



ENSOLUM

April 3, 2024

New Mexico Oil Conservation Division

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

Re: 2023 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 *2023 Annual Compliance Monitoring Report* detailing compliance soil sampling completed between January 2023 and December 2023 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.

2023 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. and subsequently Eurofins Environment Testing (Formerly 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 March 14, 2023, and September 15, 2023, 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 8015M/D and chloride following EPA Method 300.0.

Analytical results indicated 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 March 14, June 29, September 15, and December 19, 2023, 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/D. During the March and September 2023 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. Chloride, TPH, and BTEX concentrations were not detected in any of the soil

samples collected in 2023 above the Site background/laboratory PQLs. 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 *LTE Site Characterization Report and Variance Request* 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, 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.

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 NMOCDC 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 1* (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.

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. 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. Additionally, chloride, TPH, and BTEX concentrations for all collected samples were below the Site background/laboratory PQLs.

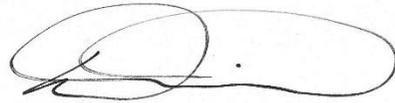
During the March 2023 sampling event, concentrations of several inorganic COCs in soil samples were also detected above the Site background/laboratory PQL concentrations; however, all COCs were below the NMED/EPA soil screening levels/closure standards presented in the *Closure and Post-Closure Plan* 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



Stuart Hyde, PG
Senior Geologist
(970) 903-1607
shyde@ensolum.com



Daniel R. Moir, PG
Senior Managing Geologist
(303) 887-2946
dmoir@ensolum.com

Attachments:

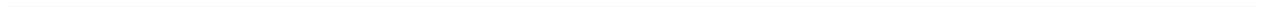
Figure 1: Site Location Map
Figure 2: Site Map
Figure 3: Vadose Zone Sample Locations

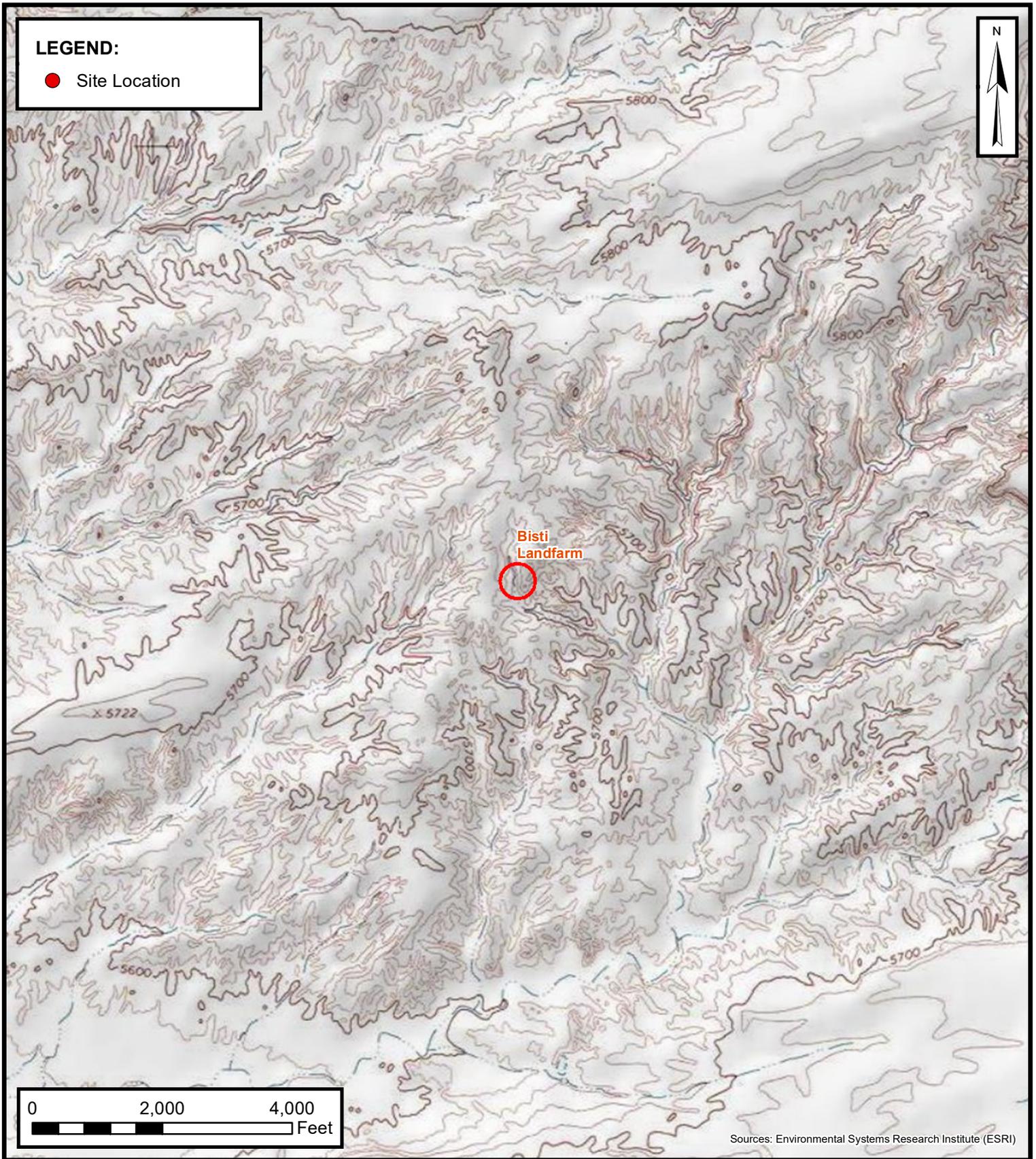
Table 1: 2023 Semi-Annual Treatment Zone Soil Analytical Results
Table 2: 2023 Quarterly and Semi-Annual Vadose Zone Soil Analytical Results
Table 3: 2023 Annual Vadose Zone Soil Analytical Results
Table 4: Treatment Zone Closure Performance Standards

Appendix A: Laboratory Analytical Reports



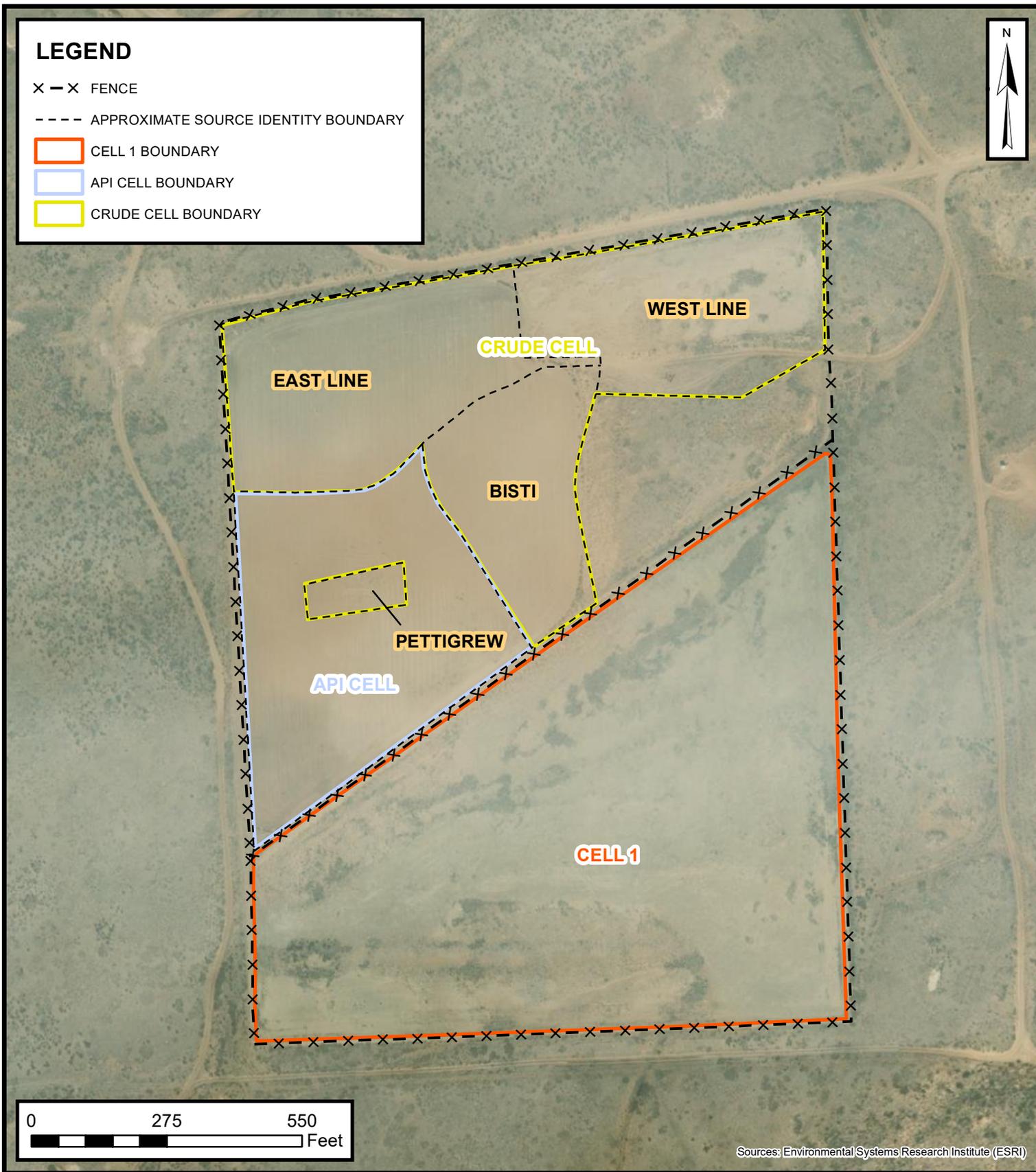
FIGURES





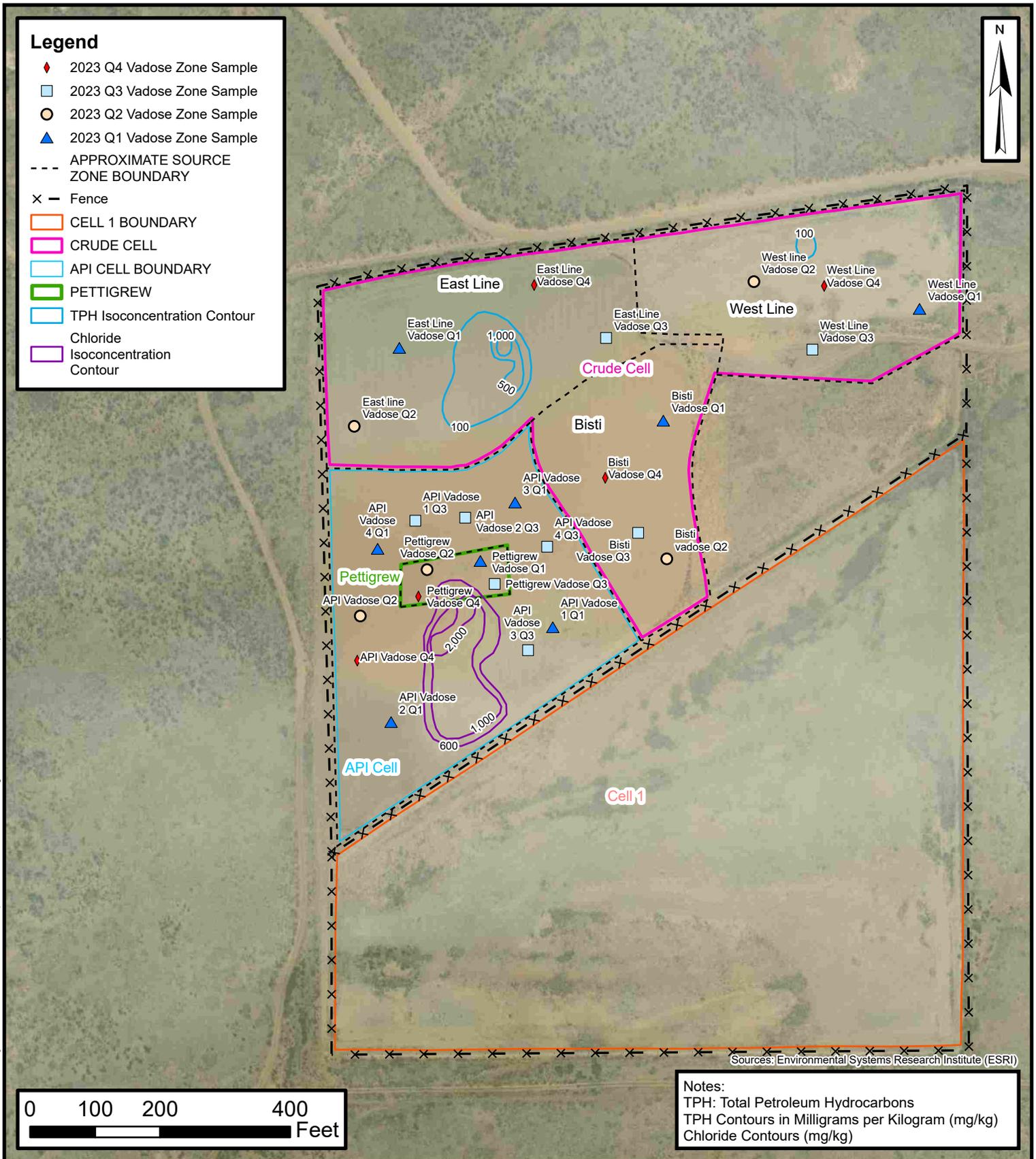
Site Location Map
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NM
WESTERN REFINING SOUTHWEST, LLC

