisions. Western acquired the Site from Giant in June 2007. Western has continued to monitor and maintain the API Cell and the Crude Cell using Rule 711 and provisional requirements of Rule 36.

2022 COMPLIANCE SAMPLING ACTIVITIES AND RESULTS

The scope of work for this report consisted of semi-annual treatment zone and vadose zone soil sampling as required by 19.15.36 NMAC for operation of a landfarm, as well as quarterly and annual vadose zone soil sampling required by the original Rule 711 Permit NM2-10. Soil sampling

was conducted to monitor the natural attenuation of contaminants of concern (COCs) in the treatment zone and to monitor potential vertical migration of COCs into the vadose zone.

During each sampling event, soil samples were labeled with the date and time of collection, sample name, sample collector's name, and parameters to be analyzed. Strict chain-of-custody protocol was documented, including the date and time sampled, sample number, type of sample, sample collector's name and signature, preservative used, and analyses required. All collected samples were placed on ice and sealed in a cooler for delivery to Hall Environmental Analysis Laboratory, Inc. (Hall) in Albuquerque, New Mexico, for analysis.

A summary of field activities, laboratory analytical soil sampling results, and conclusions are presented in the subsequent sections of this report.

SEMI-ANNUAL TREATMENT ZONE MONITORING

Semi-annual samples were collected on February 10, 2022 and September 22, 2022 from treatment zone soils in the API and Crude cells. These sampling events fulfilled the semi-annual requirements of 19.15.36 NMAC for treatment zone sampling and monitoring. Four soil aliquots from discrete locations within each treatment cell were collected at approximately 6 inches below ground surface (bgs) and composited in a 1-gallon plastic bag. The soil within the bag was thoroughly homogenized before filling clean glass sampling jars provided by the laboratory. The API Cell treatment zone samples included four discrete sample aliquots collected from within the cell. The Crude Cell treatment zone samples included four discrete aliquots: one sample each from the Pettigrew, Bisti, West Line, and East Line source areas (Figure 2). Treatment zone samples were analyzed for the following COCs: total petroleum hydrocarbons (TPH) following United States Environmental Protection Agency (EPA) Method 418.1 or 8015M/D and chloride following EPA Method 300.0.

Analytical results indicate TPH and chloride concentrations from all soil samples from the two semi-annual events were either not detected above the laboratory practical quantitation limit (PQL, also known as reporting limit) or were detected at concentrations in compliance with the Treatment Zone Closure Performance Standards presented in 19.15.36.15 NMAC. Analytical results are summarized in Table 1, with complete laboratory reports attached as Appendix A.

QUARTERLY AND SEMI-ANNUAL VADOSE ZONE MONITORING

Discrete vadose zone samples were collected on February 10, June 20, September 22, and December 19, 2022 from the two active landfarm cells (API and Crude Cells) to fulfill requirements for Rule 711 quarterly sampling. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) following EPA Method 8021B and TPH following EPA Method 8015M or EPA Method 418.1. During the February and September 2022 sampling events, vadose zone soil samples were additionally analyzed for chloride following EPA Method 300.0 to fulfill requirements under 19.15.36 NMAC for semi-annual sampling. All vadose zone soil samples were collected from approximately 3 feet below the native ground surface (3 feet below treatment zone soils). Following the collection of discrete soil samples, the boreholes were backfilled with hydrated bentonite from the borehole terminus to the existing ground surface.

The number of vadose zone soil samples collected within each cell was dependent on the size of the cell and consistent with historical sampling events. Four discrete soil samples were collected from the API Cell vadose zone. In addition, four discrete soil samples were collected from the Crude Cell consisting of one discrete sample collected from each source area of the cell (Pettigrew, East Line, West Line and Bisti source areas). Figure 3 depicts all vadose zone soil sample locations.

Analytical results from the first quarter sampling event (February 10, 2022) indicated chloride concentrations in soil from East Line Vadose Zone and API 2 Vadose were detected above the Site background concentration/laboratory PQL. Chloride, TPH, and BTEX concentrations were not detected in any of the remaining soil samples above the Site background/laboratory PQLs. Analytical results from the third quarter sampling event (September 22, 2022) indicated chloride concentrations in soil from Pettigrew Vadose Zone, API 3 Vadose, and API 4 Vadose were detected above the Site background concentration/laboratory PQL. Chloride, TPH, and BTEX concentrations were not detected in any of the remaining soil samples above the Site background/laboratory PQLs.

Lastly, analytical results collected during the second and fourth quarter sampling events (June 20 and December 19, 2022) indicated TPH, BTEX, and/or chloride concentrations did not exceed background/laboratory PQL concentrations in any of the collected soil samples. Analytical results are summarized in Table 2, with complete laboratory reports attached as Appendix A. Sample locations are shown on Figure 3. Figure 3 also presents chloride and TPH concentration isocontours based on chloride and TPH delineation activities performed at the Site in 2020 to address historical releases. Additional information regarding the delineation effort can be found in the *Site Characterization Report and Variance Request* prepared by LT Environmental, Inc. and dated October 2020.

ANNUAL VADOSE ZONE MONITORING

To address annual sampling requirements in the original Rule 711 permit, vadose zone soil samples were collected from the API Cell and from each source area of the Crude Cell (Pettigrew, East Line, West Line and Bisti) to be analyzed for the following additional COCs: major anions/cations (alkalinity, calcium, magnesium, potassium, sodium, and sulfate) and heavy metals (arsenic, barium, cadmium, chromium, lead, mercury selenium, and silver) following EPA Methods ASA10-3, 300.0, 6010B, 6020A, and/or 7471B.

Of these constituents, calcium, chromium, lead, magnesium, potassium, and sulfate concentrations exceeded their respective Site background/laboratory PQL concentrations in one or more samples collected from the API Cell and/or Crude Cell; however, all concentrations of these constituents (except sulfate which does not pose toxicity risks and does not have a risk based screening level) were below applicable risk-based soil screening levels developed by the New Mexico Environmental Department (NMED) and/or EPA and presented in the *Closure and Post-Closure Plan* prepared for the Site (dated February 17, 2023 and further described below). All other constituents were below Site background/laboratory PQL concentrations. The analytical results are presented in Table 3, with complete laboratory analytical reports attached as Appendix A.

FIVE YEAR MONITORING PROGRAM

As specified in 19.15.36.15(E)(3) NMAC, all vadose zone soil samples collected as part of the first quarter sampling event (including four locations within the Crude Cell and four locations within the API Cell) were also analyzed for COCs specified in Subsections A and B of 20.6.2.3103 NMAC and analyzed by EPA Methods 6010B or 6020A. These COCs include arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, silver, uranium, and zinc.

Of these COCs, chromium, copper, iron, lead, manganese, and zinc concentrations exceeded their respective Site background/laboratory PQL concentrations in one or more soil samples collected from the API Cell and/or Crude Cell; however, all concentrations were below applicable NMED/EPA risk-based soil screening levels. All other COCs were below Site background/laboratory PQL concentrations. The analytical results are presented in Table 4, with complete laboratory analytical reports attached as Appendix A.

CLOSURE AND POST-CLOSURE PLAN NMED/EPA SOIL SCREENING LEVELS

As presented in the *Closure and Post-Closure Plan* prepared for the Site (dated and submitted to the NMOCD on February 17, 2023), Ensolum/Western presented a risk assessment and alternative closure standards for the Site. The alternative closure standards were based on the NMED *Risk Assessment Guidance for Investigations and Remediation, Volume I* (dated November 2022), also known as the Soil Screening Guidance (SSG), as well as various EPA risk assessment guidance documents. The soil screening levels proposed as alternative closure standards are presented in attached Tables 3 and 4, with detailed comparisons of exposure pathways/screen levels included in Table 5.

NOTIFICATION OF RELEASE AND RELEASE RESPONSE ACTION PLAN

Due to chloride concentrations exceeding Site background/PQL concentrations in several locations during the first and third quarter 2022 sampling events, Western submitted a *Notification of Release* letter to the NMOCD on October 27, 2022 and performed release response soil sampling at the Site on November 11, 2022. Results from the release response sampling event were summarized in a *Release Response Action Plan* and *Release Response Action Plan Addendum* submitted to the NMOCD Permitting group on December 9 and December 23, 2023, respectively. As proposed, the *Release Response Action Plan* and accompanying addendum were submitted to the NMOCD Incidents Group to evaluate and/or address the COCs detected during the release response resampling event in accordance with 19.15.29 NMAC. As of the date of this report, the NMOCD Incidents Group has not responded to Western or Ensolum regarding steps forward.

CONCLUSIONS

Western conducted quarterly vadose zone soil sampling in accordance with the original Rule 711 permit and semi-annual vadose zone sampling in accordance with 19.15.36 NMAC. Additionally, Western performed the five year monitoring program in accordance with 19.15.36.15 NMAC. Based on analytical results, TPH and chloride impacts in treatment-zone soils have been remediated to below Treatment Zone Closure Performance Standards identified in 19.15.36 NMAC. Chloride concentrations were detected above the Site background/laboratory PQL concentration during the first and third quarterly sampling events during 2022. To address these exceedances, Western notified the NMOCD and conducted additional sampling to further assess chloride concentrations in vadose zone soils. Results from the release response sampling event were summarized in the *Release Response Action Plan* and *Release Response Action Plan Addendum* submitted to the NMOCD Permitting group on December 9 and December 23, 2023, respectively. As stated above, Western is currently working with the NMOCD Incidents group and is awaiting a response to the plan.

During the February 2022 sampling event, concentrations of several inorganic COCs in soil samples were also detected above the Site background/laboratory PQL concentrations; however, all COCs were below the NMED/EPA soil screening levels/closure standards presented in the *Closure and Post-Closure Plan* prepared for the landfarm. As such, no further assessment is required at this time.

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

Sincerely,
Ensolum, LLC

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Attachments:

Figure 1:	Site Location Map
Figure 2:	Site Map
Figure 3:	2022 Compliance Sample Locations
Table 1:	2022 Semi-Annual Treatment Zone Soil Analytical Results
Table 2:	2022 Quarterly and Semi-Annual Vadose Zone Soil Analytical Results
Table 3:	2022 Annual Vadose Zone Soil Analytical Results
Table 4:	2022 5-Year Vadose Zone Soil Analytical Results
Table 5:	Treatment Zone Closure Performance Standards
Appendix A:	Laboratory Analytical Reports

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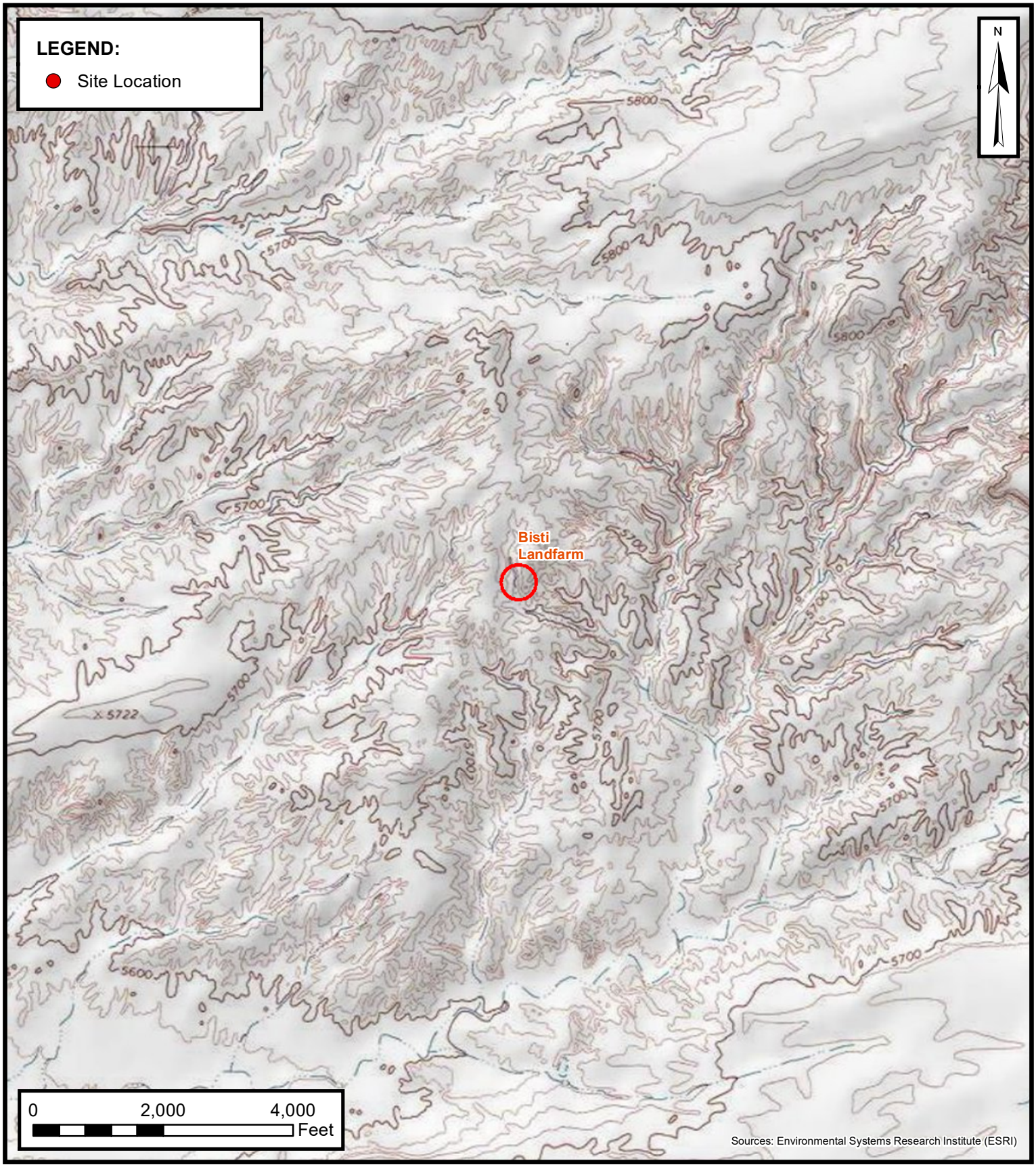
FIGURES