FIGURE
1



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

FIGURE
2



Document Path: C:\Users\Gag Palaseo\OneDrive - ENSOLUM, LLC\Desktop\Ensolium GIS\1 - Durango\Marathon\Bisti Landfarm\Bisti Landfarm.aprx



Vadose Zone Sample Locations
 BISTI LANDFARM
 SEC 16 T25N R12W
 San Juan County, New Mexico
 WESTERN REFINING SOUTHWEST, INC

FIGURE
3



TABLES



TABLE 1 2023 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	3/14/23	145	<60
Crude Cell	Crude Treatment	9/15/23	17	<15
API Cell	API Treatment	3/14/23	<48	<60
API Cell	API Treatment	9/15/23	<50	<15

Notes:

mg/kg: milligrams per kilograms

TPH: total petroleum hydrocarbons

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



TABLE 2 2023 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	3/14/23	West Line Vadose	<48	<0.024	<0.048	<0.048	<0.017 MDL	<0.048	<15
		6/29/23	West Line Vadose	<46	<0.025	<0.049	<0.049	<0.098	<0.098	NA
		9/15/23	West Line Vadose	<49	<0.025	<0.049	<0.049	<0.099	<0.099	<15
		12/19/23	West Line Vadose	<47	<0.024	<0.048	<0.048	<0.095	<0.099	NA
	East Line	3/14/23	East Line Vadose	42.6 J	<0.024	<0.049	<0.049	<0.018 MDL	<0.049	22
		6/29/23	East Line Vadose	<48	<0.024	<0.048	<0.048	<0.097	<0.097	NA
		9/15/23	East Line Vadose	<47	<0.025	<0.049	<0.049	<0.098	<0.098	17
		12/19/23	East Line Vadose	<47	<0.023	<0.046	<0.046	<0.093	<0.093	NA
	Bisti	3/14/23	Bisti Vadose	<49	<0.024	<0.048	<0.048	<0.017 MDL	<0.048	<15
		6/29/23	Bisti Vadose	<46	<0.024	<0.049	<0.049	<0.097	<0.097	NA
		9/15/23	Bisti Vadose	<49	<0.024	<0.048	<0.048	<0.097	<0.097	<15
		12/19/23	Bisti Vadose	<49	<0.023	<0.047	<0.047	<0.094	<0.094	NA
	Pettigrew	3/14/23	Pettigrew Vadose	<48	<0.024	<0.048	<0.048	<0.017 MDL	<0.048	15
		6/29/23	Pettigrew Vadose	<46	<0.025	<0.049	<0.049	<0.098	<0.098	NA
		9/15/23	Pettigrew Vadose	<49	<0.025	<0.049	<0.049	<0.099	<0.099	<15
		12/19/23	Pettigrew Vadose	<50	<0.024	<0.047	<0.047	<0.094	<0.094	NA
API Cell	API	3/14/23	API 1 Vadose	<47	<0.025	<0.049	<0.049	<0.018 MDL	<0.049	<15
			API 2 Vadose	<47	<0.023	<0.047	<0.047	<0.017 MDL	<0.047	<60
			API 3 Vadose	<47	<0.024	<0.048	<0.048	<0.017 MDL	<0.048	<60
			API 4 Vadose	<50	<0.025	<0.049	<0.049	<0.018 MDL	<0.049	<60
	6/29/23	API Vadose	<50	<0.024	<0.049	<0.049	<0.097	<0.097	NA	
	9/15/23	API 1 Vadose	<49	<0.024	<0.048	<0.048	<0.097	<0.097	<15	
		API 2 Vadose	<48	<0.024	<0.049	<0.049	<0.098	<0.098	<15	
		API 3 Vadose	<47	<0.025	<0.050	<0.050	<0.10	<0.10	<15	
		API 4 Vadose	<47	<0.024	<0.048	<0.048	<0.096	<0.096	<15	
	12/19/23	API Vadose	<50	<0.024	<0.048	<0.048	<0.096	<0.096	NA	

Notes:

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

J: analyte detected below quantitation limits, estimated concentration

mg/kg: milligrams per kilogram

MDL: results reported to the laboratory method detection limit

NA: not analyzed

TPH: Total Petroleum Hydrocarbon

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

Concentrations in **bold** exceed higher of the background sample result or laboratory PQL

*: concentrations reported to the laboratory method detection limit



TABLE 3 2023 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	3/14/23	103	2.7	77	<0.49	3,600	4.7	5.2	2,000	0.037	1,700	2.2	<0.98	130	110
	East Line	East Line Vadose	3/14/23	58	2.2	110	<0.49	1,900	5.2	5.8	1,900	<0.033	2,100	2.3	<0.99	210	161
	Bisti	Bisti Vadose	3/14/23	97	2.0	61	<0.49	4,900	2.6	3.5	1,300	<0.033	950	1.4	<0.99	130	<100
	Pettigrew	Pettigrew Vadose	3/14/23	57	1.9	85	<0.49	2,600	2.1	2.9	1,000	<0.032	770	1.2	<0.99	<99	<100
API Cell	API Cell	API 1 Vadose	3/14/23	59	1.8	41	<0.49	2,500	2.2	3.0	1,000	7.3	670	1.2	<0.98	100	<100

Notes:

EPA: Environmental Protection Agency

mg/kg: milligrams per kilogram

NE: not established

NA: not analyzed

<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 stringent (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"



**TABLE 4
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 States 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

<1.3 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



APPENDIX A

Laboratory Analytical Reports



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

April 27, 2023

Stuart Hyde

ENSOLUM

606 S. Rio Grande Suite A

Aztec, NM 87410

TEL: (903) 821-5603

FAX

RE: Bisti LF

OrderNo.: 2303785

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 10 sample(s) on 3/15/2023 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued March 31, 2023.

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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: West Line Vadose

Project: Bisti LF

Collection Date: 3/14/2023 11:35:00 AM

Lab ID: 2303785-001

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	ND	8.2	9.6		mg/Kg	1	3/20/2023 3:09:21 PM	73773
Motor Oil Range Organics (MRO)	ND	27	48		mg/Kg	1	3/20/2023 3:09:21 PM	73773
Surr: DNOP	101	0	69-147		%Rec	1	3/20/2023 3:09:21 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: RAA								
Gasoline Range Organics (GRO)	ND	1.2	4.8		mg/Kg	1	3/18/2023 5:19:00 AM	73764
Surr: BFB	90.5	0	37.7-212		%Rec	1	3/18/2023 5:19:00 AM	73764
EPA METHOD 8021B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.013	0.024		mg/Kg	1	3/18/2023 5:19:00 AM	73764
Toluene	ND	0.012	0.048		mg/Kg	1	3/18/2023 5:19:00 AM	73764
Ethylbenzene	ND	0.0095	0.048		mg/Kg	1	3/18/2023 5:19:00 AM	73764
Xylenes, Total	ND	0.017	0.097		mg/Kg	1	3/18/2023 5:19:00 AM	73764
Surr: 4-Bromofluorobenzene	90.8	0	70-130		%Rec	1	3/18/2023 5:19:00 AM	73764
EPA METHOD 300.0: ANIONS								
Analyst: CAS								
Chloride	ND	15	15		mg/Kg	5	4/13/2023 9:43:06 AM	73788
EPA METHOD 6020A: TOTAL METALS								
Analyst: ELS								
Arsenic	2.7	0.24	0.49		mg/Kg	5	3/23/2023 1:12:03 PM	73859
Lead	5.2	0.24	0.49		mg/Kg	5	3/23/2023 1:12:03 PM	73859
Selenium	2.2	0.49	0.49		mg/Kg	5	3/24/2023 10:46:37 AM	73859
EPA METHOD 7471B: MERCURY								
Analyst: tem								
Mercury	0.037	0.032	0.032		mg/Kg	1	3/24/2023 3:21:04 PM	73902
EPA METHOD 6010B: SOIL METALS								
Analyst: JRR								
Barium	77	0.20	0.20		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Cadmium	ND	0.41	0.49		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Calcium	3600	37	98		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Chromium	4.7	0.59	0.59		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Magnesium	2000	9.7	98		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Potassium	1700	12	98		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Silver	ND	0.32	0.98		mg/Kg	2	3/27/2023 11:06:44 AM	73859
Sodium	130	50	98		mg/Kg	2	3/27/2023 11:06:44 AM	73859

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: East Line Vadose

Project: Bisti LF

Collection Date: 3/14/2023 11:50:00 AM

Lab ID: 2303785-002

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	9.6	7.9	9.2		mg/Kg	1	3/20/2023 3:19:58 PM	73773
Motor Oil Range Organics (MRO)	33	25	46	J	mg/Kg	1	3/20/2023 3:19:58 PM	73773
Surr: DNOP	105	0	69-147		%Rec	1	3/20/2023 3:19:58 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: RAA								
Gasoline Range Organics (GRO)	ND	1.2	4.9		mg/Kg	1	3/18/2023 5:41:00 AM	73764
Surr: BFB	87.7	0	37.7-212		%Rec	1	3/18/2023 5:41:00 AM	73764
EPA METHOD 8021B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.013	0.024		mg/Kg	1	3/18/2023 5:41:00 AM	73764
Toluene	ND	0.012	0.049		mg/Kg	1	3/18/2023 5:41:00 AM	73764
Ethylbenzene	ND	0.0096	0.049		mg/Kg	1	3/18/2023 5:41:00 AM	73764
Xylenes, Total	ND	0.018	0.098		mg/Kg	1	3/18/2023 5:41:00 AM	73764
Surr: 4-Bromofluorobenzene	89.3	0	70-130		%Rec	1	3/18/2023 5:41:00 AM	73764
EPA METHOD 300.0: ANIONS								
Analyst: CAS								
Chloride	22	15	15		mg/Kg	5	4/13/2023 9:55:30 AM	73788
EPA METHOD 6020A: TOTAL METALS								
Analyst: ELS								
Arsenic	2.2	0.25	0.49		mg/Kg	5	3/23/2023 1:16:25 PM	73859
Lead	5.8	0.25	0.49		mg/Kg	5	3/23/2023 1:16:25 PM	73859
Selenium	2.3	0.49	0.49		mg/Kg	5	3/24/2023 10:51:00 AM	73859
EPA METHOD 7471B: MERCURY								
Analyst: tem								
Mercury	ND	0.033	0.033		mg/Kg	1	3/24/2023 3:23:12 PM	73902
EPA METHOD 6010B: SOIL METALS								
Analyst: JRR								
Barium	110	0.49	0.49		mg/Kg	5	3/27/2023 12:58:19 PM	73859
Cadmium	ND	0.41	0.49		mg/Kg	2	3/27/2023 11:08:26 AM	73859
Calcium	1900	37	99		mg/Kg	2	3/27/2023 11:08:26 AM	73859
Chromium	5.2	0.59	0.59		mg/Kg	2	3/27/2023 11:08:26 AM	73859
Magnesium	1900	9.8	99		mg/Kg	2	3/27/2023 11:08:26 AM	73859
Potassium	2100	12	99		mg/Kg	2	3/27/2023 11:08:26 AM	73859
Silver	ND	0.32	0.99		mg/Kg	2	3/27/2023 11:08:26 AM	73859
Sodium	210	51	99		mg/Kg	2	3/27/2023 11:08:26 AM	73859