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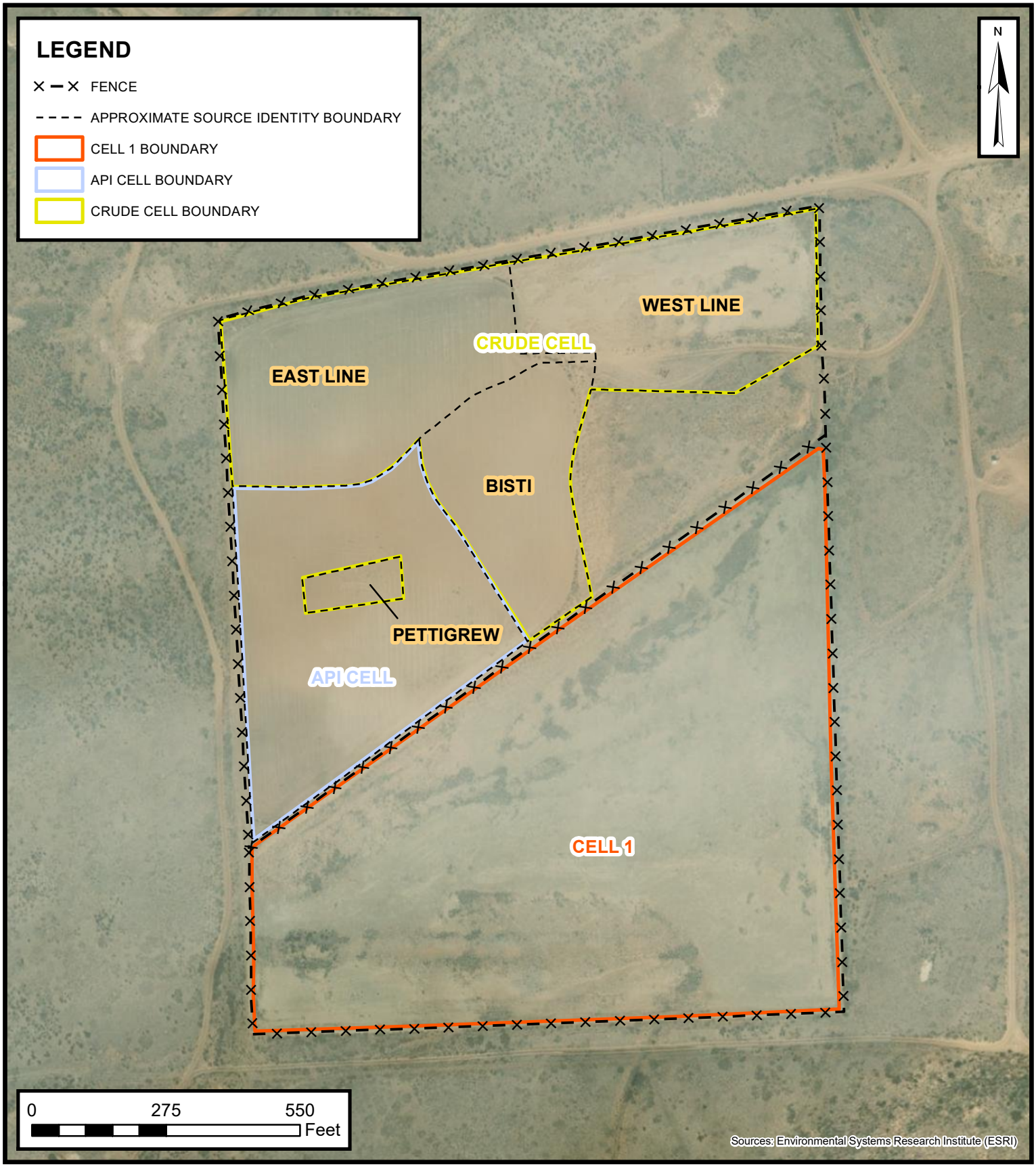
Site Location Map

BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NM

WESTERN REFINING SOUTHWEST LLC

FIGURE
1



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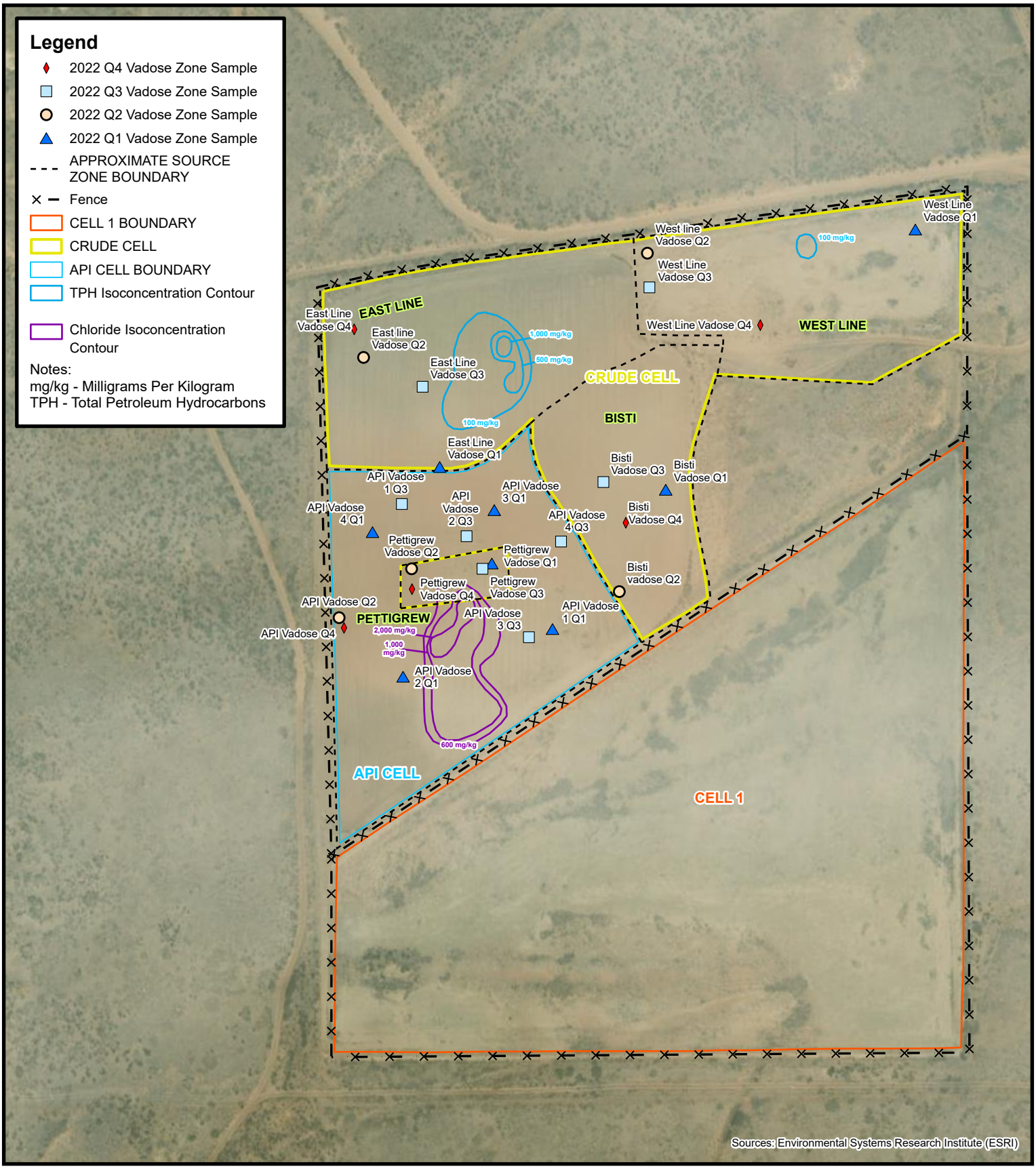
Site Map

BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NM
WESTERN REFINING SOUTHWEST LLC

FIGURE
2



Document Path: C:\Users\Justin Valdez\GIS\Ensolum GIS\1 - Durango\Western Refining Southwest LLC\07A2015004 - Bisti Landfarm\1 - MXDs\Figure 3 - Vasdose Zone Samples.aprx

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2022 Compliance Sample Locations

BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NM
WESTERN REFINING SOUTHWEST LLC

FIGURE
3

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TABLES

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TABLE 1
2022 SEMI-ANNUAL TREATMENT ZONE SOIL ANALYTICAL RESULTS
Bisti Landfarm
Western Refining Southwest LLC
San Juan County, New Mexico

Cell	Sample ID	Sample Date	TPH (mg/kg)	Chloride (mg/kg)
19.15.36.15 Treatment Zone Closure Performance Standards			**2,500**	**1,000**
Crude Cell	**Crude Treatment**	2/10/22	89	16
Crude Cell	**Crude Treatment**	9/22/22	34	<60
API Cell	**API Treatment**	2/10/22	<19	100
API Cell	**API Treatment**	9/22/22	<26	94

Notes:

mg/kg: milligrams per kilograms

TPH: total petroleum hydrocarbons

<: indicates result is less than the stated laboratory practical quantitation limit (PQL)

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TABLE 2
2022 QUARTERLY AND SEMI-ANNUAL VADOSE ZONE SOIL ANALYTICAL RESULTS
Bisti Landfarm
Western Refining Southwest LLC
San Juan County, New Mexico

Cell	Source Area	Sample Date	Sample ID	TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
Background Sample Result or Laboratory Practical Quantitation Limit				**<50**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<50**
Crude Cell	West Line	2/10/22	West Line Vadose Zone	<18	<0.025	<0.050	<0.050	<0.099	<0.099	<7.5
		6/20/22	West Line Vadose Zone	<49	<0.024	<0.048	<0.048	<0.017 *	<0.048	<59
		9/22/22	West Line Vadose Zone	<41	<0.024	<0.049	<0.049	<0.018 *	<0.049	<3.0
		12/19/22	West Line Vadose Zone	<50	<0.025	<0.050	<0.050	<0.099	<0.099	NA
	East Line	2/10/22	East Line Vadose Zone	<19	<0.024	<0.049	<0.049	<0.097	<0.097	**63**
		6/20/22	East Line Vadose Zone	<47	<0.025	<0.049	<0.049	<0.018 *	<0.049	<61
		9/22/22	East Line Vadose Zone	<45	<0.025	<0.050	<0.050	<0.018 *	<0.050	<3.0
		12/19/22	East Line Vadose Zone	<48	<0.025	<0.049	<0.049	<0.099	<0.099	NA
	Bisti	2/10/22	Bisti Vadose Zone	<20	<0.024	<0.048	<0.048	<0.096	<0.096	<7.5
		6/20/22	Bisti Vadose Zone	<25	<0.024	<0.048	<0.048	<0.017 *	<0.048	<60
		9/22/22	Bisti Vadose Zone	<45	<0.024	<0.049	<0.049	<0.018 *	<0.049	<3.0
		12/19/22	Bisti Vadose Zone	<49	<0.024	<0.049	<0.049	<0.098	<0.098	NA
	Pettigrew	2/10/22	Pettigrew Vadose Zone	<18	<0.024	<0.048	<0.048	<0.096	<0.096	<7.5
		6/20/22	Pettigrew Vadose Zone	<47	<0.025	<0.049	<0.049	<0.018 *	<0.049	<61
		9/22/22	Pettigrew Vadose Zone	<49	<0.025	<0.050	<0.050	<0.018 *	<0.050	**120**
		12/19/22	Pettigrew Vadose Zone	<46	<0.025	<0.049	<0.049	<0.098	<0.098	NA
API Cell	API	2/10/22	API 1 Vadose	<19	<0.024	<0.047	<0.047	<0.095	<0.095	25
			API 2 Vadose	<19	<0.024	<0.048	<0.048	<0.096	<0.096	**610**
			API 3 Vadose	<18	<0.023	<0.047	<0.047	<0.093	<0.093	<15
			API 4 Vadose	<18	<0.024	<0.048	<0.048	<0.095	<0.095	<15
		6/20/22	API Vadose	<47	<0.025	<0.050	<0.050	<0.018 *	<0.050	<60
		9/22/22	API 1 Vadose	<47	<0.024	<0.048	<0.048	0.018 J	0.018 J	<3.0
			API 2 Vadose	<48	<0.024	<0.049	<0.049	<0.018 *	<0.049	<3.0
			API 3 Vadose	<49	<0.025	<0.049	<0.049	<0.018 *	<0.049	**380**
			API 4 Vadose	<50	<0.025	<0.050	<0.050	<0.018 *	<0.050	**89**
		12/19/22	API Vadose	<48	<0.024	<0.049	<0.049	<0.098	<0.098	NA

Notes:

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
J: analyte detected below quantitation limits, estimated concentration
mg/kg: milligrams per kilogram
MRO: Motor Oil/Lube Oil Range Organics
NA: not analyzed
NE: not established
TPH: Total Petroleum Hydrocarbon
<0.037: indicates result less than the stated laboratory practical quantitation limit (PQL)
*Concentrations in **bold** and shaded exceed higher of the background sample result or laboratory PQL*
** : concentrations reported to the laboratory method detection limit*

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TABLE 3
2022 ANNUAL VADOSE ZONE SOIL ANALYTICAL RESULTS
Bisti Landfarm
Western Refining Southwest LLC
San Juan County, New Mexico

Cell	Source Area	Sample ID	Sample Date	Alkalinity (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Calcium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Magnesium (mg/kg)	Mercury (mg/kg)	Potassium (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Sodium (mg/kg)	Sulfate (mg/kg)
Background Sample Result or Laboratory Practical Quantitation Limit				NE	**2.8**	**180**	**<1.3**	**2,500**	**<5.0**	**6.8**	**1,300**	**<0.5**	**810**	**<2.5**	**<1.3**	NE	**140**
NMED/EPA Soil Screening Level (1)				NE	**7.07**	**4,390**	**70.5**	**8,850,000**	**96.6**	**400**	**1,550,000**	**20.7**	**15,600,000**	**391**	**391**	**7,820,000**	NE
Crude Cell	**West Line**	West Line Vadose	2/10/22	99	2.4	110	<0.19	**5,300**	**5.3**	6.2	**2,200**	<0.032	**1,800**	0.74	<0.96	120	130
	East Line	East Line Vadose	2/10/22	111	1.8	180	<0.19	**4,400**	4.9	**7.5**	**1,800**	<0.032	**1,900**	0.81	<0.96	200	38
	Bisti	Bisti Vadose	2/10/22	106	1.8	120	<0.19	**3,100**	2.4	3.6	1,200	<0.032	**900**	0.49	<0.96	85	14
	Pettigrew	Pettigrew Vadose	2/10/22	88	1.5	68	<0.19	1,600	1.7	3.3	1,000	<0.031	650	<0.48	<0.95	86	77
API Cell	**API Cell**	API 1 Vadose	2/10/22	118	1.6	110	<0.19	**3,800**	2.5	3.4	1,200	<0.032	**870**	0.49	<0.96	260	**160**