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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 1 Vadose

Project: Bisti LF

Collection Date: 3/14/2023 12:00:00 PM

Lab ID: 2303785-003

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	ND	8.1	9.4		mg/Kg	1	3/20/2023 3:30:38 PM	73773
Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	3/20/2023 3:30:38 PM	73773
Surr: DNOP	104	0	69-147		%Rec	1	3/20/2023 3:30:38 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: RAA								
Gasoline Range Organics (GRO)	ND	1.2	4.9		mg/Kg	1	3/18/2023 6:03:00 AM	73764
Surr: BFB	87.3	0	37.7-212		%Rec	1	3/18/2023 6:03:00 AM	73764
EPA METHOD 8021B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.013	0.025		mg/Kg	1	3/18/2023 6:03:00 AM	73764
Toluene	ND	0.012	0.049		mg/Kg	1	3/18/2023 6:03:00 AM	73764
Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	3/18/2023 6:03:00 AM	73764
Xylenes, Total	ND	0.018	0.098		mg/Kg	1	3/18/2023 6:03:00 AM	73764
Surr: 4-Bromofluorobenzene	90.8	0	70-130		%Rec	1	3/18/2023 6:03:00 AM	73764
EPA METHOD 300.0: ANIONS								
Analyst: CAS								
Chloride	ND	15	15		mg/Kg	5	4/13/2023 10:07:54 AM	73788
EPA METHOD 6020A: TOTAL METALS								
Analyst: ELS								
Arsenic	1.8	0.25	0.49		mg/Kg	5	3/23/2023 1:20:47 PM	73859
Lead	3.0	0.25	0.49		mg/Kg	5	3/23/2023 1:20:47 PM	73859
Selenium	1.2	0.49	0.49		mg/Kg	5	3/24/2023 10:55:22 AM	73859
EPA METHOD 7471B: MERCURY								
Analyst: tem								
Mercury	7.3	1.6	1.6		mg/Kg	50	3/24/2023 4:04:39 PM	73902
EPA METHOD 6010B: SOIL METALS								
Analyst: JRR								
Barium	41	0.20	0.20		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Cadmium	ND	0.41	0.49		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Calcium	2500	37	98		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Chromium	2.2	0.59	0.59		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Magnesium	1000	9.7	98		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Potassium	670	12	98		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Silver	ND	0.32	0.98		mg/Kg	2	3/27/2023 11:10:09 AM	73859
Sodium	100	51	98		mg/Kg	2	3/27/2023 11:10:09 AM	73859

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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 2 Vadose

Project: Bisti LF

Collection Date: 3/14/2023 12:10:00 PM

Lab ID: 2303785-004

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	ND	8.1	9.5		mg/Kg	1	3/20/2023 3:41:16 PM	73773
Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	3/20/2023 3:41:16 PM	73773
Surr: DNOP	100	0	69-147		%Rec	1	3/20/2023 3:41:16 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: RAA								
Gasoline Range Organics (GRO)	ND	1.2	4.7		mg/Kg	1	3/18/2023 6:24:00 AM	73764
Surr: BFB	90.5	0	37.7-212		%Rec	1	3/18/2023 6:24:00 AM	73764
EPA METHOD 8021B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.012	0.023		mg/Kg	1	3/18/2023 6:24:00 AM	73764
Toluene	ND	0.012	0.047		mg/Kg	1	3/18/2023 6:24:00 AM	73764
Ethylbenzene	ND	0.0092	0.047		mg/Kg	1	3/18/2023 6:24:00 AM	73764
Xylenes, Total	ND	0.017	0.093		mg/Kg	1	3/18/2023 6:24:00 AM	73764
Surr: 4-Bromofluorobenzene	91.4	0	70-130		%Rec	1	3/18/2023 6:24:00 AM	73764
EPA METHOD 300.0: ANIONS								
Analyst: JTT								
Chloride	ND	60	60		mg/Kg	20	3/18/2023 12:33:00 AM	73788

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 3 Vadose

Project: Bisti LF

Collection Date: 3/14/2023 12:20:00 PM

Lab ID: 2303785-005

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: JME
Diesel Range Organics (DRO)	ND	8.1	9.5		mg/Kg	1	3/20/2023 3:52:05 PM	73773
Motor Oil Range Organics (MRO)	ND	26	47		mg/Kg	1	3/20/2023 3:52:05 PM	73773
Surr: DNOP	102	0	69-147		%Rec	1	3/20/2023 3:52:05 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								Analyst: RAA
Gasoline Range Organics (GRO)	ND	1.2	4.8		mg/Kg	1	3/18/2023 6:46:00 AM	73764
Surr: BFB	85.4	0	37.7-212		%Rec	1	3/18/2023 6:46:00 AM	73764
EPA METHOD 8021B: VOLATILES								Analyst: RAA
Benzene	ND	0.013	0.024		mg/Kg	1	3/18/2023 6:46:00 AM	73764
Toluene	ND	0.012	0.048		mg/Kg	1	3/18/2023 6:46:00 AM	73764
Ethylbenzene	ND	0.0095	0.048		mg/Kg	1	3/18/2023 6:46:00 AM	73764
Xylenes, Total	ND	0.017	0.096		mg/Kg	1	3/18/2023 6:46:00 AM	73764
Surr: 4-Bromofluorobenzene	89.7	0	70-130		%Rec	1	3/18/2023 6:46:00 AM	73764
EPA METHOD 300.0: ANIONS								Analyst: JTT
Chloride	ND	60	60		mg/Kg	20	3/18/2023 12:45:25 AM	73788

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 4 Vadose

Project: Bisti LF

Collection Date: 3/14/2023 12:40:00 PM

Lab ID: 2303785-006

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: JME
Diesel Range Organics (DRO)	ND	8.6	10		mg/Kg	1	3/20/2023 4:02:53 PM	73773
Motor Oil Range Organics (MRO)	ND	28	50		mg/Kg	1	3/20/2023 4:02:53 PM	73773
Surr: DNOP	101	0	69-147		%Rec	1	3/20/2023 4:02:53 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								Analyst: RAA
Gasoline Range Organics (GRO)	ND	1.2	4.9		mg/Kg	1	3/18/2023 7:07:00 AM	73764
Surr: BFB	88.8	0	37.7-212		%Rec	1	3/18/2023 7:07:00 AM	73764
EPA METHOD 8021B: VOLATILES								Analyst: RAA
Benzene	ND	0.013	0.025		mg/Kg	1	3/18/2023 7:07:00 AM	73764
Toluene	ND	0.012	0.049		mg/Kg	1	3/18/2023 7:07:00 AM	73764
Ethylbenzene	ND	0.0097	0.049		mg/Kg	1	3/18/2023 7:07:00 AM	73764
Xylenes, Total	ND	0.018	0.099		mg/Kg	1	3/18/2023 7:07:00 AM	73764
Surr: 4-Bromofluorobenzene	90.3	0	70-130		%Rec	1	3/18/2023 7:07:00 AM	73764
EPA METHOD 300.0: ANIONS								Analyst: JTT
Chloride	ND	60	60		mg/Kg	20	3/18/2023 1:22:40 AM	73788

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2303785

Date Reported: 4/27/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Pettigrew Vadose

Project: Bisti LF

Collection Date: 3/14/2023 12:30:00 PM

Lab ID: 2303785-007

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	ND	8.2	9.6		mg/Kg	1	3/20/2023 4:13:38 PM	73773
Motor Oil Range Organics (MRO)	ND	27	48		mg/Kg	1	3/20/2023 4:13:38 PM	73773
Surr: DNOP	106	0	69-147		%Rec	1	3/20/2023 4:13:38 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: RAA								
Gasoline Range Organics (GRO)	ND	1.2	4.8		mg/Kg	1	3/18/2023 7:29:00 AM	73764
Surr: BFB	89.6	0	37.7-212		%Rec	1	3/18/2023 7:29:00 AM	73764
EPA METHOD 8021B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.013	0.024		mg/Kg	1	3/18/2023 7:29:00 AM	73764
Toluene	ND	0.012	0.048		mg/Kg	1	3/18/2023 7:29:00 AM	73764
Ethylbenzene	ND	0.0096	0.048		mg/Kg	1	3/18/2023 7:29:00 AM	73764
Xylenes, Total	ND	0.017	0.097		mg/Kg	1	3/18/2023 7:29:00 AM	73764
Surr: 4-Bromofluorobenzene	92.6	0	70-130		%Rec	1	3/18/2023 7:29:00 AM	73764
EPA METHOD 300.0: ANIONS								
Analyst: CAS								
Chloride	15	15	15		mg/Kg	5	4/13/2023 10:20:18 AM	73788
EPA METHOD 6020A: TOTAL METALS								
Analyst: ELS								
Arsenic	1.9	0.25	0.49		mg/Kg	5	3/23/2023 1:25:10 PM	73859
Lead	2.9	0.25	0.49		mg/Kg	5	3/23/2023 1:25:10 PM	73859
Selenium	1.2	0.49	0.49		mg/Kg	5	3/24/2023 10:59:45 AM	73859
EPA METHOD 7471B: MERCURY								
Analyst: tem								
Mercury	ND	0.032	0.032		mg/Kg	1	3/24/2023 3:27:37 PM	73902
EPA METHOD 6010B: SOIL METALS								
Analyst: JRR								
Barium	85	0.20	0.20		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Cadmium	ND	0.41	0.49		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Calcium	2600	37	99		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Chromium	2.1	0.59	0.59		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Magnesium	1000	9.8	99		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Potassium	770	12	99		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Silver	ND	0.32	0.99		mg/Kg	2	3/27/2023 11:11:46 AM	73859
Sodium	88	51	99	J	mg/Kg	2	3/27/2023 11:11:46 AM	73859

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2303785

Date Reported: 4/27/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Bisti Vadose

Project: Bisti LF

Collection Date: 3/14/2023 12:50:00 PM

Lab ID: 2303785-008

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	ND	8.5	9.9		mg/Kg	1	3/20/2023 4:24:23 PM	73773
Motor Oil Range Organics (MRO)	ND	27	49		mg/Kg	1	3/20/2023 4:24:23 PM	73773
Surr: DNOP	104	0	69-147		%Rec	1	3/20/2023 4:24:23 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: RAA								
Gasoline Range Organics (GRO)	ND	1.2	4.8		mg/Kg	1	3/18/2023 7:51:00 AM	73764
Surr: BFB	90.6	0	37.7-212		%Rec	1	3/18/2023 7:51:00 AM	73764
EPA METHOD 8021B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.013	0.024		mg/Kg	1	3/18/2023 7:51:00 AM	73764
Toluene	ND	0.012	0.048		mg/Kg	1	3/18/2023 7:51:00 AM	73764
Ethylbenzene	ND	0.0095	0.048		mg/Kg	1	3/18/2023 7:51:00 AM	73764
Xylenes, Total	ND	0.017	0.096		mg/Kg	1	3/18/2023 7:51:00 AM	73764
Surr: 4-Bromofluorobenzene	91.3	0	70-130		%Rec	1	3/18/2023 7:51:00 AM	73764
EPA METHOD 300.0: ANIONS								
Analyst: CAS								
Chloride	ND	15	15		mg/Kg	5	4/13/2023 10:32:42 AM	73789
EPA METHOD 6020A: TOTAL METALS								
Analyst: ELS								
Arsenic	2.0	0.25	0.49		mg/Kg	5	3/23/2023 1:29:32 PM	73859
Lead	3.5	0.25	0.49		mg/Kg	5	3/23/2023 1:29:32 PM	73859
Selenium	1.4	0.49	0.49		mg/Kg	5	3/24/2023 11:04:08 AM	73859
EPA METHOD 7471B: MERCURY								
Analyst: tem								
Mercury	ND	0.033	0.033		mg/Kg	1	3/24/2023 3:29:46 PM	73902
EPA METHOD 6010B: SOIL METALS								
Analyst: JRR								
Barium	61	0.20	0.20		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Cadmium	ND	0.41	0.49		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Calcium	4900	37	99		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Chromium	2.6	0.59	0.59		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Magnesium	1300	9.8	99		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Potassium	950	12	99		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Silver	ND	0.32	0.99		mg/Kg	2	3/27/2023 11:18:40 AM	73859
Sodium	130	51	99		mg/Kg	2	3/27/2023 11:18:40 AM	73859