Notes:

EPA: Environmental Protection Agency

mg/kg: milligrams per kilogram

NE: not established

<0.037 : indicates result less than the stated laboratory practical quantitation limit (PQL)

NMED: New Mexico Environment Department

*Concentrations in **bold** exceed the Site background sample result/laboratory PQL*

*Concentrations in **bold** and shaded exceed the NMED/EPA Soil Screening Level*

(1): soil screening levels are based on the most stringest (lowest) levels from the "NMED Risk Assessment Guidance for Site Investigations and Remediation, Volume I - Soil Screening Guidance for Human Health Risk Assessments" (November 2022) and the United States EPA regional screening levels for inhalation of fugitive dust using the EPA online "Regional Screening Level Calculator"

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TABLE 4
2022 5-YEAR VADOSE ZONE SOIL ANALYTICAL RESULTS
Bisti Landfarm
Western Refining Southwest LLC
San Juan County, New Mexico

Cell	Source Area	Sample ID	Sample Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Manganese (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Uranium (mg/kg)	Zinc (mg/kg)
Background Sample Result or Laboratory Practical Quantitation Limit				**2.8**	**180**	**<1.3**	**<5.0**	**3.2**	**7,200**	**6.8**	**150**	**<2.5**	**<1.3**	**<4.9**	**14**
NMED/EPA Soil Screening Level (1)				**7.07**	**4,390**	**70.5**	**96.6**	**3,130**	**54,800**	**400**	**464**	**391**	**391**	**234**	**23,500**
Crude Cell	**West Line**	West Line Vadose	2/10/22	2.4	110	<0.19	**5.3**	**5.8**	**11,000**	6.2	**230**	0.74	<0.96	<0.48	**23**
	East Line	East Line Vadose	2/10/22	1.8	180	<0.19	4.9	**9.4**	**11,000**	**7.5**	**380**	0.81	<0.96	<0.48	**31**
	Bisti	Bisti Vadose	2/10/22	1.8	120	<0.19	2.4	<3.8	5,400	3.6	110	0.49	<0.96	<0.48	12
	Pettigrew	Pettigrew Vadose	2/10/22	1.5	68	<0.19	1.7	<3.8	5,000	3.3	120	<0.48	<0.95	<0.48	10
API Cell	**API Cell**	API 1 Vadose	2/10/22	1.6	110	<0.19	2.5	<3.8	5,600	3.4	110	0.49	<0.96	<4.8	11
		API 2 Vadose	2/10/22	1.8	78	<0.20	2.5	<3.9	6,500	4.1	**190**	0.55	<0.98	<0.49	13
		API 3 Vadose	2/10/22	1.4	220	<0.20	2.4	<4.0	5,200	3.5	120	0.51	<1.0	<0.50	12
		API 4 Vadose	2/10/22	2.2	69	<0.20	1.6	<3.9	6,000	3.6	130	<0.49	<0.98	<0.49	10

Notes:

EPA: Environmental Protection Agency

mg/kg: milligrams per kilogram

NE: not established

<0.037: indicates result less than the stated laboratory practical quantitation limit (PQL)

NMED: New Mexico Environment Department

*Concentrations in **bold** exceed the Site background sample result/laboratory PQL*

*Concentrations in **bold** and shaded exceed the NMED/EPA Soil Screening Level*

(1): soil screening levels are based on the most stringest (lowest) levels from the "NMED Risk Assessment Guidance for Site Investigations and Remediation, Volume I - Soil Screening Guidance for Human Health Risk Assessments" (November 2022) and the United States EPA regional screening levels for inhalation of fugitive dust using the EPA online "Regional Screening Level Calculator"

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TABLE 5
TREATMENT ZONE CLOSURE PERFORMANCE STANDARDS
Bisti Landfarm
Western Refining Southwest LLC
San Juan County, New Mexico

ANALYTE	UNITS	NMOCD Treatment Zone Closure Performance Standards	NMED Soil Screening Level, Direct Contact/Ingestion, Residential Cancer (1)	NMED Soil Screening Level, Direct Contact/Ingestion, Residential Non-Cancer (1)	NMED Soil Screening Level, Direct Contact/Ingestion, Industrial/ Occupational Cancer (1)	NMED Soil Screening Level, Direct Contact/Ingestion, Industrial/ Occupational Non-Cancer (1)	NMED Soil Screening Level, Direct Contact/Ingestion, Construction Worker Cancer (1)	NMED Soil Screening Level, Direct Contact/Ingestion, Construction Worker Non-Cancer (1)	EPA Soil Screening Level, Inhalation of Volatiles and Fugitive Dusts (2)	Most Stringent Soil Screening Level
Petroleum Hydrocarbons by EPA Method 8015M										
GRO+DRO	mg/kg	500	---	---	---	---	---	---	---	---
TPH	mg/kg	2,500	---	---	---	---	---	---	---	---
Volatile Organic Compounds by EPA Method 8021B										
Benzene	mg/kg	0.20	---	---	---	---	---	---	---	---
BTEX	mg/kg	50	---	---	---	---	---	---	---	---
Anions by EPA Method 300.0										
Chloride	mg/kg	1,000	---	---	---	---	---	---	---	---
Metals by EPA Method 6010B and 6020										
Arsenic	mg/kg	2.8	7.07	13.0	35.9	208	216	41.2	8,880	7.07
Barium	mg/kg	180	NE	15,600	NE	25,500	NE	4,390	709,000	4,390
Cadmium	mg/kg	<1.3	85,900	70.5	417,000	1,110	3,610	72.1	14,200	70.5
Calcium	mg/kg	2,500	NE	13,000,000	NE	32,400,000	NE	8,850,000	NE	8,850,000
Chromium	mg/kg	<5.0	96.6	45,200	505	314,000	468	134	14,200	96.6
Copper	mg/kg	3.2	NE	3,130	NE	51,900	NE	14,200	NE	3,130
Iron	mg/kg	7,200	NE	54,800	NE	908,000	NE	248,000	NE	54,800
Lead (3)	mg/kg	6.8	NE	400	NE	800	NE	800	NE	400
Magnesium	mg/kg	1,300	NE	15,600,000	NE	5,680,000	NE	1,550,000	NE	1,550,000
Manganese	mg/kg	150	NE	10,500	NE	160,000	NE	464	70,900	464
Mercury	mg/kg	<0.5	NE	23.8	NE	112	NE	20.7	10.9	20.7
Potassium	mg/kg	810	NE	15,600,000	NE	76,200,000	NE	20,800,000	NE	15,600,000
Selenium	mg/kg	<2.5	NE	391	NE	6,490	NE	1,750	28,400,000	391
Silver	mg/kg	<1.3	NE	391	NE	6,490	NE	1,770	NE	391
Sodium	mg/kg	NE	NE	7,820,000	NE	37,300,000	NE	10,200,000	NE	7,820,000
Sulfate	mg/kg	NE	NE	NE	NE	NE	NE	NE	NE	NE
Uranium	mg/kg	<4.9	NE	234	NE	3,880	NE	277	56,700	234
Zinc	mg/kg	14	NE	23,500	NE	389,000	NE	106,000	NE	23,500

Notes:

(1) - soil screening levels are based on the "NMED Risk Assessment Guidance for Site Investigations and Remediation, Volume I - Soil Screening Guidance for Human Health Risk Assessments" (November 2022)

(2) - United Stated EPA regional screening level for inhalation of fugitive dust using the EPA online "Regional Screening Level Calculator"

(3) - lead soil screening level based on Section 5.2 of the EPA online resource "Regional Screening Levels (RSLs) - User's Guide" dated November 2022

BTEX: benzene, toluene, ethylbenzene, total xylenes

DRO: diesel range organics

GRO: gasoline range organics

mg/kg: milligrams per kilogram

NE: Not Established

NMED: New Mexico Environment Department

NMOCD: New Mexico Oil and Gas Conservation Division

PQL: practical quantitation limit

TPH: total petroleum hydrocarbons

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

Gray shading indicates the concentration to be used for treatment zone closure performance standard

ENSOLUM

APPENDIX A

Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

March 14, 2022

Stuart Hyde
WSP
848 East 2nd Avenue
Durango, CO 81301
TEL: (970) 946-1093
FAX:

RE: Bisti LF OrderNo.: 2202573

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 10 sample(s) on 2/11/2022 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: West Line Vadose
Project: Bisti LF
Collection Date: 2/10/2022 11:35:00 AM
Lab ID: 2202573-001 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	2/15/2022 11:26:21 PM
Toluene	ND	0.050		mg/Kg	1	2/15/2022 11:26:21 PM
Ethylbenzene	ND	0.050		mg/Kg	1	2/15/2022 11:26:21 PM
Xylenes, Total	ND	0.099		mg/Kg	1	2/15/2022 11:26:21 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	2/15/2022 11:26:21 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	7.5		mg/Kg	5	2/16/2022 4:33:23 PM
Sulfate	130	7.5		mg/Kg	5	2/16/2022 4:33:23 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	2.4	0.48		mg/Kg	5	3/4/2022 4:02:40 PM
Lead	6.2	0.48		mg/Kg	5	3/4/2022 4:02:40 PM
Selenium	0.74	0.48		mg/Kg	5	3/4/2022 4:02:40 PM
Thallium	ND	0.48		mg/Kg	5	3/4/2022 4:02:40 PM
Uranium	ND	0.48		mg/Kg	5	3/4/2022 4:02:40 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.032		mg/Kg	1	3/7/2022 4:08:35 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.8		mg/Kg	2	3/8/2022 5:46:23 PM
Barium	110	0.19		mg/Kg	2	3/8/2022 5:46:23 PM
Beryllium	0.53	0.29		mg/Kg	2	3/8/2022 5:46:23 PM
Cadmium	ND	0.19		mg/Kg	2	3/8/2022 5:46:23 PM
Calcium	5300	48		mg/Kg	2	3/8/2022 5:46:23 PM
Chromium	5.3	0.58		mg/Kg	2	3/8/2022 5:46:23 PM
Copper	5.8	3.8		mg/Kg	2	3/8/2022 5:46:23 PM
Iron	11000	4800		mg/Kg	500	3/8/2022 6:32:23 PM
Magnesium	2200	48		mg/Kg	2	3/8/2022 5:46:23 PM
Manganese	230	0.38		mg/Kg	2	3/8/2022 5:46:23 PM
Potassium	1800	96		mg/Kg	2	3/8/2022 5:46:23 PM
Silver	ND	0.96		mg/Kg	2	3/8/2022 5:46:23 PM
Sodium	120	48		mg/Kg	2	3/8/2022 5:46:23 PM
Zinc	23	4.8		mg/Kg	2	3/8/2022 5:46:23 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	18		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: East Line Vadose
Project: Bisti LF
Collection Date: 2/10/2022 11:50:00 AM
Lab ID: 2202573-002 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/16/2022 12:37:30 AM
Toluene	ND	0.049		mg/Kg	1	2/16/2022 12:37:30 AM
Ethylbenzene	ND	0.049		mg/Kg	1	2/16/2022 12:37:30 AM
Xylenes, Total	ND	0.097		mg/Kg	1	2/16/2022 12:37:30 AM
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	1	2/16/2022 12:37:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	63	7.5		mg/Kg	5	2/16/2022 5:47:50 PM
Sulfate	38	7.5		mg/Kg	5	2/16/2022 5:47:50 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	1.8	0.48		mg/Kg	5	3/4/2022 4:07:08 PM
Lead	7.5	0.48		mg/Kg	5	3/4/2022 4:07:08 PM
Selenium	0.81	0.48		mg/Kg	5	3/4/2022 4:07:08 PM
Thallium	ND	0.48		mg/Kg	5	3/4/2022 4:07:08 PM
Uranium	ND	0.48		mg/Kg	5	3/4/2022 4:07:08 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.032		mg/Kg	1	3/7/2022 4:10:44 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.8		mg/Kg	2	3/8/2022 5:47:58 PM
Barium	180	0.19		mg/Kg	2	3/8/2022 5:47:58 PM
Beryllium	0.53	0.29		mg/Kg	2	3/8/2022 5:47:58 PM
Cadmium	ND	0.19		mg/Kg	2	3/8/2022 5:47:58 PM
Calcium	4400	48		mg/Kg	2	3/8/2022 5:47:58 PM
Chromium	4.9	0.57		mg/Kg	2	3/8/2022 5:47:58 PM
Copper	9.4	3.8		mg/Kg	2	3/8/2022 5:47:58 PM
Iron	11000	4800		mg/Kg	500	3/8/2022 6:34:10 PM
Magnesium	1800	48		mg/Kg	2	3/8/2022 5:47:58 PM
Manganese	380	0.38		mg/Kg	2	3/8/2022 5:47:58 PM
Potassium	1900	96		mg/Kg	2	3/8/2022 5:47:58 PM
Silver	ND	0.96		mg/Kg	2	3/8/2022 5:47:58 PM
Sodium	200	48		mg/Kg	2	3/8/2022 5:47:58 PM
Zinc	31	4.8		mg/Kg	2	3/8/2022 5:47:58 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: Pettigrew Vadose
Project: Bisti LF
Collection Date: 2/10/2022 12:00:00 PM
Lab ID: 2202573-003 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/16/2022 1:01:06 AM
Toluene	ND	0.048		mg/Kg	1	2/16/2022 1:01:06 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/16/2022 1:01:06 AM
Xylenes, Total	ND	0.096		mg/Kg	1	2/16/2022 1:01:06 AM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	2/16/2022 1:01:06 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	7.5		mg/Kg	5	2/16/2022 6:12:39 PM
Sulfate	77	7.5		mg/Kg	5	2/16/2022 6:12:39 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	1.5	0.48		mg/Kg	5	3/4/2022 4:11:36 PM
Lead	3.3	0.48		mg/Kg	5	3/4/2022 4:11:36 PM
Selenium	ND	0.48		mg/Kg	5	3/4/2022 4:11:36 PM
Thallium	ND	0.48		mg/Kg	5	3/4/2022 4:11:36 PM
Uranium	ND	0.48		mg/Kg	5	3/4/2022 4:11:36 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.031		mg/Kg	1	3/7/2022 4:12:54 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.8		mg/Kg	2	3/8/2022 5:49:34 PM
Barium	68	0.19		mg/Kg	2	3/8/2022 5:49:34 PM
Beryllium	ND	0.29		mg/Kg	2	3/8/2022 5:49:34 PM
Cadmium	ND	0.19		mg/Kg	2	3/8/2022 5:49:34 PM
Calcium	1600	48		mg/Kg	2	3/8/2022 5:49:34 PM
Chromium	1.7	0.57		mg/Kg	2	3/8/2022 5:49:34 PM
Copper	ND	3.8		mg/Kg	2	3/8/2022 5:49:34 PM
Iron	5000	1900		mg/Kg	200	3/8/2022 6:35:57 PM
Magnesium	1000	48		mg/Kg	2	3/8/2022 5:49:34 PM
Manganese	120	0.38		mg/Kg	2	3/8/2022 5:49:34 PM
Potassium	650	95		mg/Kg	2	3/8/2022 5:49:34 PM
Silver	ND	0.95		mg/Kg	2	3/8/2022 5:49:34 PM
Sodium	86	48		mg/Kg	2	3/8/2022 5:49:34 PM
Zinc	10	4.8		mg/Kg	2	3/8/2022 5:49:34 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	18		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP **Client Sample ID:** Bisti Vadose
Project: Bisti LF **Collection Date:** 2/10/2022 12:10:00 PM
Lab ID: 2202573-004 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/16/2022 1:24:40 AM
Toluene	ND	0.048		mg/Kg	1	2/16/2022 1:24:40 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/16/2022 1:24:40 AM
Xylenes, Total	ND	0.096		mg/Kg	1	2/16/2022 1:24:40 AM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	1	2/16/2022 1:24:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	7.5		mg/Kg	5	2/16/2022 6:37:27 PM
Sulfate	14	7.5		mg/Kg	5	2/16/2022 6:37:27 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	1.8	0.48		mg/Kg	5	3/4/2022 4:16:04 PM
Lead	3.6	0.48		mg/Kg	5	3/4/2022 4:16:04 PM
Selenium	0.49	0.48		mg/Kg	5	3/4/2022 4:16:04 PM
Thallium	ND	0.48		mg/Kg	5	3/4/2022 4:16:04 PM
Uranium	ND	0.48		mg/Kg	5	3/4/2022 4:16:04 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.032		mg/Kg	1	3/7/2022 4:15:05 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.8		mg/Kg	2	3/8/2022 5:51:10 PM
Barium	120	0.19		mg/Kg	2	3/8/2022 5:51:10 PM
Beryllium	0.32	0.29		mg/Kg	2	3/8/2022 5:51:10 PM
Cadmium	ND	0.19		mg/Kg	2	3/8/2022 5:51:10 PM
Calcium	3100	48		mg/Kg	2	3/8/2022 5:51:10 PM
Chromium	2.4	0.58		mg/Kg	2	3/8/2022 5:51:10 PM
Copper	ND	3.8		mg/Kg	2	3/8/2022 5:51:10 PM
Iron	5400	4800		mg/Kg	500	3/8/2022 6:37:45 PM
Magnesium	1200	48		mg/Kg	2	3/8/2022 5:51:10 PM
Manganese	110	0.38		mg/Kg	2	3/8/2022 5:51:10 PM
Potassium	900	96		mg/Kg	2	3/8/2022 5:51:10 PM
Silver	ND	0.96		mg/Kg	2	3/8/2022 5:51:10 PM
Sodium	85	48		mg/Kg	2	3/8/2022 5:51:10 PM
Zinc	12	4.8		mg/Kg	2	3/8/2022 5:51:10 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: API 1 Vadose
Project: Bisti LF
Collection Date: 2/10/2022 12:15:00 PM
Lab ID: 2202573-005 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/16/2022 2:35:23 AM
Toluene	ND	0.047		mg/Kg	1	2/16/2022 2:35:23 AM
Ethylbenzene	ND	0.047		mg/Kg	1	2/16/2022 2:35:23 AM
Xylenes, Total	ND	0.095		mg/Kg	1	2/16/2022 2:35:23 AM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	2/16/2022 2:35:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	25	7.5		mg/Kg	5	2/16/2022 7:02:15 PM
Sulfate	160	7.5		mg/Kg	5	2/16/2022 7:02:15 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	1.6	0.48		mg/Kg	5	3/4/2022 4:20:32 PM
Lead	3.4	0.48		mg/Kg	5	3/4/2022 4:20:32 PM
Selenium	0.49	0.48		mg/Kg	5	3/4/2022 4:20:32 PM
Thallium	ND	0.48		mg/Kg	5	3/4/2022 4:20:32 PM
Uranium	ND	0.48		mg/Kg	5	3/4/2022 4:20:32 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.032		mg/Kg	1	3/7/2022 4:17:12 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.8		mg/Kg	2	3/8/2022 5:52:45 PM
Barium	110	0.19		mg/Kg	2	3/8/2022 5:52:45 PM
Beryllium	0.32	0.29		mg/Kg	2	3/8/2022 5:52:45 PM
Cadmium	ND	0.19		mg/Kg	2	3/8/2022 5:52:45 PM
Calcium	3800	48		mg/Kg	2	3/8/2022 5:52:45 PM
Chromium	2.5	0.58		mg/Kg	2	3/8/2022 5:52:45 PM
Copper	ND	3.8		mg/Kg	2	3/8/2022 5:52:45 PM
Iron	5600	4800		mg/Kg	500	3/8/2022 6:39:32 PM
Magnesium	1200	48		mg/Kg	2	3/8/2022 5:52:45 PM
Manganese	110	0.38		mg/Kg	2	3/8/2022 5:52:45 PM
Potassium	870	96		mg/Kg	2	3/8/2022 5:52:45 PM
Silver	ND	0.96		mg/Kg	2	3/8/2022 5:52:45 PM
Sodium	260	48		mg/Kg	2	3/8/2022 5:52:45 PM
Zinc	11	4.8		mg/Kg	2	3/8/2022 5:52:45 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP **Client Sample ID:** API 2 Vadose
Project: Bisti LF **Collection Date:** 2/10/2022 12:20:00 PM
Lab ID: 2202573-006 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/16/2022 2:58:48 AM
Toluene	ND	0.048		mg/Kg	1	2/16/2022 2:58:48 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/16/2022 2:58:48 AM
Xylenes, Total	ND	0.096		mg/Kg	1	2/16/2022 2:58:48 AM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	1	2/16/2022 2:58:48 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	610	60		mg/Kg	20	2/16/2022 7:27:05 PM
Sulfate	1100	60		mg/Kg	20	2/16/2022 7:27:05 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	1.8	0.49		mg/Kg	5	3/4/2022 4:25:00 PM
Lead	4.1	0.49		mg/Kg	5	3/4/2022 4:25:00 PM
Selenium	0.55	0.49		mg/Kg	5	3/4/2022 4:25:00 PM
Thallium	ND	0.49		mg/Kg	5	3/4/2022 4:25:00 PM
Uranium	ND	0.49		mg/Kg	5	3/4/2022 4:25:00 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.033		mg/Kg	1	3/7/2022 4:19:20 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.9		mg/Kg	2	3/8/2022 6:01:02 PM
Barium	78	0.20		mg/Kg	2	3/8/2022 6:01:02 PM
Beryllium	0.34	0.29		mg/Kg	2	3/8/2022 6:01:02 PM
Cadmium	ND	0.20		mg/Kg	2	3/8/2022 6:01:02 PM
Chromium	2.5	0.59		mg/Kg	2	3/8/2022 6:01:02 PM
Copper	ND	3.9		mg/Kg	2	3/8/2022 6:01:02 PM
Iron	6500	4900		mg/Kg	500	3/8/2022 6:48:08 PM
Manganese	190	0.39		mg/Kg	2	3/8/2022 6:01:02 PM
Silver	ND	0.98		mg/Kg	2	3/9/2022 6:48:13 PM
Zinc	13	4.9		mg/Kg	2	3/8/2022 6:01:02 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: API 3 Vadose
Project: Bisti LF
Collection Date: 2/10/2022 12:30:00 PM
Lab ID: 2202573-007 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	2/16/2022 3:22:13 AM
Toluene	ND	0.047		mg/Kg	1	2/16/2022 3:22:13 AM
Ethylbenzene	ND	0.047		mg/Kg	1	2/16/2022 3:22:13 AM
Xylenes, Total	ND	0.093		mg/Kg	1	2/16/2022 3:22:13 AM
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	2/16/2022 3:22:13 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	15		mg/Kg	5	3/1/2022 5:33:57 PM
Sulfate	49	15		mg/Kg	5	3/1/2022 5:33:57 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	1.4	0.50		mg/Kg	5	3/4/2022 4:29:28 PM
Lead	3.5	0.50		mg/Kg	5	3/4/2022 4:29:28 PM
Selenium	0.51	0.50		mg/Kg	5	3/4/2022 4:29:28 PM
Thallium	ND	0.50		mg/Kg	5	3/4/2022 4:29:28 PM
Uranium	ND	0.50		mg/Kg	5	3/4/2022 4:29:28 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.032		mg/Kg	1	3/7/2022 4:21:28 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	5.0		mg/Kg	2	3/8/2022 6:02:38 PM
Barium	220	0.20		mg/Kg	2	3/8/2022 6:02:38 PM
Beryllium	0.33	0.30		mg/Kg	2	3/8/2022 6:02:38 PM
Cadmium	ND	0.20		mg/Kg	2	3/8/2022 6:02:38 PM
Chromium	2.4	0.60		mg/Kg	2	3/8/2022 6:02:38 PM
Copper	ND	4.0		mg/Kg	2	3/8/2022 6:02:38 PM
Iron	5200	5000		mg/Kg	500	3/8/2022 6:49:56 PM
Manganese	120	0.40		mg/Kg	2	3/8/2022 6:02:38 PM
Silver	ND	1.0		mg/Kg	2	3/9/2022 6:53:18 PM
Zinc	12	5.0		mg/Kg	2	3/8/2022 6:02:38 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	18		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: API 4 Vadose
Project: Bisti LF
Collection Date: 2/10/2022 12:40:00 PM
Lab ID: 2202573-008 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/16/2022 3:45:43 AM
Toluene	ND	0.048		mg/Kg	1	2/16/2022 3:45:43 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/16/2022 3:45:43 AM
Xylenes, Total	ND	0.095		mg/Kg	1	2/16/2022 3:45:43 AM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	1	2/16/2022 3:45:43 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	15		mg/Kg	5	3/1/2022 6:11:10 PM
Sulfate	38	15		mg/Kg	5	3/1/2022 6:11:10 PM
EPA METHOD 6020A: METALS						Analyst: **DBK**
Arsenic	2.2	0.49		mg/Kg	5	3/4/2022 4:42:55 PM
Lead	3.6	0.49		mg/Kg	5	3/4/2022 4:42:55 PM
Selenium	ND	0.49		mg/Kg	5	3/4/2022 4:42:55 PM
Thallium	ND	0.49		mg/Kg	5	3/4/2022 4:42:55 PM
Uranium	ND	0.49		mg/Kg	5	3/4/2022 4:42:55 PM
EPA METHOD 7471B: MERCURY						Analyst: **VP**
Mercury	ND	0.031		mg/Kg	1	3/7/2022 4:23:36 PM
EPA METHOD 6010B: SOIL METALS						Analyst: **JLF**
Antimony	ND	4.9		mg/Kg	2	3/8/2022 6:04:14 PM
Barium	69	0.20		mg/Kg	2	3/8/2022 6:04:14 PM
Beryllium	0.31	0.29		mg/Kg	2	3/8/2022 6:04:14 PM
Cadmium	ND	0.20		mg/Kg	2	3/8/2022 6:04:14 PM
Chromium	1.6	0.59		mg/Kg	2	3/8/2022 6:04:14 PM
Copper	ND	3.9		mg/Kg	2	3/8/2022 6:04:14 PM
Iron	6000	4900		mg/Kg	500	3/8/2022 6:51:44 PM
Manganese	130	0.39		mg/Kg	2	3/8/2022 6:04:14 PM
Silver	ND	0.98		mg/Kg	2	3/9/2022 6:54:36 PM
Zinc	10	4.9		mg/Kg	2	3/8/2022 6:04:14 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	18		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: API Treatment
Project: Bisti LF
Collection Date: 2/10/2022 12:35:00 PM
Lab ID: 2202573-009 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	100	60		mg/Kg	20	2/16/2022 8:29:07 PM
Sulfate	250	60		mg/Kg	20	2/16/2022 8:29:07 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2202573**
Date Reported: **3/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: WSP
Client Sample ID: Crude Treatment
Project: Bisti LF
Collection Date: 2/10/2022 12:05:00 PM
Lab ID: 2202573-010 **Matrix:** SOIL **Received Date:** 2/11/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	16	15		mg/Kg	5	3/1/2022 6:23:35 PM
Sulfate	740	15		mg/Kg	5	3/1/2022 6:23:35 PM
EPA METHOD 418.1: TPH						Analyst: **JPM**
Petroleum Hydrocarbons, TR	89	19		mg/Kg	1	2/16/2022 8:00:00 AM

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

Qualifiers:

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

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ANALYTICAL SUMMARY REPORT

February 24, 2022

Hall Environmental
4901 Hawkins St NE Ste D
Albuquerque, NM 87109-4372

Work Order: B22021056 Quote ID: B5636

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 5 samples for Hall Environmental on 2/15/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B22021056-001	2202573-001B, West Line Vadose	02/10/22 11:35	02/15/22	Soil	Alkalinity, Water Extractable DI Water Soil Extract ASA10-3
B22021056-002	2202573-002B, East Line Vadose	02/10/22 11:50	02/15/22	Soil	Same As Above
B22021056-003	2202573-003B, Pettigrew Vadose	02/10/22 12:00	02/15/22	Soil	Same As Above
B22021056-004	2202573-004B, Bisti Vadose	02/10/22 12:10	02/15/22	Soil	Same As Above
B22021056-005	2202573-005B, API 1 Vadose	02/10/22 12:15	02/15/22	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Report Date: 02/24/22