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Crude Treatment

Project: Bisti LF

Collection Date: 3/14/2023 12:45:00 PM

Lab ID: 2303785-009

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: PRD
Diesel Range Organics (DRO)	81	7.9	9.3		mg/Kg	1	3/21/2023 2:52:10 PM	73773
Motor Oil Range Organics (MRO)	64	26	46		mg/Kg	1	3/21/2023 2:52:10 PM	73773
Surr: DNOP	109	0	69-147		%Rec	1	3/21/2023 2:52:10 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								Analyst: RAA
Gasoline Range Organics (GRO)	ND	1.2	4.9		mg/Kg	1	3/18/2023 8:12:00 AM	73764
Surr: BFB	87.3	0	37.7-212		%Rec	1	3/18/2023 8:12:00 AM	73764
EPA METHOD 300.0: ANIONS								Analyst: CAS
Chloride	ND	60	60		mg/Kg	20	3/18/2023 7:56:47 AM	73789

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2303785**

Date Reported: **4/27/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API Treatment

Project: Bisti LF

Collection Date: 3/14/2023 12:35:00 PM

Lab ID: 2303785-010

Matrix: SOIL

Received Date: 3/15/2023 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: JME
Diesel Range Organics (DRO)	ND	8.2	9.6		mg/Kg	1	3/20/2023 4:45:58 PM	73773
Motor Oil Range Organics (MRO)	ND	27	48		mg/Kg	1	3/20/2023 4:45:58 PM	73773
Surr: DNOP	91.4	0	69-147		%Rec	1	3/20/2023 4:45:58 PM	73773
EPA METHOD 8015D: GASOLINE RANGE								Analyst: RAA
Gasoline Range Organics (GRO)	ND	1.2	4.9		mg/Kg	1	3/18/2023 8:34:00 AM	73764
Surr: BFB	87.6	0	37.7-212		%Rec	1	3/18/2023 8:34:00 AM	73764
EPA METHOD 300.0: ANIONS								Analyst: CAS
Chloride	ND	60	60		mg/Kg	20	3/18/2023 8:09:07 AM	73789

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		



ANALYTICAL REPORT

March 21, 2023

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

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1595440

Samples Received: 03/16/2023

Project Number:

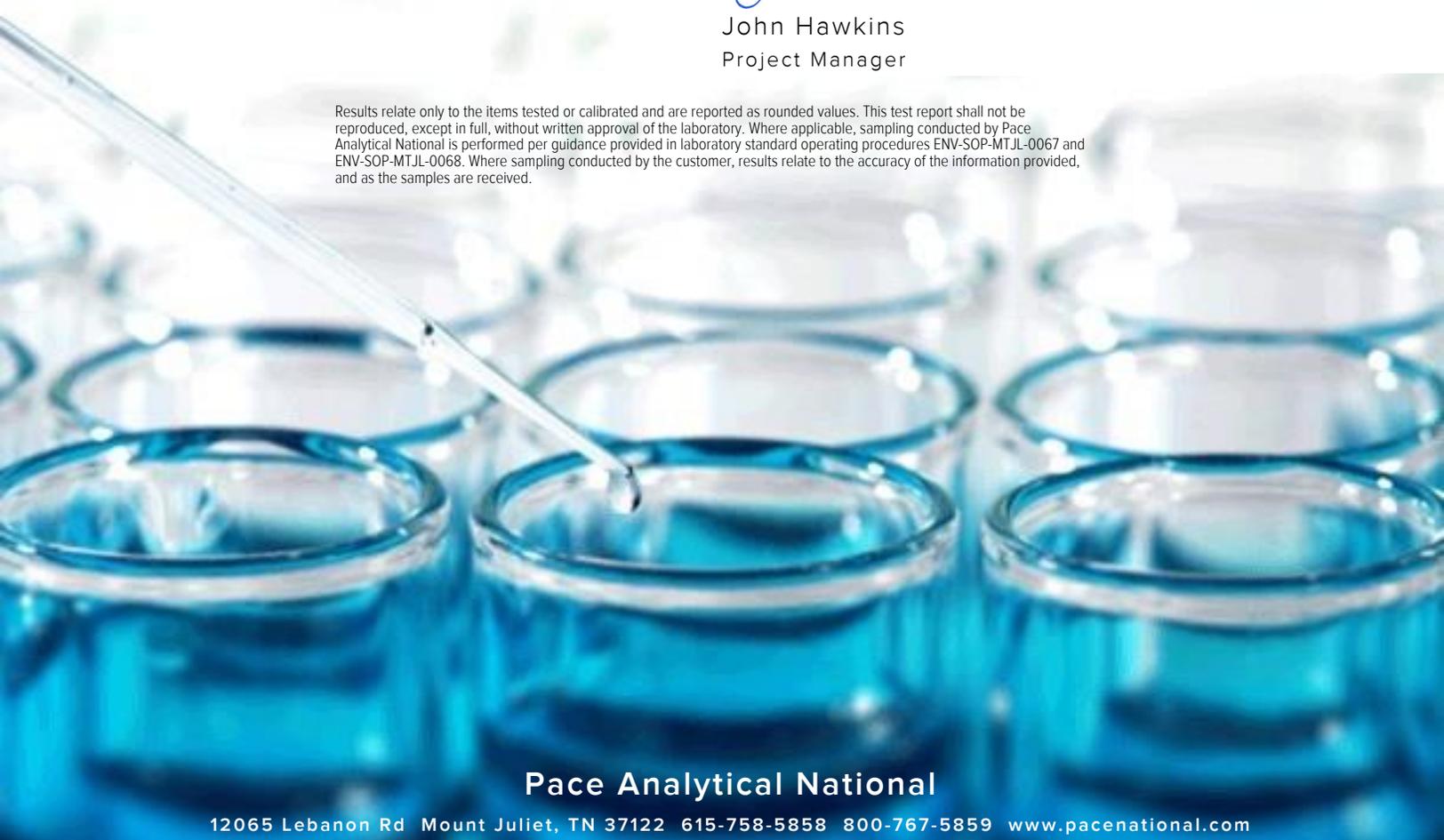
Description:

Report To: Andy Freeman
 4901 Hawkins NE
 Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	
Tc: Table of Contents	2	
Ss: Sample Summary	3	
Cn: Case Narrative	4	
Sr: Sample Results	5	
2303785-001B WEST LINE VADOSE L1595440-01	5	
2303785-002B EAST LINE VADOSE L1595440-02	6	
2303785-003B API 1 VADOSE L1595440-03	7	
2303785-004B PETTIGREW VADOSE L1595440-04	8	
2303785-005B BISTI VADOSE L1595440-05	9	
Qc: Quality Control Summary	10	
Metals (ICP) by Method 6010B	10	
Gl: Glossary of Terms	11	
Al: Accreditations & Locations	12	
Sc: Sample Chain of Custody	13	

2303785-001B WEST LINE VADOSE L1595440-01 Solid

Collected by
Collected date/time
Received date/time
03/14/23 11:35
03/16/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG2024940	1	03/17/23 02:12	03/17/23 20:00	ZSA	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

2303785-002B EAST LINE VADOSE L1595440-02 Solid

Collected by
Collected date/time
Received date/time
03/14/23 11:50
03/16/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG2024940	1	03/17/23 02:12	03/17/23 20:02	ZSA	Mt. Juliet, TN

4 Cn

5 Sr

2303785-003B API 1 VADOSE L1595440-03 Solid

Collected by
Collected date/time
Received date/time
03/14/23 12:00
03/16/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG2024940	1	03/17/23 02:12	03/17/23 20:05	ZSA	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

2303785-004B PETTIGREW VADOSE L1595440-04 Solid

Collected by
Collected date/time
Received date/time
03/14/23 12:30
03/16/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG2024940	1	03/17/23 02:12	03/17/23 20:13	ZSA	Mt. Juliet, TN

9 Sc

2303785-005B BISTI VADOSE L1595440-05 Solid

Collected by
Collected date/time
Received date/time
03/14/23 12:50
03/16/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG2024940	1	03/17/23 02:12	03/17/23 20:16	ZSA	Mt. Juliet, TN

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

John Hawkins
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 03/14/23 11:35

L1595440

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfur	110		100	1	03/17/2023 20:00	WG2024940

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

Collected date/time: 03/14/23 11:50

L1595440

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Sulfur	161		100	1	03/17/2023 20:02	WG2024940

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 03/14/23 12:00

L1595440

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfur	ND		100	1	03/17/2023 20:05	WG2024940

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

Collected date/time: 03/14/23 12:30

L1595440

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfur	ND		100	1	03/17/2023 20:13	WG2024940

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 03/14/23 12:50

L1595440

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfur	ND		100	1	03/17/2023 20:16	WG2024940

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

Metals (ICP) by Method 6010B

[L1595440-01,02,03,04,05](#)

Method Blank (MB)

(MB) R3902718-1 03/17/23 19:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sulfur	U		13.5	100

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS)

(LCS) R3902718-2 03/17/23 19:44

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sulfur	1000	922	92.2	80.0-120	

7 Gl

8 Al

9 Sc

L1595519-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1595519-13 03/17/23 19:47 • (MS) R3902718-5 03/17/23 19:55 • (MSD) R3902718-6 03/17/23 19:57

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sulfur	1000	ND	819	976	79.3	95.1	1	75.0-125			17.5	20

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

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

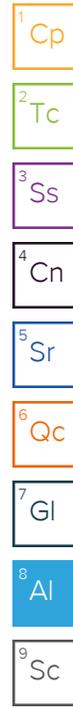
- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

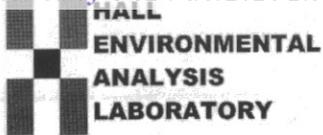
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		



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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



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: www.hallenvironmental.com

SUB CONTRACTOR: **Pace TN** COMPANY: **PACE TN** PHONE: **(800) 767-5859** FAX: **(615) 758-5859**
 ADDRESS: **12065 Lebanon Rd** ACCOUNT #: _____ EMAIL: _____
 CITY, STATE, ZIP: **Mt. Juliet, TN 37122** **A140**

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2303785-001B	West Line Vadose	4OZGU	Soil	3/14/2023 11:35:00 AM	1	Alkalinity, Sulfur in Soil -01
2	2303785-002B	East Line Vadose	4OZGU	Soil	3/14/2023 11:50:00 AM	1	Alkalinity, Sulfur in Soil -02
3	2303785-003B	API 1 Vadose	4OZGU	Soil	3/14/2023 12:00:00 PM	1	Alkalinity, Sulfur in Soil -03
4	2303785-007B	Pettigrew Vadose	4OZGU	Soil	3/14/2023 12:30:00 PM	1	Alkalinity, Sulfur in Soil -04
5	2303785-008B	Bisti Vadose	4OZGU	Soil	3/14/2023 12:50:00 PM	1	Alkalinity, Sulfur in Soil -05

L15915440

Sample Receipt Checklist

COC Seal Present/Intact: Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 RAD Screen <0.5 mR/hr: Y N

If Applicable
 VOA Zero Headspace: Y N
 Pres. Correct/Check: Y N

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.