Lab ID: B22021056-001
Client Sample ID: 2202573-001B, West Line Vadose
Collection Date: 02/10/22 11:35
DateReceived: 02/15/22
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	99	mg/kg		8		ASA10-3	02/23/22 15:20 / ftk

Lab ID: B22021056-002
Client Sample ID: 2202573-002B, East Line Vadose
Collection Date: 02/10/22 11:50
DateReceived: 02/15/22
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	111	mg/kg		8		ASA10-3	02/23/22 15:34 / ftk

Lab ID: B22021056-003
Client Sample ID: 2202573-003B, Pettigrew Vadose
Collection Date: 02/10/22 12:00
DateReceived: 02/15/22
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	88	mg/kg		8		ASA10-3	02/23/22 15:40 / ftk

Lab ID: B22021056-004
Client Sample ID: 2202573-004B, Bisti Vadose
Collection Date: 02/10/22 12:10
DateReceived: 02/15/22
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	106	mg/kg		8		ASA10-3	02/23/22 15:45 / ftk

Lab ID: B22021056-005
Client Sample ID: 2202573-005B, API 1 Vadose
Collection Date: 02/10/22 12:15
DateReceived: 02/15/22
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	118	mg/kg		8		ASA10-3	02/23/22 15:51 / ftk

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental **Work Order:** B22021056 **Report Date:** 02/24/22

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**										Batch: 163961
Lab ID: **LCS-163961**	Laboratory Control Sample					Run: ORIONVERSASTARPRO_220				02/23/22 15:14
Alkalinity, 1:2		233	mg/kg	8.0	99	70	130			
Lab ID: **B22021056-001A DUP**	Sample Duplicate					Run: ORIONVERSASTARPRO_220				02/23/22 15:24
Alkalinity, 1:2		95.1	mg/kg	8.0				4.0	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

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Work Order Receipt Checklist

Hall Environmental

B22021056

Login completed by: Leslie S. Cadreau
Date Received: 2/15/2022
Reviewed by: BL2000\tburris
Received by: lsc
Reviewed Date: 2/18/2022
Carrier name: UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	1.0°C Blue Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: Energy Labs -Billings	COMPANY: Energy Laboratories	PHONE: (406) 869-6253	FAX: (406) 252-6069
ADDRESS: 1120 South 27th Street		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Billings, MT 59107			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2202573-001B	West Line Vadose	4OZGU	Soil	2/10/2022 11:35:00 AM	1	Alkalinity in Soil B22021056
2	2202573-002B	East Line Vadose	4OZGU	Soil	2/10/2022 11:50:00 AM	1	Alkalinity in Soil
3	2202573-003B	Pettigrew Vadose	4OZGU	Soil	2/10/2022 12:00:00 PM	1	Alkalinity in Soil
4	2202573-004B	Bisti Vadose	4OZGU	Soil	2/10/2022 12:10:00 PM	1	Alkalinity in Soil
5	2202573-005B	API 1 Vadose	4OZGU	Soil	2/10/2022 12:15:00 PM	1	Alkalinity in Soil

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 2/11/2022	Time: 10:28 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 2/16/22	Time: 0901:30

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **MB-65586**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **65586**	RunNo: **85864**							
Prep Date: **2/16/2022**	Analysis Date: **2/16/2022**	SeqNo: **3024752**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								
Sulfate	ND	1.5								

Sample ID: **LCS-65586**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **65586**	RunNo: **85864**							
Prep Date: **2/16/2022**	Analysis Date: **2/16/2022**	SeqNo: **3024753**	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			
Sulfate	28	1.5	30.00	0	93.9	90	110			

Sample ID: **2202573-001AMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **West Line Vadose**	Batch ID: **65586**	RunNo: **85896**							
Prep Date: **2/16/2022**	Analysis Date: **2/16/2022**	SeqNo: **3024955**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	19	7.5	15.00	0	125	57.5	166			
Sulfate	160	7.5	30.00	133.1	91.5	48.4	135			

Sample ID: **2202573-001AMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **West Line Vadose**	Batch ID: **65586**	RunNo: **85896**							
Prep Date: **2/16/2022**	Analysis Date: **2/16/2022**	SeqNo: **3024956**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	19	7.5	15.00	0	126	57.5	166	0.690	20	
Sulfate	160	7.5	30.00	133.1	95.8	48.4	135	0.798	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**

14-Mar-22

Client: WSP

Project: Bisti LF

Sample ID: **MB-65559**	SampType: **MBLK**	TestCode: **EPA Method 418.1: TPH**							
Client ID: **PBS**	Batch ID: **65559**	RunNo: **85854**							
Prep Date: **2/15/2022**	Analysis Date: **2/16/2022**	SeqNo: **3023181**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID: **LCS-65559**	SampType: **LCS**	TestCode: **EPA Method 418.1: TPH**							
Client ID: **LCSS**	Batch ID: **65559**	RunNo: **85854**							
Prep Date: **2/15/2022**	Analysis Date: **2/16/2022**	SeqNo: **3023182**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	104.0	0	106	80.2	114			

Sample ID: **LCSD-65559**	SampType: **LCSD**	TestCode: **EPA Method 418.1: TPH**							
Client ID: **LCSS02**	Batch ID: **65559**	RunNo: **85854**							
Prep Date: **2/15/2022**	Analysis Date: **2/16/2022**	SeqNo: **3023183**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	120	20	104.0	0	111	80.2	114	4.35	20	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **MB-65942** SampType: **MBLK** TestCode: **EPA Method 6020A: Metals**
Client ID: **PBS** Batch ID: **65942** RunNo: **86256**
Prep Date: **3/3/2022** Analysis Date: **3/4/2022** SeqNo: **3040939** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.20								
Selenium	ND	0.20								
Thallium	ND	0.20								
Uranium	ND	0.20								

Sample ID: **MSLCSLL-65942** SampType: **LCSLL** TestCode: **EPA Method 6020A: Metals**
Client ID: **BatchQC** Batch ID: **65942** RunNo: **86256**
Prep Date: **3/3/2022** Analysis Date: **3/4/2022** SeqNo: **3040940** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.20	0.1000	0	82.2	70	130			
Selenium	ND	0.20	0.1000	0	109	70	130			
Thallium	ND	0.20	0.1000	0	87.3	70	130			
Uranium	ND	0.20	0.1000	0	86.9	70	130			

Sample ID: **MSLCS-65942** SampType: **LCS** TestCode: **EPA Method 6020A: Metals**
Client ID: **LCSS** Batch ID: **65942** RunNo: **86256**
Prep Date: **3/3/2022** Analysis Date: **3/4/2022** SeqNo: **3040941** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	4.8	0.20	5.000	0	95.2	80	120			
Selenium	4.4	0.20	5.000	0	87.8	80	120			
Thallium	4.9	0.20	5.000	0	97.0	80	120			
Uranium	4.8	0.20	5.000	0	96.4	80	120			

Sample ID: **MB-65942** SampType: **MBLK** TestCode: **EPA Method 6020A: Metals**
Client ID: **PBS** Batch ID: **65942** RunNo: **86256**
Prep Date: **3/3/2022** Analysis Date: **3/4/2022** SeqNo: **3041014** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.20								

Sample ID: **MSLCSLL-65942** SampType: **LCSLL** TestCode: **EPA Method 6020A: Metals**
Client ID: **BatchQC** Batch ID: **65942** RunNo: **86256**
Prep Date: **3/3/2022** Analysis Date: **3/4/2022** SeqNo: **3041015** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.20	0.1000	0	88.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **MSLCS-65942**	SampType: **LCS**	TestCode: **EPA Method 6020A: Metals**
Client ID: **LCSS**	Batch ID: **65942**	RunNo: **86256**
Prep Date: **3/3/2022**	Analysis Date: **3/4/2022**	SeqNo: **3041017** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	4.8	0.20	5.000	0	96.5	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**

14-Mar-22

Client: WSP

Project: Bisti LF

Sample ID: **mb-65533**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **65533**	RunNo: **85848**
Prep Date: **2/14/2022**	Analysis Date: **2/16/2022**	SeqNo: **3022962** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		114	70	130			

Sample ID: **LCS-65533**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **65533**	RunNo: **85848**
Prep Date: **2/14/2022**	Analysis Date: **2/15/2022**	SeqNo: **3022963** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.3	80	120			
Toluene	0.97	0.050	1.000	0	97.3	80	120			
Ethylbenzene	1.0	0.050	1.000	0	99.8	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.4	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		116	70	130			

Sample ID: **2202573-001ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **West Line Vadose**	Batch ID: **65533**	RunNo: **85848**
Prep Date: **2/14/2022**	Analysis Date: **2/15/2022**	SeqNo: **3022965** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9901	0	101	80	120			
Toluene	1.1	0.050	0.9901	0	106	80	120			
Ethylbenzene	1.1	0.050	0.9901	0	110	80	120			
Xylenes, Total	3.3	0.099	2.970	0	110	80	120			
Surr: 4-Bromofluorobenzene	1.1		0.9901		115	70	130			

Sample ID: **2202573-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **West Line Vadose**	Batch ID: **65533**	RunNo: **85848**
Prep Date: **2/14/2022**	Analysis Date: **2/16/2022**	SeqNo: **3022966** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9881	0	101	80	120	0.0789	20	
Toluene	1.0	0.049	0.9881	0	106	80	120	0.755	20	
Ethylbenzene	1.1	0.049	0.9881	0	109	80	120	0.426	20	
Xylenes, Total	3.3	0.099	2.964	0	110	80	120	0.319	20	
Surr: 4-Bromofluorobenzene	1.2		0.9881		117	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **MB-65981**	SampType: **MBLK**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **PBS**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042338**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LCS-65981**	SampType: **LCS**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **LCSS**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042339**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.15	0.033	0.1667	0	91.5	80	120			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042340**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	105	70	130			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042341**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	94.8	70	130			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042342**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	96.1	70	130			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042343**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	93.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042344**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	95.4	70	130			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042345**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	95.8	70	130			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042346**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	96.6	70	130			

Sample ID: **LCSLL-65981**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **65981**	RunNo: **86288**							
Prep Date: **3/7/2022**	Analysis Date: **3/7/2022**	SeqNo: **3042347**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	98.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **MB-65942**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **65942**	RunNo: **86344**
Prep Date: **3/3/2022**	Analysis Date: **3/8/2022**	SeqNo: **3045232** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Calcium	ND	25								
Chromium	ND	0.30								
Copper	ND	2.0								
Iron	ND	10								
Magnesium	ND	25								
Manganese	ND	0.20								
Potassium	ND	50								
Sodium	ND	25								

Sample ID: **LCS-65942**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **65942**	RunNo: **86344**
Prep Date: **3/3/2022**	Analysis Date: **3/8/2022**	SeqNo: **3045234** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	96.9	80	120			
Barium	23	0.10	25.00	0	92.3	80	120			
Beryllium	24	0.15	25.00	0	96.8	80	120			
Cadmium	24	0.10	25.00	0	94.3	80	120			
Calcium	2200	25	2500	0	89.5	80	120			
Chromium	23	0.30	25.00	0	91.3	80	120			
Copper	27	2.0	25.00	0	107	80	120			
Iron	24	10	25.00	0	96.9	80	120			
Magnesium	2400	25	2500	0	97.8	80	120			
Manganese	24	0.20	25.00	0	94.4	80	120			
Potassium	2500	50	2500	0	98.0	80	120			
Sodium	2500	25	2500	0	101	80	120			

Sample ID: **MB-65942**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **65942**	RunNo: **86344**
Prep Date: **3/3/2022**	Analysis Date: **3/8/2022**	SeqNo: **3045353** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.50								
Zinc	ND	2.5								

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202573**
14-Mar-22

Client: WSP
Project: Bisti LF

Sample ID: **LCS-65942** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **65942** RunNo: **86344**
Prep Date: **3/3/2022** Analysis Date: **3/8/2022** SeqNo: **3045355** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	4.8	0.50	5.000	0	96.1	80	120			
Zinc	23	2.5	25.00	0	93.6	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: WSP | Work Order Number: 2202573 | RcptNo: 1

Received By: Tracy Casarrubias 2/11/2022 8:00:00 AM

Completed By: Sean Livingston 2/11/2022 10:00:17 AM Sean Livingston

Reviewed By: 2-11-22

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JR 2/11/22

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good				

Chain-of-Custody Record

Client: WSP

Stuart Hyde

Mailing Address: 848 E. 2nd Ave

Durango, CO.

Phone #: 970-903-1607

email or Fax#: Stuart.Hyde@wsp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: Bisti LF

Project #: ~~TE0903~~ TE029521002

Project Manager: Stuart Hyde

Sampler: Eric Carroll

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.3-0=3.3 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2202573	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	TPH 418.1	Major Cations/Anions	Subsection A&B			
2/10	11:35	Soil	West line vadose	various	cool	001	X						X				X	X	X			
	11:50		East line vadose			002	X						X				X	X	X			
	12:00		Pettigrew vadose			003	X						X				X	X	X			
	12:10		Bisti vadose			004	X						X				X	X	X			
	12:15		API 1 vadose			005	X						X				X	X	X			
	12:20		API 2 vadose			006	X						X				X	X	X			
	12:30		API 3 vadose			007	X						X				X	X	X			
	12:40		API 4 vadose			008	X						X				X	X	X			
	12:35		API Treatment			009							X				X					
↓	12:05	↓	~~API~~ Crude Treatment	↓	↓	010							X				X					

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
2/10	1400	Eric Carroll				
2/10/22	1747				2/10/22	1400
					2/11/22	8:00

Remarks: See Attached for cations/anions & Subsection A&B

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.

Analyte Lists		
5- Year Sampling, Subsection A&B - Rule 36 (by USEPA Method 6010B/6020) Plus Mercury (7471)	**Annual Sampling, Rule 711 Heavy Metals**	**Major Cations/Anions - Rule 711 (USEPA Method)**
Antimony	Arsenic (6010B)	Alkalinity (ASA10-3)
Arsenic ✓	Barium (6010B)	Bicarbonate (ASA10-3
Barium	Cadmium (6010B)	Carbonate (ASA10-3)
Beryllium	Chromium (6010B)	Chloride (300.0)
Cadmium	Lead (6010B)	Calcium (6010B)
Chromium	Selenium (6010B)	Magnesium
Copper	Silver (6010B)	Potassium (6010B)
Iron	Mercury (7471)	Sodium (6010B)
Lead ✓		Sulfate (300.0)
Manganese		
Selenium ✓		
Silver		
Thallium ✓		
Uranium ✓		
Zinc		
Mercury		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 03, 2022

Stuart Hyde
ENSOLUM
606 S. Rio Grande Suite A
Aztec, NM 87410
TEL: (903) 821-5603
FAX

RE: Bisti LF OrderNo.: 2206A52

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/21/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 12, 20222.

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.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2206A52**
Date Reported: **8/3/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: West Line Vadose
Project: Bisti LF
Collection Date: 6/20/2022 10:50:00 AM
Lab ID: 2206A52-001 **Matrix:** SOIL **Received Date:** 6/21/2022 7:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **ED**	
Diesel Range Organics (DRO)	ND	11	15		mg/Kg	1	6/23/2022 11:51:55 PM	68271
Motor Oil Range Organics (MRO)	ND	27	49		mg/Kg	1	6/23/2022 11:51:55 PM	68271
Surr: DNOP	82.0	0	51.1-141		%Rec	1	6/23/2022 11:51:55 PM	68271
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	4.8		mg/Kg	1	6/24/2022 2:55:43 AM	68260
Surr: BFB	95.9	0	37.7-212		%Rec	1	6/24/2022 2:55:43 AM	68260
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Benzene	ND	0.013	0.024		mg/Kg	1	6/24/2022 2:55:43 AM	68260
Toluene	ND	0.012	0.048		mg/Kg	1	6/24/2022 2:55:43 AM	68260
Ethylbenzene	ND	0.0095	0.048		mg/Kg	1	6/24/2022 2:55:43 AM	68260
Xylenes, Total	ND	0.017	0.096		mg/Kg	1	6/24/2022 2:55:43 AM	68260
Surr: 4-Bromofluorobenzene	91.5	0	70-130		%Rec	1	6/24/2022 2:55:43 AM	68260
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Chloride	ND	59	59		mg/Kg	20	6/25/2022 2:02:55 AM	68356

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

Qualifiers:

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

Analytical Report
Lab Order **2206A52**
Date Reported: **8/3/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: East Line Vadose
Project: Bisti LF
Collection Date: 6/20/2022 11:00:00 AM
Lab ID: 2206A52-002 **Matrix:** SOIL **Received Date:** 6/21/2022 7:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **ED**	
Diesel Range Organics (DRO)	ND	11	14		mg/Kg	1	6/24/2022 12:15:40 AM	68271
Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	6/24/2022 12:15:40 AM	68271
Surr: DNOP	110	0	51.1-141		%Rec	1	6/24/2022 12:15:40 AM	68271
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	6/24/2022 4:06:24 AM	68260
Surr: BFB	94.6	0	37.7-212		%Rec	1	6/24/2022 4:06:24 AM	68260
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Benzene	ND	0.013	0.025		mg/Kg	1	6/24/2022 4:06:24 AM	68260
Toluene	ND	0.012	0.049		mg/Kg	1	6/24/2022 4:06:24 AM	68260
Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	6/24/2022 4:06:24 AM	68260
Xylenes, Total	ND	0.018	0.099		mg/Kg	1	6/24/2022 4:06:24 AM	68260
Surr: 4-Bromofluorobenzene	92.3	0	70-130		%Rec	1	6/24/2022 4:06:24 AM	68260
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Chloride	ND	61	61		mg/Kg	20	6/25/2022 2:39:57 AM	68356

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

Qualifiers:

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

Analytical Report
Lab Order **2206A52**
Date Reported: **8/3/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: API Vadose
Project: Bisti LF
Collection Date: 6/20/2022 11:10:00 AM
Lab ID: 2206A52-003 **Matrix:** SOIL **Received Date:** 6/21/2022 7:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **ED**	
Diesel Range Organics (DRO)	ND	11	14		mg/Kg	1	6/24/2022 12:39:22 AM	68271
Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	6/24/2022 12:39:22 AM	68271
Surr: DNOP	90.5	0	51.1-141		%Rec	1	6/24/2022 12:39:22 AM	68271
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **BRM**	
Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	6/24/2022 4:36:00 AM	68260
Surr: BFB	89.3	0	37.7-212		%Rec	1	6/24/2022 4:36:00 AM	68260
EPA METHOD 8021B: VOLATILES							Analyst: **BRM**	
Benzene	ND	0.013	0.025		mg/Kg	1	6/24/2022 4:36:00 AM	68260
Toluene	ND	0.013	0.050		mg/Kg	1	6/24/2022 4:36:00 AM	68260
Ethylbenzene	ND	0.0099	0.050		mg/Kg	1	6/24/2022 4:36:00 AM	68260
Xylenes, Total	ND	0.018	0.10		mg/Kg	1	6/24/2022 4:36:00 AM	68260
Surr: 4-Bromofluorobenzene	86.7	0	70-130		%Rec	1	6/24/2022 4:36:00 AM	68260
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Chloride	ND	60	60		mg/Kg	20	6/25/2022 3:16:59 AM	68356

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

Qualifiers:

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

Analytical Report
Lab Order **2206A52**
Date Reported: **8/3/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Pettigrew Vadose
Project: Bisti LF
Collection Date: 6/20/2022 11:17:00 AM
Lab ID: 2206A52-004
Matrix: SOIL
Received Date: 6/21/2022 7:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **ED**	
Diesel Range Organics (DRO)	ND	11	14		mg/Kg	1	6/24/2022 1:03:05 AM	68271
Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	6/24/2022 1:03:05 AM	68271
Surr: DNOP	83.9	0	51.1-141		%Rec	1	6/24/2022 1:03:05 AM	68271
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **BRM**	
Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	6/24/2022 4:56:00 AM	68260
Surr: BFB	94.2	0	37.7-212		%Rec	1	6/24/2022 4:56:00 AM	68260
EPA METHOD 8021B: VOLATILES							Analyst: **BRM**	
Benzene	ND	0.013	0.025		mg/Kg	1	6/24/2022 4:56:00 AM	68260
Toluene	ND	0.012	0.049		mg/Kg	1	6/24/2022 4:56:00 AM	68260
Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	6/24/2022 4:56:00 AM	68260
Xylenes, Total	ND	0.018	0.099		mg/Kg	1	6/24/2022 4:56:00 AM	68260
Surr: 4-Bromofluorobenzene	87.3	0	70-130		%Rec	1	6/24/2022 4:56:00 AM	68260
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Chloride	ND	61	61		mg/Kg	20	6/25/2022 3:54:02 AM	68356

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

Qualifiers:

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

Analytical Report
Lab Order **2206A52**
Date Reported: **8/3/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Bisti Vadose
Project: Bisti LF
Collection Date: 6/20/2022 11:26:00 AM
Lab ID: 2206A52-005
Matrix: SOIL
Received Date: 6/21/2022 7:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **ED**	
Diesel Range Organics (DRO)	ND	10	14		mg/Kg	1	6/24/2022 1:26:51 AM	68271
Motor Oil Range Organics (MRO)	ND	25	46		mg/Kg	1	6/24/2022 1:26:51 AM	68271
Surr: DNOP	88.4	0	51.1-141		%Rec	1	6/24/2022 1:26:51 AM	68271
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **BRM**	
Gasoline Range Organics (GRO)	ND	1.5	4.8		mg/Kg	1	6/24/2022 5:16:00 AM	68260
Surr: BFB	89.5	0	37.7-212		%Rec	1	6/24/2022 5:16:00 AM	68260
EPA METHOD 8021B: VOLATILES							Analyst: **BRM**	
Benzene	ND	0.013	0.024		mg/Kg	1	6/24/2022 5:16:00 AM	68260
Toluene	ND	0.012	0.048		mg/Kg	1	6/24/2022 5:16:00 AM	68260
Ethylbenzene	ND	0.0096	0.048		mg/Kg	1	6/24/2022 5:16:00 AM	68260
Xylenes, Total	ND	0.017	0.097		mg/Kg	1	6/24/2022 5:16:00 AM	68260
Surr: 4-Bromofluorobenzene	85.4	0	70-130		%Rec	1	6/24/2022 5:16:00 AM	68260
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Chloride	ND	60	60		mg/Kg	20	6/25/2022 4:06:22 AM	68356

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206A52**

03-Aug-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **MB-68356**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **68356**	RunNo: **89033**
Prep Date: **6/24/2022**	Analysis Date: **6/24/2022**	SeqNo: **3162206** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-68356**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **68356**	RunNo: **89033**
Prep Date: **6/24/2022**	Analysis Date: **6/24/2022**	SeqNo: **3162207** 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			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206A52**

03-Aug-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **MB-68271**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **68271**	RunNo: **88982**
Prep Date: **6/22/2022**	Analysis Date: **6/23/2022**	SeqNo: **3161113** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		91.3	51.1	141			

Sample ID: **LCS-68271**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **68271**	RunNo: **88982**
Prep Date: **6/22/2022**	Analysis Date: **6/23/2022**	SeqNo: **3161114** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	15	50.00	0	96.1	64.4	127			
Surr: DNOP	4.5		5.000		90.4	51.1	141			

Sample ID: **MB-68322**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **68322**	RunNo: **88982**
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3162904** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		106	51.1	141			

Sample ID: **LCS-68322**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **68322**	RunNo: **88982**
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3162905** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.4		5.000		109	51.1	141			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206A52**
03-Aug-22

Client: ENSOLUM
Project: Bisti LF

Sample ID: **mb-68260** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **68260** RunNo: **88994**
Prep Date: **6/21/2022** Analysis Date: **6/24/2022** SeqNo: **3160385** 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	980		1000		98.2	37.7	212			

Sample ID: **lcs-68260** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **68260** RunNo: **88994**
Prep Date: **6/21/2022** Analysis Date: **6/23/2022** SeqNo: **3160387** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	72.3	137			
Surr: BFB	2100		1000		213	37.7	212			S

Sample ID: **2206a52-001ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **West Line Vadose** Batch ID: **68260** RunNo: **88994**
Prep Date: **6/21/2022** Analysis Date: **6/24/2022** SeqNo: **3160391** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.8	23.97	0	107	70	130			
Surr: BFB	2000		958.8		209	37.7	212			

Sample ID: **2206a52-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **West Line Vadose** Batch ID: **68260** RunNo: **88994**
Prep Date: **6/21/2022** Analysis Date: **6/24/2022** SeqNo: **3160392** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.8	23.90	0	107	70	130	0.310	20	
Surr: BFB	2000		956.0		208	37.7	212	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206A52**

03-Aug-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **mb-68260** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **68260** RunNo: **88994**

Prep Date: **6/21/2022** Analysis Date: **6/24/2022** SeqNo: **3160401** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		94.0	70	130			

Sample ID: **LCS-68260** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **68260** RunNo: **88994**

Prep Date: **6/21/2022** Analysis Date: **6/23/2022** SeqNo: **3160402** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	1.000	0	82.6	80	120			
Toluene	0.87	0.050	1.000	0	86.8	80	120			
Ethylbenzene	0.88	0.050	1.000	0	88.4	80	120			
Xylenes, Total	2.7	0.10	3.000	0	89.4	80	120			
Surr: 4-Bromofluorobenzene	0.95		1.000		94.8	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **ENSOLUM** Work Order Number: **2206A52** RcptNo: 1

Received By: **Cheyenne Cason** **6/21/2022 7:00:00 AM**

Completed By: **Cheyenne Cason** **6/21/2022 8:20:11 AM**

Reviewed By: KPG 6.21.22

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JR 6/21/22

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Yes			

Chain-of-Custody Record

Client: ~~Western Refining~~ Ensolum
~~Kateri Lucas~~ Stuart Hyde
Mailing Address: 776 E. 2nd Ave
Durango, CO. 81301
Phone #:
email or Fax#: ~~#~~ shyde@ensolum.com
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 5 day
☒ Standard ☐ Rush
Project Name: Bisti LF
Project #: 07A2015004
Project Manager: Stuart Hyde
Sampler: E. Carroll
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 4.1 -0=4.1 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2206452	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6-20	10:50	Soil	West line vadose	1 4oz	cool	001	X	X					X			
	11:00		East line vadose			002	X	X					X			
	11:10		API vadose			003	X	X					X			
	11:17		Pettigrew vadose			004	X	X					X			
	11:26		Bisti vadose			005	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6/20	1243	Erin Carroll			6/20/22	1243
6/21/22	1814		CMC courier		6/21/22	0700

Remarks:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 26, 2022

Stuart Hyde
ENSOLUM
606 S. Rio Grande Suite A
Aztec, NM 87410
TEL: (903) 821-5603
FAX:

RE: Bisti LF OrderNo.: 2209D41

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 10 sample(s) on 9/24/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 07, 2022.