U094 5470 0140

Relinquished By: <i>SLC</i>	Date: 3/15/2023	Time: 1:43 PM	Received By:	Date:	Time:	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples <u>37.10 = 3.7 NS</u> Attempt to Cool? _____ Comments: _____
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By: <i>Handy P...</i>	Date: 3/11/23	Time: 0845	

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

3/16-NCF-11595440 HALLENVANM

R5

Time estimate: 0h

Time spent: 0h

Members



Hailey Melson (responsible)



John V Hawkins

Due on 20 March 2023 8:00 AM for target Done

- Login Clarification needed
- Chain of custody is incomplete
- Please specify Metals requested
- Please specify TCLP requested
- Received additional samples not listed on COC
- Sample IDs on containers do not match IDs on COC
- Client did not "X" analysis
- Chain of Custody is missing
- If no COC: Received by: _____
- If no COC: Date/Time: _____
- If no COC: Temp./Cont Rec./pH: _____
- If no COC: Carrier: _____
- If no COC: Tracking #: _____
- Client informed by call
- Client informed by Email
- Client informed by Voicemail
- Date/Time: 3-16-23 4:50 _____
- PM initials: J VH _____
- Client Contact: Michelle _____

Comments

<p>Hailey Melson</p> <p>COC asks for Alkalinity but we do not have an ALK product for soils. How would you like to proceed?</p>	<p>16 March 2023 1:44 PM</p>
<p>John V Hawkins</p> <p>Client informed, Log for T'toal Sulfur only by SICP 6010B</p>	<p>16 March 2023 4:51 PM</p>
<p>Hailey Melson</p> <p>Done</p>	<p>16 March 2023 4:52 PM</p>



ANALYTICAL SUMMARY REPORT

April 26, 2023

Hall Environmental

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

Work Order: B23041345

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 5 samples for Hall Environmental on 4/19/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23041345-001	2303785-001B, West Line Vadose	03/14/23 11:35	04/19/23	Soil	Alkalinity, Water Extractable DI Water Soil Extract ASA10-3
B23041345-002	2303785-002B, East Line Vadose	03/14/23 11:50	04/19/23	Soil	Same As Above
B23041345-003	2303785-003B, API 1 Vadose	03/14/23 12:00	04/19/23	Soil	Same As Above
B23041345-004	2303785-007B, Pettigrew Vadose	03/14/23 12:30	04/19/23	Soil	Same As Above
B23041345-005	2303785-008B, Bisti Vadose	03/14/23 12:50	04/19/23	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:



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated

Report Date: 04/26/23

Lab ID: B23041345-001
Client Sample ID: 2303785-001B, West Line Vadose

Collection Date: 03/14/23 11:35
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
----------	--------	-------	------------	----	-------------	--------	--------------------

WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 103 mg/kg 8 ASA10-3 04/25/23 14:27 / nrb

Lab ID: B23041345-002
Client Sample ID: 2303785-002B, East Line Vadose

Collection Date: 03/14/23 11:50
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
----------	--------	-------	------------	----	-------------	--------	--------------------

WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 58 mg/kg 8 ASA10-3 04/25/23 15:01 / nrb

Lab ID: B23041345-003
Client Sample ID: 2303785-003B, API 1 Vadose

Collection Date: 03/14/23 12:00
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
----------	--------	-------	------------	----	-------------	--------	--------------------

WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 59 mg/kg 8 ASA10-3 04/25/23 15:12 / nrb

Lab ID: B23041345-004
Client Sample ID: 2303785-007B, Pettigrew Vadose

Collection Date: 03/14/23 12:30
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
----------	--------	-------	------------	----	-------------	--------	--------------------

WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 57 mg/kg 8 ASA10-3 04/25/23 15:21 / nrb

Lab ID: B23041345-005
Client Sample ID: 2303785-008B, Bisti Vadose

Collection Date: 03/14/23 12:50
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
----------	--------	-------	------------	----	-------------	--------	--------------------

WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 97 mg/kg 8 ASA10-3 04/25/23 15:35 / nrb

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: B23041345

Report Date: 04/26/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3										Batch: 178047
Lab ID: LCS-178047		Laboratory Control Sample								Run: ORIONVERSASTARPRO_230 04/25/23 14:18
Alkalinity, 1:2		216	mg/kg	8.0	92	70	130			
Lab ID: B23041345-001ADUP		Sample Duplicate								Run: ORIONVERSASTARPRO_230 04/25/23 14:46
Alkalinity, 1:2		102	mg/kg	8.0				0.3	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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Work Order Receipt Checklist

Hall Environmental

B23041345

Login completed by: Leslie S. Cadreau

Date Received: 4/19/2023

Reviewed by: tedwards

Received by: lsc

Reviewed Date: 4/24/2023

Carrier name: FedEx

- 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: 4.8°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.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
 4901 Hawkins NE
 Albuquerque, NM 87109
 TEL: 505-345-3973
 FAX: 505-345-4107
 Website: www.hallenvironmental.com

SUB CONTRACTOR: Energy Labs -Billings		COMPANY: Energy Laboratories		PHONE: (406) 869-6253	FAX: (406) 252-6069		
ADDRESS: 1120 South 27th Street		ACCOUNT #:					
CITY, STATE, ZIP: Billings, MT 59107		EMAIL:					
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2303785-001B	West Line Vadose	4OZGU	Soil	3/14/2023 11:35:00 AM	1	Alkalinity
2	2303785-002B	East Line Vadose	4OZGU	Soil	3/14/2023 11:50:00 AM	1	Alkalinity
3	2303785-003B	API 1 Vadose	4OZGU	Soil	3/14/2023 12:00:00 PM	1	Alkalinity
4	2303785-007B	Pettigrew Vadose	4OZGU	Soil	3/14/2023 12:30:00 PM	1	Alkalinity
5	2303785-008B	Bisti Vadose	4OZGU	Soil	3/14/2023 12:50:00 PM	1	Alkalinity

B23041345

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: <i>JDB</i>	Date: 4/17/2023	Time: 4:46 PM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: <i>Josh Cadman</i>	Date: 4/17/23	Time: 8:10
TAT: Standard <input checked="" type="checkbox"/>	RUSH	Next BD <input type="checkbox"/>	2nd BD <input type="checkbox"/>	3rd BD <input type="checkbox"/>	
REPORT TRANSMITTAL DESIRED:			FOR LAB USE ONLY		
<input type="checkbox"/> HARDCOPY (extra cost)			<input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE		
Temp of samples _____ °C			Attempt to Cool? _____		
Comments:					



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

ANALYTICAL SUMMARY REPORT

April 26, 2023

Hall Environmental

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

Work Order: B23041345

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 5 samples for Hall Environmental on 4/19/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23041345-001	2303785-001B, West Line Vadose	03/14/23 11:35	04/19/23	Soil	Alkalinity, Water Extractable DI Water Soil Extract ASA10-3
B23041345-002	2303785-002B, East Line Vadose	03/14/23 11:50	04/19/23	Soil	Same As Above
B23041345-003	2303785-003B, API 1 Vadose	03/14/23 12:00	04/19/23	Soil	Same As Above
B23041345-004	2303785-007B, Pettigrew Vadose	03/14/23 12:30	04/19/23	Soil	Same As Above
B23041345-005	2303785-008B, Bisti Vadose	03/14/23 12:50	04/19/23	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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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated

Report Date: 04/26/23

Lab ID: B23041345-001
Client Sample ID: 2303785-001B, West Line Vadose

Collection Date: 03/14/23 11:35
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
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WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 103 mg/kg 8 ASA10-3 04/25/23 14:27 / nrb

Lab ID: B23041345-002
Client Sample ID: 2303785-002B, East Line Vadose

Collection Date: 03/14/23 11:50
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
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WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 58 mg/kg 8 ASA10-3 04/25/23 15:01 / nrb

Lab ID: B23041345-003
Client Sample ID: 2303785-003B, API 1 Vadose

Collection Date: 03/14/23 12:00
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
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WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 59 mg/kg 8 ASA10-3 04/25/23 15:12 / nrb

Lab ID: B23041345-004
Client Sample ID: 2303785-007B, Pettigrew Vadose

Collection Date: 03/14/23 12:30
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
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WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 57 mg/kg 8 ASA10-3 04/25/23 15:21 / nrb

Lab ID: B23041345-005
Client Sample ID: 2303785-008B, Bisti Vadose

Collection Date: 03/14/23 12:50
DateReceived: 04/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
----------	--------	-------	------------	----	-------------	--------	--------------------

WATER EXTRACTABLE CONSTITUENTS

Alkalinity, 1:2 97 mg/kg 8 ASA10-3 04/25/23 15:35 / nrb

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: B23041345

Report Date: 04/26/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3										Batch: 178047
Lab ID: LCS-178047		Laboratory Control Sample								Run: ORIONVERSASTARPRO_230 04/25/23 14:18
Alkalinity, 1:2		216	mg/kg	8.0	92	70	130			
Lab ID: B23041345-001ADUP		Sample Duplicate								Run: ORIONVERSASTARPRO_230 04/25/23 14:46
Alkalinity, 1:2		102	mg/kg	8.0				0.3	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

Work Order Receipt Checklist

Hall Environmental

B23041345

Login completed by: Leslie S. Cadreau

Date Received: 4/19/2023

Reviewed by: tedwards

Received by: lsc

Reviewed Date: 4/24/2023

Carrier name: FedEx

- 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: 4.8°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.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
 4901 Hawkins NE
 Albuquerque, NM 87109
 TEL: 505-345-3973
 FAX: 505-345-4107
 Website: www.hallenvironmental.com

SUB CONTRACTOR: Energy Labs -Billings		COMPANY: Energy Laboratories		PHONE: (406) 869-6253	FAX: (406) 252-6069		
ADDRESS: 1120 South 27th Street		ACCOUNT #:					
CITY, STATE, ZIP: Billings, MT 59107		EMAIL:					
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2303785-001B	West Line Vadose	4OZGU	Soil	3/14/2023 11:35:00 AM	1	Alkalinity
2	2303785-002B	East Line Vadose	4OZGU	Soil	3/14/2023 11:50:00 AM	1	Alkalinity
3	2303785-003B	API 1 Vadose	4OZGU	Soil	3/14/2023 12:00:00 PM	1	Alkalinity
4	2303785-007B	Pettigrew Vadose	4OZGU	Soil	3/14/2023 12:30:00 PM	1	Alkalinity
5	2303785-008B	Bisti Vadose	4OZGU	Soil	3/14/2023 12:50:00 PM	1	Alkalinity

B23041345

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: <i>ADP</i>	Date: 4/17/2023	Time: 4:46 PM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: <i>Josh Cadman</i>	Date: 4/17/23	Time: 8:10
TAT: Standard <input checked="" type="checkbox"/>	RUSH	Next BD <input type="checkbox"/>	2nd BD <input type="checkbox"/>	3rd BD <input type="checkbox"/>	
REPORT TRANSMITTAL DESIRED:			FOR LAB USE ONLY		
<input type="checkbox"/> HARDCOPY (extra cost)			<input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE		
Temp of samples _____ °C			Attempt to Cool? _____		
Comments:					

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-73788	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 73788	RunNo: 95364								
Prep Date: 3/17/2023	Analysis Date: 3/17/2023	SeqNo: 3449726	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-73788	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 73788	RunNo: 95364								
Prep Date: 3/17/2023	Analysis Date: 3/17/2023	SeqNo: 3449727	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.2	90	110			

Sample ID: MB-73789	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 73789	RunNo: 95382								
Prep Date: 3/18/2023	Analysis Date: 3/18/2023	SeqNo: 3450256	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-73789	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 73789	RunNo: 95382								
Prep Date: 3/18/2023	Analysis Date: 3/18/2023	SeqNo: 3450257	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.2	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 Quantitative 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-73859	SampType: MBLK	TestCode: EPA Method 6020A: Total Metals								
Client ID: PBS	Batch ID: 73859	RunNo: 95532								
Prep Date: 3/22/2023	Analysis Date: 3/23/2023	SeqNo: 3455336	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.20								
Lead	ND	0.20								

Sample ID: MSLCSLL-73859	SampType: LCSLL	TestCode: EPA Method 6020A: Total Metals								
Client ID: BatchQC	Batch ID: 73859	RunNo: 95532								
Prep Date: 3/22/2023	Analysis Date: 3/23/2023	SeqNo: 3455337	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.11	0.20	0.1000	0	113	70	130			J
Lead	0.12	0.20	0.1000	0	118	70	130			J

Sample ID: MSLCS-73859	SampType: LCS	TestCode: EPA Method 6020A: Total Metals								
Client ID: LCSS	Batch ID: 73859	RunNo: 95532								
Prep Date: 3/22/2023	Analysis Date: 3/23/2023	SeqNo: 3455339	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	4.6	0.20	5.000	0	92.5	80	120			
Lead	5.3	0.20	5.000	0	107	80	120			

Sample ID: 2303785-008AMSL	SampType: MS	TestCode: EPA Method 6020A: Total Metals								
Client ID: Bisti Vadose	Batch ID: 73859	RunNo: 95532								
Prep Date: 3/22/2023	Analysis Date: 3/23/2023	SeqNo: 3455355	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	7.0	0.49	4.901	1.994	103	70	130			
Lead	8.8	0.49	4.901	3.497	107	70	130			