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.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

CLIENT: ENSOLUM
Client Sample ID: West Line Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:05:00 AM
Lab ID: 2209D41-001 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	9.3	12		mg/Kg	1	9/30/2022 5:40:25 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	23	41		mg/Kg	1	9/30/2022 5:40:25 AM
117-84-0	Surr: DNOP	84.2	0	21-129		%Rec	1	9/30/2022 5:40:25 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **BRM**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	9/28/2022 8:24:00 PM
460-00-4	Surr: BFB	105	0	37.7-212		%Rec	1	9/28/2022 8:24:00 PM
EPA METHOD 8021B: VOLATILES								Analyst: **BRM**
71-43-2	Benzene	ND	0.013	0.024		mg/Kg	1	9/27/2022 10:34:00 PM
108-88-3	Toluene	ND	0.012	0.049		mg/Kg	1	9/27/2022 10:34:00 PM
100-41-4	Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	9/27/2022 10:34:00 PM
1330-20-7	Xylenes, Total	ND	0.018	0.098		mg/Kg	1	9/27/2022 10:34:00 PM
460-00-4	Surr: 4-Bromofluorobenzene	90.6	0	70-130		%Rec	1	9/27/2022 10:34:00 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	ND	3.0	3.0		mg/Kg	1	10/14/2022 6:00:03 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: East Line Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:15:00 AM
Lab ID: 2209D41-002 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	10	14		mg/Kg	1	9/30/2022 5:51:09 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	25	45		mg/Kg	1	9/30/2022 5:51:09 AM
117-84-0	Surr: DNOP	85.2	0	21-129		%Rec	1	9/30/2022 5:51:09 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **BRM**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	9/28/2022 8:43:00 PM
460-00-4	Surr: BFB	104	0	37.7-212		%Rec	1	9/28/2022 8:43:00 PM
EPA METHOD 8021B: VOLATILES								Analyst: **BRM**
71-43-2	Benzene	ND	0.013	0.025		mg/Kg	1	9/27/2022 10:54:00 PM
108-88-3	Toluene	ND	0.013	0.050		mg/Kg	1	9/27/2022 10:54:00 PM
100-41-4	Ethylbenzene	ND	0.0098	0.050		mg/Kg	1	9/27/2022 10:54:00 PM
1330-20-7	Xylenes, Total	ND	0.018	0.099		mg/Kg	1	9/27/2022 10:54:00 PM
460-00-4	Surr: 4-Bromofluorobenzene	89.0	0	70-130		%Rec	1	9/27/2022 10:54:00 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	ND	3.0	3.0		mg/Kg	1	10/14/2022 6:12:28 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Pettigrew Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:29:00 AM
Lab ID: 2209D41-003 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	11	15		mg/Kg	1	9/30/2022 12:39:49 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	28	49		mg/Kg	1	9/30/2022 12:39:49 AM
117-84-0	Surr: DNOP	117	0	21-129		%Rec	1	9/30/2022 12:39:49 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	9/28/2022 12:24:54 PM
460-00-4	Surr: BFB	92.8	0	37.7-212		%Rec	1	9/28/2022 12:24:54 PM
EPA METHOD 8021B: VOLATILES								Analyst: **RAA**
71-43-2	Benzene	ND	0.013	0.025		mg/Kg	1	9/28/2022 12:24:54 PM
108-88-3	Toluene	ND	0.013	0.050		mg/Kg	1	9/28/2022 12:24:54 PM
100-41-4	Ethylbenzene	ND	0.0098	0.050		mg/Kg	1	9/28/2022 12:24:54 PM
1330-20-7	Xylenes, Total	ND	0.018	0.099		mg/Kg	1	9/28/2022 12:24:54 PM
460-00-4	Surr: 4-Bromofluorobenzene	98.7	0	70-130		%Rec	1	9/28/2022 12:24:54 PM
EPA METHOD 300.0: ANIONS								Analyst: **JMT**
16887-00-6	Chloride	120	60	60		mg/Kg	20	9/29/2022 5:35:04 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Bisti Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:45:00 AM
Lab ID: 2209D41-004 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	10	14		mg/Kg	1	9/30/2022 1:12:06 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	25	45		mg/Kg	1	9/30/2022 1:12:06 AM
117-84-0	Surr: DNOP	98.5	0	21-129		%Rec	1	9/30/2022 1:12:06 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	9/28/2022 1:35:12 PM
460-00-4	Surr: BFB	92.8	0	37.7-212		%Rec	1	9/28/2022 1:35:12 PM
EPA METHOD 8021B: VOLATILES								Analyst: **RAA**
71-43-2	Benzene	ND	0.013	0.024		mg/Kg	1	9/28/2022 1:35:12 PM
108-88-3	Toluene	ND	0.012	0.049		mg/Kg	1	9/28/2022 1:35:12 PM
100-41-4	Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	9/28/2022 1:35:12 PM
1330-20-7	Xylenes, Total	ND	0.018	0.098		mg/Kg	1	9/28/2022 1:35:12 PM
460-00-4	Surr: 4-Bromofluorobenzene	98.5	0	70-130		%Rec	1	9/28/2022 1:35:12 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	ND	3.0	3.0		mg/Kg	1	10/14/2022 6:49:42 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: API 1 Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:20:00 AM
Lab ID: 2209D41-005 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	11	14		mg/Kg	1	9/30/2022 1:22:57 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	9/30/2022 1:22:57 AM
117-84-0	Surr: DNOP	95.0	0	21-129		%Rec	1	9/30/2022 1:22:57 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	4.8		mg/Kg	1	9/28/2022 2:45:34 PM
460-00-4	Surr: BFB	92.9	0	37.7-212		%Rec	1	9/28/2022 2:45:34 PM
EPA METHOD 8021B: VOLATILES								Analyst: **RAA**
71-43-2	Benzene	ND	0.013	0.024		mg/Kg	1	9/28/2022 2:45:34 PM
108-88-3	Toluene	ND	0.012	0.048		mg/Kg	1	9/28/2022 2:45:34 PM
100-41-4	Ethylbenzene	ND	0.0095	0.048		mg/Kg	1	9/28/2022 2:45:34 PM
1330-20-7	Xylenes, Total	0.018	0.017	0.096	J	mg/Kg	1	9/28/2022 2:45:34 PM
460-00-4	Surr: 4-Bromofluorobenzene	99.5	0	70-130		%Rec	1	9/28/2022 2:45:34 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	ND	3.0	3.0		mg/Kg	1	10/14/2022 7:02:07 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: API 2 Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:27:00 AM
Lab ID: 2209D41-006 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	11	14		mg/Kg	1	9/30/2022 1:33:47 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	27	48		mg/Kg	1	9/30/2022 1:33:47 AM
117-84-0	Surr: DNOP	120	0	21-129		%Rec	1	9/30/2022 1:33:47 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	9/28/2022 3:08:59 PM
460-00-4	Surr: BFB	93.6	0	37.7-212		%Rec	1	9/28/2022 3:08:59 PM
EPA METHOD 8021B: VOLATILES								Analyst: **RAA**
71-43-2	Benzene	ND	0.013	0.024		mg/Kg	1	9/28/2022 3:08:59 PM
108-88-3	Toluene	ND	0.012	0.049		mg/Kg	1	9/28/2022 3:08:59 PM
100-41-4	Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	9/28/2022 3:08:59 PM
1330-20-7	Xylenes, Total	ND	0.018	0.098		mg/Kg	1	9/28/2022 3:08:59 PM
460-00-4	Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	9/28/2022 3:08:59 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	ND	3.0	3.0		mg/Kg	1	10/14/2022 7:14:31 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: API 3 Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:35:00 AM
Lab ID: 2209D41-007 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	11	15		mg/Kg	1	9/30/2022 1:44:36 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	27	49		mg/Kg	1	9/30/2022 1:44:36 AM
117-84-0	Surr: DNOP	103	0	21-129		%Rec	1	9/30/2022 1:44:36 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	9/28/2022 3:32:25 PM
460-00-4	Surr: BFB	94.7	0	37.7-212		%Rec	1	9/28/2022 3:32:25 PM
EPA METHOD 8021B: VOLATILES								Analyst: **RAA**
71-43-2	Benzene	ND	0.013	0.025		mg/Kg	1	9/28/2022 3:32:25 PM
108-88-3	Toluene	ND	0.012	0.049		mg/Kg	1	9/28/2022 3:32:25 PM
100-41-4	Ethylbenzene	ND	0.0098	0.049		mg/Kg	1	9/28/2022 3:32:25 PM
1330-20-7	Xylenes, Total	ND	0.018	0.099		mg/Kg	1	9/28/2022 3:32:25 PM
460-00-4	Surr: 4-Bromofluorobenzene	98.7	0	70-130		%Rec	1	9/28/2022 3:32:25 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	380	60	60		mg/Kg	20	9/29/2022 7:44:30 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: API 4 Vadose
Project: Bisti LF
Collection Date: 9/22/2022 11:40:00 AM
Lab ID: 2209D41-008 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	11	15		mg/Kg	1	9/30/2022 1:55:23 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	28	50		mg/Kg	1	9/30/2022 1:55:23 AM
117-84-0	Surr: DNOP	135	0	21-129	S	%Rec	1	9/30/2022 1:55:23 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	9/28/2022 3:55:53 PM
460-00-4	Surr: BFB	94.1	0	37.7-212		%Rec	1	9/28/2022 3:55:53 PM
EPA METHOD 8021B: VOLATILES								Analyst: **RAA**
71-43-2	Benzene	ND	0.013	0.025		mg/Kg	1	9/28/2022 3:55:53 PM
108-88-3	Toluene	ND	0.013	0.050		mg/Kg	1	9/28/2022 3:55:53 PM
100-41-4	Ethylbenzene	ND	0.0098	0.050		mg/Kg	1	9/28/2022 3:55:53 PM
1330-20-7	Xylenes, Total	ND	0.018	0.099		mg/Kg	1	9/28/2022 3:55:53 PM
460-00-4	Surr: 4-Bromofluorobenzene	99.7	0	70-130		%Rec	1	9/28/2022 3:55:53 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	89	60	60		mg/Kg	20	9/29/2022 8:21:44 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Crude Treatment
Project: Bisti LF
Collection Date: 9/22/2022 11:48:00 AM
Lab ID: 2209D41-009 **Matrix:** SOIL **Received Date:** 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	9.8	13		mg/Kg	1	10/1/2022 5:59:19 AM
TPH-MRO	Motor Oil Range Organics (MRO)	34	24	43	J	mg/Kg	1	10/1/2022 5:59:19 AM
117-84-0	Surr: DNOP	97.8	0	21-129		%Rec	1	10/1/2022 5:59:19 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	9/28/2022 4:19:19 PM
460-00-4	Surr: BFB	92.4	0	37.7-212		%Rec	1	9/28/2022 4:19:19 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	ND	60	60		mg/Kg	20	9/29/2022 8:34:08 PM

Qualifiers:

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

Analytical Report
Lab Order **2209D41**
Date Reported: **10/26/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: API Treatment
Project: Bisti LF
Collection Date: 9/22/2022 11:48:00 AM
Lab ID: 2209D41-010
Matrix: SOIL
Received Date: 9/24/2022 7:00:00 AM

CAS#	Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: **DGH**
TPH-DRO	Diesel Range Organics (DRO)	ND	11	14		mg/Kg	1	9/30/2022 2:16:55 AM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	9/30/2022 2:16:55 AM
117-84-0	Surr: DNOP	99.2	0	21-129		%Rec	1	9/30/2022 2:16:55 AM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: **RAA**
TPH-GRO	Gasoline Range Organics (GRO)	ND	1.5	4.8		mg/Kg	1	9/28/2022 4:42:50 PM
460-00-4	Surr: BFB	92.4	0	37.7-212		%Rec	1	9/28/2022 4:42:50 PM
EPA METHOD 300.0: ANIONS								Analyst: **JTT**
16887-00-6	Chloride	94	60	60		mg/Kg	20	9/29/2022 8:46:32 PM

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **MB-70488**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **70488**	RunNo: **91427**
Prep Date: **9/29/2022**	Analysis Date: **9/29/2022**	SeqNo: **3273639** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-70488**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **70488**	RunNo: **91427**
Prep Date: **9/29/2022**	Analysis Date: **9/29/2022**	SeqNo: **3273640** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	96.8	90	110			

Sample ID: **MB-70497**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **70497**	RunNo: **91433**
Prep Date: **9/29/2022**	Analysis Date: **9/29/2022**	SeqNo: **3273950** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-70497**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **70497**	RunNo: **91433**
Prep Date: **9/29/2022**	Analysis Date: **9/29/2022**	SeqNo: **3273951** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.6	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **LCS-70432**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **70432**	RunNo: **91371**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3271147** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	36	15	50.00	0	72.8	64.4	127			
Surr: DNOP	3.6		5.000		71.0	21	129			

Sample ID: **MB-70432**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **70432**	RunNo: **91371**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3271155** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	7.6		10.00		75.6	21	129			

Sample ID: **2209D41-003AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **Pettigrew Vadose**	Batch ID: **70443**	RunNo: **91439**
Prep Date: **9/27/2022**	Analysis Date: **9/30/2022**	SeqNo: **3274403** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	14	45.62	0	81.9	36.1	154			
Surr: DNOP	4.4		4.562		96.0	21	129			

Sample ID: **2209D41-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **Pettigrew Vadose**	Batch ID: **70443**	RunNo: **91439**
Prep Date: **9/27/2022**	Analysis Date: **9/30/2022**	SeqNo: **3274404** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	32	14	46.34	0	68.1	36.1	154	16.8	33.9	
Surr: DNOP	3.5		4.634		74.7	21	129	0	0	

Sample ID: **LCS-70443**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **70443**	RunNo: **91439**
Prep Date: **9/27/2022**	Analysis Date: **9/30/2022**	SeqNo: **3274443** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	15	50.00	0	74.5	64.4	127			
Surr: DNOP	4.2		5.000		84.9	21	129			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **MB-70443** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **70443** RunNo: **91439**

Prep Date: **9/27/2022** Analysis Date: **9/30/2022** SeqNo: **3274446** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	14		10.00		137	21	129			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 Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **lcs-70417**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **70417**	RunNo: **91349**
Prep Date: **9/26/2022**	Analysis Date: **9/28/2022**	SeqNo: **3271445** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	104	72.3	137			
Surr: BFB	2200		1000		220	37.7	212			S

Sample ID: **mb-70417**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **70417**	RunNo: **91349**
Prep Date: **9/26/2022**	Analysis Date: **9/28/2022**	SeqNo: **3271446** 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	1100		1000		110	37.7	212			

Sample ID: **2209d41-003ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Pettigrew Vadose**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272010** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.8	24.20	0	105	70	130			
Surr: BFB	1900		968.1		200	37.7	212			

Sample ID: **2209d41-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Pettigrew Vadose**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272011** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.8	24.15	0	96.0	70	130	9.26	20	
Surr: BFB	1800		966.2		189	37.7	212	0	0	

Sample ID: **LCS-70438**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272041** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.8	72.3	137			
Surr: BFB	1900		1000		191	37.7	212			

Sample ID: **mb-70438**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272043** 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 Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **mb-70438**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272043** 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	940		1000		93.8	37.7	212			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **lcs-70417**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **70417**	RunNo: **91342**
Prep Date: **9/26/2022**	Analysis Date: **9/27/2022**	SeqNo: **3269588** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	94.1	80	120			
Toluene	0.95	0.050	1.000	0	95.3	80	120			
Ethylbenzene	0.97	0.050	1.000	0	96.8	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.6	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.7	70	130			

Sample ID: **mb-70417**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **70417**	RunNo: **91342**
Prep Date: **9/26/2022**	Analysis Date: **9/27/2022**	SeqNo: **3269589** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		94.0	70	130			

Sample ID: **2209d41-004ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **Bisti Vadose**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272447** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9814	0	102	68.8	120			
Toluene	1.1	0.049	0.9814	0	107	73.6	124			
Ethylbenzene	1.1	0.049	0.9814	0	108	72.7	129			
Xylenes, Total	3.2	0.098	2.944	0	109	75.7	126			
Surr: 4-Bromofluorobenzene	1.0		0.9814		102	70	130			

Sample ID: **2209d41-004amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **Bisti Vadose**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272448** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.024	0.9747	0	102	68.8	120	0.743	20	
Toluene	1.0	0.049	0.9747	0	106	73.6	124	1.70	20	
Ethylbenzene	1.0	0.049	0.9747	0	107	72.7	129	1.36	20	
Xylenes, Total	3.1	0.097	2.924	0	107	75.7	126	2.02	20	
Surr: 4-Bromofluorobenzene	0.97		0.9747		99.7	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209D41**

26-Oct-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **lcs-70438**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272469** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.9	80	120			
Toluene	0.95	0.050	1.000	0	95.5	80	120			
Ethylbenzene	0.96	0.050	1.000	0	95.5	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.8	80	120			
Surr: 4-Bromofluorobenzene	0.97		1.000		97.0	70	130			

Sample ID: **mb-70438**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **70438**	RunNo: **91394**
Prep Date: **9/27/2022**	Analysis Date: **9/28/2022**	SeqNo: **3272470** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	0.019	0.10								J
Surr: 4-Bromofluorobenzene	1.0		1.000		100	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **ENSOLUM** Work Order Number: **2209D41** RcptNo: **1**

Received By: **Cheyenne Cason** **9/24/2022 7:00:00 AM**

Completed By: **Cheyenne Cason** **9/24/2022 7:59:05 AM**

Reviewed By: JN 9/26/22

Chain of Custody

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

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: CMC 9/24/22

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6	Good	Yes			

Chain-of-Custody Record

Client: Ensolum

Stuart Hyde

Mailing Address:

Phone #:

email or Fax#: SHyde@ensolum.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5day

☒ Standard ☐ Rush

Project Name: Bisti LF

Project #: 07A2015004

Project Manager: Stuart Hyde

Sampler: E. Carroll Z. Myers

On Ice: ☒ Yes ☐ No

# of Coolers: ~~3~~ 1

Cooler Temp(including CF): 3.6 -0 3.6 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2209041	~~BTEX / MTBE / TMB's (8021)~~	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	~~Cl, F, Br, NO_3, NO_2, PO_4, SO_4~~	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)					
9-22	11:05	soil	West Line Vadose	1 4oz	C001	001	X	X					X								
	11:15		East Line Vadose			002	X	X					X								
	11:29		Pettigrew Vadose			003	X	X					X								
	11:45		Bisti Vadose			004	X	X					X								
	11:20		API 1 Vadose			005	X	X					X								
	11:27		API 2 Vadose			006	X	X					X								
	11:35		API 3 Vadose			007	X	X					X								
	11:40		API4 Vadose			008	X	X					X								
	11:48		Crude Treatment			009		X					X								
	11:48		API Treatment			010		X					X								

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9/22/22	1514	E Carroll			9/23/22	1514
9/23/22	1810				9/24/22	0700

Remarks:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 29, 2022

Stuart Hyde
ENSOLUM
606 S. Rio Grande Suite A
Aztec, NM 87410
TEL: (903) 821-5603
FAX:

RE: Bisti LF OrderNo.: 2212B31

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 5 sample(s) on 12/20/2022 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2212B31**
Date Reported: **12/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Project: Bisti LF
Lab ID: 2212B31-001 **Matrix:** SOIL

Client Sample ID: West Line Vadose
Collection Date: 12/19/2022 11:30:00 AM
Received Date: 12/20/2022 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**DGH**
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	12/22/2022 9:49:05 PM	72256
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/22/2022 9:49:05 PM	72256
Surr: DNOP	122	21-129		%Rec	1	12/22/2022 9:49:05 PM	72256
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**CCM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2022 5:10:00 AM	72232
Surr: BFB	99.8	37.7-212		%Rec	1	12/22/2022 5:10:00 AM	72232
EPA METHOD 8021B: VOLATILES						Analyst:	**CCM**
Benzene	ND	0.025		mg/Kg	1	12/22/2022 5:10:00 AM	72232
Toluene	ND	0.050		mg/Kg	1	12/22/2022 5:10:00 AM	72232
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2022 5:10:00 AM	72232
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2022 5:10:00 AM	72232
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	1	12/22/2022 5:10:00 AM	72232

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

Qualifiers:

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

Analytical Report
Lab Order **2212B31**
Date Reported: **12/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Project: Bisti LF
Lab ID: 2212B31-002 **Matrix:** SOIL

Client Sample ID: East Line Vadose
Collection Date: 12/19/2022 11:50:00 AM
Received Date: 12/20/2022 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**DGH**
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	12/22/2022 9:59:38 PM	72256
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2022 9:59:38 PM	72256
Surr: DNOP	116	21-129		%Rec	1	12/22/2022 9:59:38 PM	72256
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2022 6:09:00 AM	72232
Surr: BFB	96.8	37.7-212		%Rec	1	12/22/2022 6:09:00 AM	72232
EPA METHOD 8021B: VOLATILES						Analyst:	**CCM**
Benzene	ND	0.025		mg/Kg	1	12/22/2022 6:09:00 AM	72232
Toluene	ND	0.049		mg/Kg	1	12/22/2022 6:09:00 AM	72232
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2022 6:09:00 AM	72232
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2022 6:09:00 AM	72232
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	12/22/2022 6:09:00 AM	72232

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

Qualifiers:

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

Analytical Report
Lab Order **2212B31**
Date Reported: **12/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: APF Vadose
Project: Bisti LF
Collection Date: 12/19/2022 12:00:00 PM
Lab ID: 2212B31-003 **Matrix:** SOIL **Received Date:** 12/20/2022 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**	
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	12/22/2022 10:10:12 PM	72256
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2022 10:10:12 PM	72256
Surr: DNOP	113	21-129		%Rec	1	12/22/2022 10:10:12 PM	72256
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2022 6:30:00 AM	72232
Surr: BFB	105	37.7-212		%Rec	1	12/22/2022 6:30:00 AM	72232
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**	
Benzene	ND	0.024		mg/Kg	1	12/22/2022 6:30:00 AM	72232
Toluene	ND	0.049		mg/Kg	1	12/22/2022 6:30:00 AM	72232
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2022 6:30:00 AM	72232
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2022 6:30:00 AM	72232
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	12/22/2022 6:30:00 AM	72232

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

Qualifiers:

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

Analytical Report
Lab Order **2212B31**
Date Reported: **12/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Pettigrew Vadose
Project: Bisti LF
Collection Date: 12/19/2022 12:25:00 PM
Lab ID: 2212B31-004 **Matrix:** SOIL **Received Date:** 12/20/2022 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**	
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	12/22/2022 10:20:48 PM	72256
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/22/2022 10:20:48 PM	72256
Surr: DNOP	123	21-129		%Rec	1	12/22/2022 10:20:48 PM	72256
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2022 6:50:00 AM	72232
Surr: BFB	112	37.7-212		%Rec	1	12/22/2022 6:50:00 AM	72232
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**	
Benzene	ND	0.025		mg/Kg	1	12/22/2022 6:50:00 AM	72232
Toluene	ND	0.049		mg/Kg	1	12/22/2022 6:50:00 AM	72232
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2022 6:50:00 AM	72232
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2022 6:50:00 AM	72232
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	12/22/2022 6:50:00 AM	72232

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

Qualifiers:

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

Analytical Report
Lab Order **2212B31**
Date Reported: **12/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM
Client Sample ID: Bisti Vadose
Project: Bisti LF
Collection Date: 12/19/2022 12:35:00 PM
Lab ID: 2212B31-005 **Matrix:** SOIL **Received Date:** 12/20/2022 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**	
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	12/22/2022 10:31:24 PM	72256
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/22/2022 10:31:24 PM	72256
Surr: DNOP	121	21-129		%Rec	1	12/22/2022 10:31:24 PM	72256
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2022 7:09:00 AM	72232
Surr: BFB	106	37.7-212		%Rec	1	12/22/2022 7:09:00 AM	72232
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**	
Benzene	ND	0.024		mg/Kg	1	12/22/2022 7:09:00 AM	72232
Toluene	ND	0.049		mg/Kg	1	12/22/2022 7:09:00 AM	72232
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2022 7:09:00 AM	72232
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2022 7:09:00 AM	72232
Surr: 4-Bromofluorobenzene	115	70-130		%Rec	1	12/22/2022 7:09:00 AM	72232

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B31**

29-Dec-22

Client: ENSOLUM

Project: Bisti LF

Sample ID: **MB-72256**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **72256**	RunNo: **93500**
Prep Date: **12/21/2022**	Analysis Date: **12/22/2022**	SeqNo: **3372932** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		118	21	129			

Sample ID: **LCS-72256**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **72256**	RunNo: **93500**
Prep Date: **12/21/2022**	Analysis Date: **12/22/2022**	SeqNo: **3374250** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	15	50.00	0	99.6	64.4	127			
Surr: DNOP	6.8		5.000		136	21	129			S

Sample ID: **LCS-72271**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **72271**	RunNo: **93500**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3374252** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.9		5.000		117	21	129			

Sample ID: **MB-72271**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **72271**	RunNo: **93500**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3374254** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		111	21	129			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B31**
29-Dec-22

Client: ENSOLUM
Project: Bisti LF

Sample ID: **LCS-72232** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **72232** RunNo: **93486**
Prep Date: **12/20/2022** Analysis Date: **12/22/2022** SeqNo: **3371888** 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	88.4	72.3	137			
Surr: BFB	2200		1000		219	37.7	212			S

Sample ID: **mb-72232** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **72232** RunNo: **93486**
Prep Date: **12/20/2022** Analysis Date: **12/22/2022** SeqNo: **3371889** 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	1000		1000		101	37.7	212			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B31**
29-Dec-22

Client: ENSOLUM
Project: Bisti LF

Sample ID: **LCS-72232** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **72232** RunNo: **93486**
Prep Date: **12/20/2022** Analysis Date: **12/22/2022** SeqNo: **3371965** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	108	80	120			
Toluene	1.1	0.050	1.000	0	108	80	120			
Ethylbenzene	1.1	0.050	1.000	0	107	80	120			
Xylenes, Total	3.2	0.10	3.000	0	107	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		110	70	130			

Sample ID: **mb-72232** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **72232** RunNo: **93486**
Prep Date: **12/20/2022** Analysis Date: **12/22/2022** SeqNo: **3371966** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		109	70	130			

Sample ID: **2212B31-001ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **West Line Vadose** Batch ID: **72232** RunNo: **93486**
Prep Date: **12/20/2022** Analysis Date: **12/22/2022** SeqNo: **3371969** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	0.9921	0	116	68.8	120			
Toluene	1.2	0.050	0.9921	0	118	73.6	124			
Ethylbenzene	1.2	0.050	0.9921	0	118	72.7	129			
Xylenes, Total	3.5	0.099	2.976	0	118	75.7	126			
Surr: 4-Bromofluorobenzene	1.1		0.9921		115	70	130			

Sample ID: **2212B31-001amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **West Line Vadose** Batch ID: **72232** RunNo: **93486**
Prep Date: **12/20/2022** Analysis Date: **12/22/2022** SeqNo: **3371970** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	0.9930	0	119	68.8	120	2.45	20	
Toluene	1.2	0.050	0.9930	0	120	73.6	124	2.32	20	
Ethylbenzene	1.2	0.050	0.9930	0	121	72.7	129	2.54	20	
Xylenes, Total	3.6	0.099	2.979	0	121	75.7	126	2.33	20	
Surr: 4-Bromofluorobenzene	1.1		0.9930		112	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: ENSOLUM Work Order Number: 2212B31 RcptNo: 1

Received By: Sean Livingston 12/20/2022 7:50:00 AM S Livgston
Completed By: Isaiah Ortiz 12/20/2022 9:20:24 AM I-Ox
Reviewed By: KPG 12.20.22

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preserved 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: JN 12/20/22

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.8	Good	Not Present			
2	1.8	Good	Not Present			

Chain-of-Custody Record

Client: Ensolum LLC

Mailing Address:

Phone #:

email or Fax#: shyde@ensolum.com

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Bisti LF

Project #: 07A201S004

Project Manager: Stuart Hyde

Sampler: E. Carroll

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp (Including CF): 0.9±0=0.8 (°C) 1.8±0=1.8

HEAL No. 2212B31

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-19	11:30	soil	West line vadose	14 oz	Cool	001	X	X								
	11:50		East line vadose			002	X	X								
	12:00		APE vadose			003	X	X								
	12:25		Pebbigrew vadose			004	X	X								
	12:35		Bisti vadose			005	X	X								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
12-19	1351	Ecc Carroll	Christin Walker		12/19/22	1351
12/19/22	1840	Christin Walker	Sia Courier		12/20/22	7:50

Remarks: cc: ecarroll@ensolum.com

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.

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 202505

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 202505
	Action Type: [C-137] Non-Fee SWMF Submittal (SWMF NON-FEE SUBMITTAL)

CONDITIONS

Created By	Condition	Condition Date
bjones	OCD accepts the 2022 Annual Report into the administrative record but wishes to address the issues regarding the reporting of the laboratory results. In the future Western must use the sum of the reporting limits (RLs) for GRO, DRO, and MRO (instead of the RL and/or Method Detection Limit for MRO) when reporting non-detects (NDs) for TPH analyzed by EPA methods 8015 M/D and 8015 D in lieu of EPA method 418.1. On Table 2, all Xylene results from the June and Sept. 2022 sampling events were NDs. The Qualifiers at the bottom of each page of the Hall laboratory report clarifies that ND equals Not Detected at the Reporting Limit. Western's note * for Table 2 states "concentrations reported to the laboratory method detection" contrary to the ND Qualifier at the bottom of each Hall laboratory report. On Table 5, Western must use the most stringent soil screening level (SSL). In the case of Mercury that would be the EPA SSL of 10.9 mg/kg. Please contact me if you have any questions.	4/9/2024