Sample ID: 2303785-008AMSDL	SampType: MSD	TestCode: EPA Method 6020A: Total Metals								
Client ID: Bisti Vadose	Batch ID: 73859	RunNo: 95532								
Prep Date: 3/22/2023	Analysis Date: 3/23/2023	SeqNo: 3455356	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	6.6	0.49	4.935	1.994	94.2	70	130	5.51	20	
Lead	8.7	0.49	4.935	3.497	106	70	130	0.471	20	

Sample ID: MB-73859	SampType: MBLK	TestCode: EPA Method 6020A: Total Metals								
Client ID: PBS	Batch ID: 73859	RunNo: 95541								
Prep Date: 3/22/2023	Analysis Date: 3/24/2023	SeqNo: 3456095	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2303785

27-Apr-23

Client: ENSOLUM
Project: Bisti LF

Sample ID: MB-73859	SampType: MBLK	TestCode: EPA Method 6020A: Total Metals								
Client ID: PBS	Batch ID: 73859	RunNo: 95541								
Prep Date: 3/22/2023	Analysis Date: 3/24/2023	SeqNo: 3456095	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.20								

Sample ID: MSLCSLL-73859	SampType: LCSLL	TestCode: EPA Method 6020A: Total Metals								
Client ID: BatchQC	Batch ID: 73859	RunNo: 95541								
Prep Date: 3/22/2023	Analysis Date: 3/24/2023	SeqNo: 3456096	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.13	0.20	0.1000	0	130	70	130			J

Sample ID: MSLCS-73859	SampType: LCS	TestCode: EPA Method 6020A: Total Metals								
Client ID: LCSS	Batch ID: 73859	RunNo: 95541								
Prep Date: 3/22/2023	Analysis Date: 3/24/2023	SeqNo: 3456097	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	4.1	0.20	5.000	0	83.0	80	120			

Sample ID: 2303785-008AMSL	SampType: MS	TestCode: EPA Method 6020A: Total Metals								
Client ID: Bisti Vadose	Batch ID: 73859	RunNo: 95541								
Prep Date: 3/22/2023	Analysis Date: 3/24/2023	SeqNo: 3456103	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	5.5	0.49	4.901	1.355	85.4	70	130			

Sample ID: 2303785-008AMSDL	SampType: MSD	TestCode: EPA Method 6020A: Total Metals								
Client ID: Bisti Vadose	Batch ID: 73859	RunNo: 95541								
Prep Date: 3/22/2023	Analysis Date: 3/24/2023	SeqNo: 3456104	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	6.0	0.49	4.935	1.355	94.0	70	130	7.83	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 Quantitative 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-73773	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 73773	RunNo: 95380								
Prep Date: 3/17/2023	Analysis Date: 3/20/2023	SeqNo: 3450240	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.8		10.00		87.7	69	147			

Sample ID: LCS-73773	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 73773	RunNo: 95380								
Prep Date: 3/17/2023	Analysis Date: 3/20/2023	SeqNo: 3450242	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	85.0	61.9	130			
Surr: DNOP	4.6		5.000		91.5	69	147			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: ics-73764	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 73764	RunNo: 95373								
Prep Date: 3/16/2023	Analysis Date: 3/17/2023	SeqNo: 3450001	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.0	70	130			
Surr: BFB	2000		1000		196	37.7	212			

Sample ID: mb-73764	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 73764	RunNo: 95373								
Prep Date: 3/16/2023	Analysis Date: 3/17/2023	SeqNo: 3450002	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	880		1000		87.9	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 Quantitative 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: lcs-73764	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 73764	RunNo: 95373								
Prep Date: 3/16/2023	Analysis Date: 3/17/2023	SeqNo: 3450073	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.5	80	120			
Toluene	0.92	0.050	1.000	0	91.5	80	120			
Ethylbenzene	0.90	0.050	1.000	0	89.7	80	120			
Xylenes, Total	2.7	0.10	3.000	0	89.3	80	120			
Surr: 4-Bromofluorobenzene	0.93		1.000		92.8	70	130			

Sample ID: mb-73764	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 73764	RunNo: 95373								
Prep Date: 3/16/2023	Analysis Date: 3/17/2023	SeqNo: 3450074	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	0.90		1.000		90.2	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-73902	SampType: MBLK	TestCode: EPA Method 7471B: Mercury								
Client ID: PBS	Batch ID: 73902	RunNo: 95551								
Prep Date: 3/23/2023	Analysis Date: 3/24/2023	SeqNo: 3456368	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: LCSLL-73902	SampType: LCSLL	TestCode: EPA Method 7471B: Mercury								
Client ID: BatchQC	Batch ID: 73902	RunNo: 95551								
Prep Date: 3/23/2023	Analysis Date: 3/24/2023	SeqNo: 3456369	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033	0.006660	0	0	70	130			S

Sample ID: LCS-73902	SampType: LCS	TestCode: EPA Method 7471B: Mercury								
Client ID: LCSS	Batch ID: 73902	RunNo: 95551								
Prep Date: 3/23/2023	Analysis Date: 3/24/2023	SeqNo: 3456370	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	103	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 Quantitative 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-73859	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 73859	RunNo: 95581								
Prep Date: 3/22/2023	Analysis Date: 3/27/2023	SeqNo: 3459076	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.10								
Cadmium	ND	0.25								
Calcium	ND	50								
Chromium	ND	0.30								
Magnesium	ND	50								
Potassium	ND	50								
Silver	ND	0.50								
Sodium	ND	50								

Sample ID: LCS-73859	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 73859	RunNo: 95581								
Prep Date: 3/22/2023	Analysis Date: 3/27/2023	SeqNo: 3459081	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	24	0.10	25.00	0	97.5	80	120			
Cadmium	24	0.25	25.00	0	96.6	80	120			
Calcium	2200	50	2500	0	87.3	80	120			
Chromium	25	0.30	25.00	0	99.6	80	120			
Magnesium	2100	50	2500	0	83.3	80	120			
Potassium	2100	50	2500	0	85.2	80	120			
Silver	4.7	0.50	5.000	0	94.2	80	120			
Sodium	2200	50	2500	0	89.1	80	120			

Sample ID: 2303785-007AMS	SampType: MS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: Pettigrew Vadose	Batch ID: 73859	RunNo: 95581								
Prep Date: 3/22/2023	Analysis Date: 3/27/2023	SeqNo: 3459107	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	23	0.50	24.80	0	93.0	75	125			
Calcium	5000	99	2480	2612	95.5	75	125			
Chromium	26	0.60	24.80	2.079	97.6	75	125			
Magnesium	3400	99	2480	1031	95.0	75	125			
Potassium	3200	99	2480	767.9	98.2	75	125			
Sodium	2400	99	2480	87.89	94.3	75	125			

Sample ID: 2303785-007AMSD	SampType: MSD	TestCode: EPA Method 6010B: Soil Metals								
Client ID: Pettigrew Vadose	Batch ID: 73859	RunNo: 95581								
Prep Date: 3/22/2023	Analysis Date: 3/27/2023	SeqNo: 3459108	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2303785

27-Apr-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2303785-007AMSD	SampType: MSD	TestCode: EPA Method 6010B: Soil Metals								
Client ID: Pettigrew Vadose	Batch ID: 73859	RunNo: 95581								
Prep Date: 3/22/2023	Analysis Date: 3/27/2023	SeqNo: 3459108 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	23	0.49	24.40	0	93.8	75	125	0.725	20	
Calcium	5000	98	2440	2612	97.1	75	125	0.0189	20	
Chromium	26	0.59	24.40	2.079	99.3	75	125	0.154	20	
Magnesium	3400	98	2440	1031	96.4	75	125	0.127	20	
Potassium	3200	98	2440	767.9	98.9	75	125	0.710	20	
Sodium	2400	98	2440	87.89	94.6	75	125	1.26	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 Quantitative 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
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: 2303785 RcptNo: 1

Received By: Juan Rojas 3/15/2023 7:50:00 AM
Completed By: Sean Livingston 3/15/2023 10:41:14 AM
Reviewed By: [Signature]

Chain of Custody

- 1. Is Chain of Custody complete? Yes [checked] No [] Not Present []
2. How was the sample delivered? Courier

Log In

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

of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: [Signature] 3.15.23

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [checked]

Person Notified: [] Date: []
By Whom: [] Via: [] eMail [] Phone [] Fax [] In Person []
Regarding: []
Client Instructions: []

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 1.5, Good, Not Present, Morty, [], []

Chain-of-Custody Record

Client: Enselum LLC
 Mailing Address: Stuart Hyde
 Phone #: _____
 email or Fax#: Shyde@enselum.com
 QA/QC Package:
 Standard Level 4 (Full Validation)
 Accreditation: AZ Compliance Other
 NELAC Other
 EDD (Type) _____

Turn-Around Time: Standard Rush
 Project Name: Bisti LF
 Project #: 07A2015004
 Project Manager: Stuart Hyde
 Sampler: E. Carroll C. Adams
 On Ice: Yes No
 # of Coolers: 1
 Cooler Temp (including CF): 1.4 to 1.5 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
3/14	11:35	Soil	West line Vadose	2 40Z	COOL	2303765
↑	11:50	↓	East line Vadose	2 40Z	↓	001
↑	12:00	↓	API 1 Vadose	2 40Z	↓	002
↑	12:10	↓	API 2 vadose	1 40Z	↓	003
↑	12:20	↓	API 3 vadose	1 40Z	↓	004
↑	12:40	↓	API 4 vadose	1 40Z	↓	005
↑	12:30	↓	Pecqueur Vadose	2 40Z	↓	006
↑	12:50	↓	Bisti vadose	2 40Z	↓	007
↑	12:45	↓	Crude Treatment	1 40Z	↓	008
↓	12:35	↓	API Treatment	1 40Z	↓	010

Relinquished by: [Signature] Date: 3-14 14:00
 Relinquished by: [Signature] Date: 3/14/23 18:04
 Received by: Shirley Walter Date: 3/14/23 14:00
 Received by: [Signature] Date: 3/15/23 7:50



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

Analysis Request

Analysis Request	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)	Cl, Ca, Mg, K, Na, S	Alkalinity	As, Pb, Ag, Hg, Ba, Cd, Cr, Se	Chloride
BTX/ MTBE/ TMB's (8021)	X	X	X	X	X	X	X	X	X	X	X	X
TPH:8015D(GRO / DRO / MRO)	X	X	X	X	X	X	X	X	X	X	X	X

Remarks: cc: ecarroll@enselum.com



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

July 12, 2023

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

RE: Bisti LF

OrderNo.: 2306G13

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/30/2023 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 2306G13

Date Reported: 7/12/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Westline Vadose

Project: Bisti LF

Collection Date: 6/29/2023 11:10:00 AM

Lab ID: 2306G13-001

Matrix: SOIL

Received Date: 6/30/2023 6:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/5/2023 2:54:03 PM	75974
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/5/2023 2:54:03 PM	75974
Surr: DNOP	92.0	69-147		%Rec	1	7/5/2023 2:54:03 PM	75974
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/5/2023 8:38:00 PM	75968
Surr: BFB	100	15-244		%Rec	1	7/5/2023 8:38:00 PM	75968
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	7/5/2023 8:38:00 PM	75968
Toluene	ND	0.049		mg/Kg	1	7/5/2023 8:38:00 PM	75968
Ethylbenzene	ND	0.049		mg/Kg	1	7/5/2023 8:38:00 PM	75968
Xylenes, Total	ND	0.098		mg/Kg	1	7/5/2023 8:38:00 PM	75968
Surr: 4-Bromofluorobenzene	93.5	39.1-146		%Rec	1	7/5/2023 8:38:00 PM	75968

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2306G13**

Date Reported: **7/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Eastline Vadose

Project: Bisti LF

Collection Date: 6/29/2023 11:30:00 AM

Lab ID: 2306G13-002

Matrix: SOIL

Received Date: 6/30/2023 6:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/5/2023 3:04:51 PM	75974
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/5/2023 3:04:51 PM	75974
Surr: DNOP	97.4	69-147		%Rec	1	7/5/2023 3:04:51 PM	75974
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/5/2023 9:00:00 PM	75968
Surr: BFB	94.1	15-244		%Rec	1	7/5/2023 9:00:00 PM	75968
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	7/5/2023 9:00:00 PM	75968
Toluene	ND	0.048		mg/Kg	1	7/5/2023 9:00:00 PM	75968
Ethylbenzene	ND	0.048		mg/Kg	1	7/5/2023 9:00:00 PM	75968
Xylenes, Total	ND	0.097		mg/Kg	1	7/5/2023 9:00:00 PM	75968
Surr: 4-Bromofluorobenzene	91.9	39.1-146		%Rec	1	7/5/2023 9:00:00 PM	75968

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2306G13**

Date Reported: **7/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API Vadose

Project: Bisti LF

Collection Date: 6/29/2023 11:40:00 AM

Lab ID: 2306G13-003

Matrix: SOIL

Received Date: 6/30/2023 6:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/5/2023 3:15:41 PM	75974
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/5/2023 3:15:41 PM	75974
Surr: DNOP	96.9	69-147		%Rec	1	7/5/2023 3:15:41 PM	75974
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/5/2023 9:22:00 PM	75968
Surr: BFB	99.5	15-244		%Rec	1	7/5/2023 9:22:00 PM	75968
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	7/5/2023 9:22:00 PM	75968
Toluene	ND	0.049		mg/Kg	1	7/5/2023 9:22:00 PM	75968
Ethylbenzene	ND	0.049		mg/Kg	1	7/5/2023 9:22:00 PM	75968
Xylenes, Total	ND	0.097		mg/Kg	1	7/5/2023 9:22:00 PM	75968
Surr: 4-Bromofluorobenzene	93.8	39.1-146		%Rec	1	7/5/2023 9:22:00 PM	75968

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2306G13**

Date Reported: **7/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Pettigrew Vadose

Project: Bisti LF

Collection Date: 6/29/2023 11:50:00 AM

Lab ID: 2306G13-004

Matrix: SOIL

Received Date: 6/30/2023 6:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/5/2023 3:26:33 PM	75974
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/5/2023 3:26:33 PM	75974
Surr: DNOP	97.3	69-147		%Rec	1	7/5/2023 3:26:33 PM	75974
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/5/2023 9:43:00 PM	75968
Surr: BFB	93.4	15-244		%Rec	1	7/5/2023 9:43:00 PM	75968
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	7/5/2023 9:43:00 PM	75968
Toluene	ND	0.049		mg/Kg	1	7/5/2023 9:43:00 PM	75968
Ethylbenzene	ND	0.049		mg/Kg	1	7/5/2023 9:43:00 PM	75968
Xylenes, Total	ND	0.098		mg/Kg	1	7/5/2023 9:43:00 PM	75968
Surr: 4-Bromofluorobenzene	92.7	39.1-146		%Rec	1	7/5/2023 9:43:00 PM	75968

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2306G13

Date Reported: 7/12/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Bisti Vadose

Project: Bisti LF

Collection Date: 6/29/2023 12:00:00 PM

Lab ID: 2306G13-005

Matrix: SOIL

Received Date: 6/30/2023 6:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/6/2023 1:46:22 PM	76006
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/6/2023 1:46:22 PM	76006
Surr: DNOP	92.1	69-147		%Rec	1	7/6/2023 1:46:22 PM	76006
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/6/2023 7:48:15 PM	76000
Surr: BFB	95.4	15-244		%Rec	1	7/6/2023 7:48:15 PM	76000
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	7/7/2023 9:25:00 PM	76000
Toluene	ND	0.049		mg/Kg	1	7/7/2023 9:25:00 PM	76000
Ethylbenzene	ND	0.049		mg/Kg	1	7/7/2023 9:25:00 PM	76000
Xylenes, Total	ND	0.097		mg/Kg	1	7/7/2023 9:25:00 PM	76000
Surr: 4-Bromofluorobenzene	91.5	39.1-146		%Rec	1	7/7/2023 9:25:00 PM	76000

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 Quantitative 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#: 2306G13

12-Jul-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: LCS-75974	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 75974	RunNo: 97944								
Prep Date: 7/3/2023	Analysis Date: 7/5/2023	SeqNo: 3563566	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.2	61.9	130			
Surr: DNOP	4.8		5.000		95.0	69	147			

Sample ID: MB-75974	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 75974	RunNo: 97944								
Prep Date: 7/3/2023	Analysis Date: 7/5/2023	SeqNo: 3563568	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.2		10.00		91.6	69	147			

Sample ID: LCS-76006	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 76006	RunNo: 97976								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564806	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.2	61.9	130			
Surr: DNOP	5.8		5.000		115	69	147			

Sample ID: MB-76006	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 76006	RunNo: 97976								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564809	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		108	69	147			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2306G13

12-Jul-23

Client: ENSOLUM
Project: Bisti LF

Sample ID: mb-75968	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 75968	RunNo: 97913								
Prep Date: 7/3/2023	Analysis Date: 7/5/2023	SeqNo: 3563344	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	15	244			

Sample ID: ics-75968	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 75968	RunNo: 97913								
Prep Date: 7/3/2023	Analysis Date: 7/5/2023	SeqNo: 3563500	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	85.4	70	130			
Surr: BFB	2000		1000		202	15	244			

Sample ID: ics-76000	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 76000	RunNo: 97957								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564910	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.4	70	130			
Surr: BFB	2000		1000		198	15	244			

Sample ID: mb-76000	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 76000	RunNo: 97957								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564911	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.5	15	244			

Sample ID: 2306g13-005ams	SampType: MS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: Bisti Vadose	Batch ID: 76000	RunNo: 97957								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564934	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	24.20	0	91.0	70	130			
Surr: BFB	1900		968.1		201	15	244			

Sample ID: 2306g13-005amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: Bisti Vadose	Batch ID: 76000	RunNo: 97957								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564936	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2306G13

12-Jul-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2306g13-005amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: Bisti Vadose	Batch ID: 76000	RunNo: 97957								
Prep Date: 7/5/2023	Analysis Date: 7/6/2023	SeqNo: 3564936 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.27	0	89.2	70	130	1.66	20	
Surr: BFB	1900		970.9		200	15	244	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2306G13

12-Jul-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: mb-75968	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 75968	RunNo: 97913								
Prep Date: 7/3/2023	Analysis Date: 7/5/2023	SeqNo: 3563412	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	0.93		1.000		92.8	39.1	146			

Sample ID: lcs-75968	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 75968	RunNo: 97913								
Prep Date: 7/3/2023	Analysis Date: 7/5/2023	SeqNo: 3563501	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0	84.2	70	130			
Toluene	0.86	0.050	1.000	0	86.0	70	130			
Ethylbenzene	0.87	0.050	1.000	0	87.2	70	130			
Xylenes, Total	2.6	0.10	3.000	0	86.9	70	130			
Surr: 4-Bromofluorobenzene	0.95		1.000		94.5	39.1	146			

Sample ID: lcs-76000	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 76000	RunNo: 97992								
Prep Date: 7/5/2023	Analysis Date: 7/7/2023	SeqNo: 3566911	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0	84.4	70	130			
Toluene	0.87	0.050	1.000	0	86.8	70	130			
Ethylbenzene	0.87	0.050	1.000	0	87.2	70	130			
Xylenes, Total	2.6	0.10	3.000	0	86.5	70	130			
Surr: 4-Bromofluorobenzene	0.94		1.000		93.5	39.1	146			

Sample ID: mb-76000	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 76000	RunNo: 97992								
Prep Date: 7/5/2023	Analysis Date: 7/7/2023	SeqNo: 3566912	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	0.93		1.000		92.7	39.1	146			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2306G13

12-Jul-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2306G13-005ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: Bisti Vadose	Batch ID: 76000	RunNo: 97992								
Prep Date: 7/5/2023	Analysis Date: 7/7/2023	SeqNo: 3566914	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9681	0	89.0	70	130			
Toluene	0.89	0.048	0.9681	0	91.9	70	130			
Ethylbenzene	0.90	0.048	0.9681	0	92.9	70	130			
Xylenes, Total	2.7	0.097	2.904	0	92.7	70	130			
Surr: 4-Bromofluorobenzene	0.92		0.9681		94.7	39.1	146			

Sample ID: 2306G13-005amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: Bisti Vadose	Batch ID: 76000	RunNo: 97992								
Prep Date: 7/5/2023	Analysis Date: 7/7/2023	SeqNo: 3566915	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.024	0.9709	0	87.3	70	130	15.6	20	
Toluene	0.88	0.049	0.9709	0	90.7	70	130	16.6	20	
Ethylbenzene	0.89	0.049	0.9709	0	92.1	70	130	14.4	20	
Xylenes, Total	2.7	0.097	2.913	0	91.9	70	130	13.4	20	
Surr: 4-Bromofluorobenzene	0.90		0.9709		92.5	39.1	146	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
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- P Sample pH Not In Range
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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: 2306G13

RcptNo: 1

Received By: Tracy Casarrubias 6/30/2023 6:25:00 AM

Completed By: Tracy Casarrubias 6/30/2023 7:40:03 AM

Reviewed By: *TC 6/30/23*

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? Yes No

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes No

13. Is it clear what analyses were requested? Yes No

14. Were all holding times able to be met? Yes No

(If no, notify customer for authorization.)

of preserved bottles checked for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: *SCM 06/30/23*

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: Mailing address and phone number are missing on COC- TMC 6/30/23

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.2	Good	Yes	Yogi		

Chain-of-Custody Record

Client: EnSolum

Mailing Address:

Phone #:

email or Fax#: Shyde@ensolum.com

QA/QC Package:

Standard Level 4 (Full Validation)

Accreditation: Az Compliance

NELAC Other

EDD (Type)

Project Manager:

Stuart Hyde

Sampler: E. Carroll A. Thompson

On Ice: Yes No yes

of Coolers: 1

Cooler Temp (including cp): 3.1 to 3.2 (°C)

Container Type and #

Preservative Type

HEAL No.

Date

Time

Matrix

Sample Name

Type and #

Preservative Type

HEAL No.

Date

Time

Matrix

Sample Name

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Preservative Type

HEAL No.

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Preservative Type

HEAL No.

Date

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Sample Name

Type and #

Preservative Type

HEAL No.



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

October 06, 2023

Stuart Hyde

ENSOLUM

606 S. Rio Grande Suite A

Aztec, NM 87410

TEL: (903) 821-5603

FAX:

RE: Bisti LF

OrderNo.: 2309913

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 10 sample(s) on 9/16/2023 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: East Line Vadose

Project: Bisti LF

Collection Date: 9/15/2023 11:50:00 AM

Lab ID: 2309913-001

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	17	15		mg/Kg	5	9/26/2023 7:50:19 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	9/20/2023 4:38:45 AM	77580
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/20/2023 4:38:45 AM	77580
Surr: DNOP	95.6	69-147		%Rec	1	9/20/2023 4:38:45 AM	77580
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/19/2023 9:15:00 PM	77575
Surr: BFB	93.7	15-244		%Rec	1	9/19/2023 9:15:00 PM	77575
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	9/19/2023 9:15:00 PM	77575
Toluene	ND	0.049		mg/Kg	1	9/19/2023 9:15:00 PM	77575
Ethylbenzene	ND	0.049		mg/Kg	1	9/19/2023 9:15:00 PM	77575
Xylenes, Total	ND	0.098		mg/Kg	1	9/19/2023 9:15:00 PM	77575
Surr: 4-Bromofluorobenzene	86.3	39.1-146		%Rec	1	9/19/2023 9:15:00 PM	77575

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: West Line Vadose

Project: Bisti LF

Collection Date: 9/15/2023 11:50:00 AM

Lab ID: 2309913-002

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 8:02:44 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/20/2023 1:58:17 PM	77617
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/20/2023 1:58:17 PM	77617
Surr: DNOP	107	69-147		%Rec	1	9/20/2023 1:58:17 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/22/2023 10:59:00 AM	77588
Surr: BFB	96.0	15-244		%Rec	1	9/22/2023 10:59:00 AM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	9/22/2023 10:59:00 AM	77588
Toluene	ND	0.049		mg/Kg	1	9/22/2023 10:59:00 AM	77588
Ethylbenzene	ND	0.049		mg/Kg	1	9/22/2023 10:59:00 AM	77588
Xylenes, Total	ND	0.099		mg/Kg	1	9/22/2023 10:59:00 AM	77588
Surr: 4-Bromofluorobenzene	88.2	39.1-146		%Rec	1	9/22/2023 10:59:00 AM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Pettigrew Vadose

Project: Bisti LF

Collection Date: 9/15/2023 12:10:00 PM

Lab ID: 2309913-003

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 8:15:08 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/20/2023 2:40:47 PM	77617
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/20/2023 2:40:47 PM	77617
Surr: DNOP	104	69-147		%Rec	1	9/20/2023 2:40:47 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/22/2023 12:04:00 PM	77588
Surr: BFB	98.0	15-244		%Rec	1	9/22/2023 12:04:00 PM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	9/22/2023 12:04:00 PM	77588
Toluene	ND	0.049		mg/Kg	1	9/22/2023 12:04:00 PM	77588
Ethylbenzene	ND	0.049		mg/Kg	1	9/22/2023 12:04:00 PM	77588
Xylenes, Total	ND	0.099		mg/Kg	1	9/22/2023 12:04:00 PM	77588
Surr: 4-Bromofluorobenzene	88.3	39.1-146		%Rec	1	9/22/2023 12:04:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Bisti Vadose

Project: Bisti LF

Collection Date: 9/15/2023 12:20:00 PM

Lab ID: 2309913-004

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 8:27:32 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/20/2023 2:51:26 PM	77617
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/20/2023 2:51:26 PM	77617
Surr: DNOP	100	69-147		%Rec	1	9/20/2023 2:51:26 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/22/2023 3:42:00 PM	77588
Surr: BFB	97.9	15-244		%Rec	1	9/22/2023 3:42:00 PM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	9/22/2023 3:42:00 PM	77588
Toluene	ND	0.048		mg/Kg	1	9/22/2023 3:42:00 PM	77588
Ethylbenzene	ND	0.048		mg/Kg	1	9/22/2023 3:42:00 PM	77588
Xylenes, Total	ND	0.097		mg/Kg	1	9/22/2023 3:42:00 PM	77588
Surr: 4-Bromofluorobenzene	89.8	39.1-146		%Rec	1	9/22/2023 3:42:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 1 Vadose

Project: Bisti LF

Collection Date: 9/15/2023 12:30:00 PM

Lab ID: 2309913-005

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 8:39:56 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/20/2023 3:02:05 PM	77617
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/20/2023 3:02:05 PM	77617
Surr: DNOP	105	69-147		%Rec	1	9/20/2023 3:02:05 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/22/2023 4:03:00 PM	77588
Surr: BFB	99.3	15-244		%Rec	1	9/22/2023 4:03:00 PM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	9/22/2023 4:03:00 PM	77588
Toluene	ND	0.048		mg/Kg	1	9/22/2023 4:03:00 PM	77588
Ethylbenzene	ND	0.048		mg/Kg	1	9/22/2023 4:03:00 PM	77588
Xylenes, Total	ND	0.097		mg/Kg	1	9/22/2023 4:03:00 PM	77588
Surr: 4-Bromofluorobenzene	85.7	39.1-146		%Rec	1	9/22/2023 4:03:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 2 Vadose

Project: Bisti LF

Collection Date: 9/15/2023 12:35:00 PM

Lab ID: 2309913-006

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 8:52:21 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/20/2023 3:12:46 PM	77617
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/20/2023 3:12:46 PM	77617
Surr: DNOP	102	69-147		%Rec	1	9/20/2023 3:12:46 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/22/2023 4:25:00 PM	77588
Surr: BFB	101	15-244		%Rec	1	9/22/2023 4:25:00 PM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	9/22/2023 4:25:00 PM	77588
Toluene	ND	0.049		mg/Kg	1	9/22/2023 4:25:00 PM	77588
Ethylbenzene	ND	0.049		mg/Kg	1	9/22/2023 4:25:00 PM	77588
Xylenes, Total	ND	0.098		mg/Kg	1	9/22/2023 4:25:00 PM	77588
Surr: 4-Bromofluorobenzene	86.7	39.1-146		%Rec	1	9/22/2023 4:25:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 3 Vadose

Project: Bisti LF

Collection Date: 9/15/2023 12:40:00 PM

Lab ID: 2309913-007

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 9:04:46 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	9/20/2023 3:23:40 PM	77617
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/20/2023 3:23:40 PM	77617
Surr: DNOP	103	69-147		%Rec	1	9/20/2023 3:23:40 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/22/2023 4:48:00 PM	77588
Surr: BFB	97.4	15-244		%Rec	1	9/22/2023 4:48:00 PM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	9/22/2023 4:48:00 PM	77588
Toluene	ND	0.050		mg/Kg	1	9/22/2023 4:48:00 PM	77588
Ethylbenzene	ND	0.050		mg/Kg	1	9/22/2023 4:48:00 PM	77588
Xylenes, Total	ND	0.10		mg/Kg	1	9/22/2023 4:48:00 PM	77588
Surr: 4-Bromofluorobenzene	85.6	39.1-146		%Rec	1	9/22/2023 4:48:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API 4 Vadose

Project: Bisti LF

Collection Date: 9/15/2023 12:45:00 PM

Lab ID: 2309913-008

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 9:17:10 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	9/20/2023 3:35:37 PM	77617
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/20/2023 3:35:37 PM	77617
Surr: DNOP	103	69-147		%Rec	1	9/20/2023 3:35:37 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/22/2023 5:32:00 PM	77588
Surr: BFB	93.8	15-244		%Rec	1	9/22/2023 5:32:00 PM	77588
EPA METHOD 8021B: VOLATILES							Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	9/22/2023 5:32:00 PM	77588
Toluene	ND	0.048		mg/Kg	1	9/22/2023 5:32:00 PM	77588
Ethylbenzene	ND	0.048		mg/Kg	1	9/22/2023 5:32:00 PM	77588
Xylenes, Total	ND	0.096		mg/Kg	1	9/22/2023 5:32:00 PM	77588
Surr: 4-Bromofluorobenzene	86.2	39.1-146		%Rec	1	9/22/2023 5:32:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Crude Treatment

Project: Bisti LF

Collection Date: 9/15/2023 12:15:00 PM

Lab ID: 2309913-009

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 9:29:34 AM	77655
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	17	9.5		mg/Kg	1	9/20/2023 3:46:27 PM	77617
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/20/2023 3:46:27 PM	77617
Surr: DNOP	109	69-147		%Rec	1	9/20/2023 3:46:27 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/22/2023 5:53:00 PM	77588
Surr: BFB	95.1	15-244		%Rec	1	9/22/2023 5:53:00 PM	77588

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2309913**

Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API Treatments

Project: Bisti LF

Collection Date: 9/15/2023 12:50:00 PM

Lab ID: 2309913-010

Matrix: SOIL

Received Date: 9/16/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: RBC
Chloride	ND	15		mg/Kg	5	9/26/2023 9:41:58 AM	77667
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: PRD
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/20/2023 4:07:54 PM	77617
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/20/2023 4:07:54 PM	77617
Surr: DNOP	101	69-147		%Rec	1	9/20/2023 4:07:54 PM	77617
EPA METHOD 8015D: GASOLINE RANGE							Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/22/2023 6:15:00 PM	77588
Surr: BFB	94.8	15-244		%Rec	1	9/22/2023 6:15:00 PM	77588

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 Quantitative 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-77655	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 77655	RunNo: 99855								
Prep Date: 9/20/2023	Analysis Date: 9/20/2023	SeqNo: 3652507	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-77655	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 77655	RunNo: 99855								
Prep Date: 9/20/2023	Analysis Date: 9/20/2023	SeqNo: 3652508	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.4	90	110			

Sample ID: MB-77667	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 77667	RunNo: 99905								
Prep Date: 9/21/2023	Analysis Date: 9/21/2023	SeqNo: 3653545	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-77667	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 77667	RunNo: 99905								
Prep Date: 9/21/2023	Analysis Date: 9/21/2023	SeqNo: 3653546	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.5	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-77580	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 77580	RunNo: 99810								
Prep Date: 9/19/2023	Analysis Date: 9/19/2023	SeqNo: 3648794	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		114	69	147			

Sample ID: LCS-77580	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 77580	RunNo: 99810								
Prep Date: 9/19/2023	Analysis Date: 9/19/2023	SeqNo: 3648795	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	109	61.9	130			
Surr: DNOP	5.4		5.000		108	69	147			

Sample ID: LCS-77617	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 77617	RunNo: 99836								
Prep Date: 9/19/2023	Analysis Date: 9/20/2023	SeqNo: 3649951	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.4	61.9	130			
Surr: DNOP	5.3		5.000		107	69	147			

Sample ID: MB-77617	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 77617	RunNo: 99836								
Prep Date: 9/19/2023	Analysis Date: 9/20/2023	SeqNo: 3649954	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		103	69	147			

Sample ID: 2309913-002AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: West Line Vadose	Batch ID: 77617	RunNo: 99836								
Prep Date: 9/19/2023	Analysis Date: 9/20/2023	SeqNo: 3650897	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	9.7	48.59	0	91.4	54.2	135			
Surr: DNOP	4.6		4.859		94.2	69	147			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2309913-002AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: West Line Vadose	Batch ID: 77617	RunNo: 99836								
Prep Date: 9/19/2023	Analysis Date: 9/20/2023	SeqNo: 3650898 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.3	46.34	0	100	54.2	135	4.47	29.2	
Surr: DNOP	5.3		4.634		115	69	147	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: ics-77575	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 77575	RunNo: 99813								
Prep Date: 9/18/2023	Analysis Date: 9/19/2023	SeqNo: 3648847	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.0	70	130			
Surr: BFB	2200		1000		216	15	244			

Sample ID: mb-77575	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 77575	RunNo: 99813								
Prep Date: 9/18/2023	Analysis Date: 9/19/2023	SeqNo: 3648848	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	990		1000		99.1	15	244			

Sample ID: ics-77588	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654552	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.4	70	130			
Surr: BFB	2200		1000		216	15	244			

Sample ID: mb-77588	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654553	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		100	15	244			

Sample ID: 2309913-002ams	SampType: MS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: West Line Vadose	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654555	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	24.90	0	91.4	70	130			
Surr: BFB	2200		996.0		217	15	244			

Sample ID: 2309913-002amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: West Line Vadose	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654556	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2309913-002amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: West Line Vadose	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654556 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.63	0	85.3	70	130	8.01	20	
Surr: BFB	2100		985.2		211	15	244	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: ics-77575	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 77575		RunNo: 99813							
Prep Date: 9/18/2023	Analysis Date: 9/19/2023		SeqNo: 3648857		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.7	70	130			
Toluene	0.90	0.050	1.000	0	90.4	70	130			
Ethylbenzene	0.93	0.050	1.000	0	92.6	70	130			
Xylenes, Total	2.8	0.10	3.000	0	93.2	70	130			
Surr: 4-Bromofluorobenzene	0.89		1.000		88.9	39.1	146			

Sample ID: mb-77575	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 77575		RunNo: 99813							
Prep Date: 9/18/2023	Analysis Date: 9/19/2023		SeqNo: 3648858		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	0.89		1.000		89.3	39.1	146			

Sample ID: ics-77588	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 77588		RunNo: 99907							
Prep Date: 9/18/2023	Analysis Date: 9/22/2023		SeqNo: 3654566		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.025	1.000	0	82.4	70	130			
Toluene	0.83	0.050	1.000	0	83.1	70	130			
Ethylbenzene	0.85	0.050	1.000	0	85.2	70	130			
Xylenes, Total	2.6	0.10	3.000	0	85.1	70	130			
Surr: 4-Bromofluorobenzene	0.92		1.000		92.4	39.1	146			

Sample ID: mb-77588	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 77588		RunNo: 99907							
Prep Date: 9/18/2023	Analysis Date: 9/22/2023		SeqNo: 3654567		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	0.87		1.000		87.0	39.1	146			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2309913

06-Oct-23

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2309913-003ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: Pettigrew Vadose	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654570	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	0.9862	0	88.0	70	130			
Toluene	0.89	0.049	0.9862	0	90.0	70	130			
Ethylbenzene	0.91	0.049	0.9862	0	92.1	70	130			
Xylenes, Total	2.7	0.099	2.959	0	92.1	70	130			
Surr: 4-Bromofluorobenzene	0.90		0.9862		91.3	39.1	146			

Sample ID: 2309913-003amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: Pettigrew Vadose	Batch ID: 77588	RunNo: 99907								
Prep Date: 9/18/2023	Analysis Date: 9/22/2023	SeqNo: 3654571	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	0.9804	0	85.2	70	130	3.81	20	
Toluene	0.83	0.049	0.9804	0	85.0	70	130	6.40	20	
Ethylbenzene	0.86	0.049	0.9804	0	87.2	70	130	5.98	20	
Xylenes, Total	2.6	0.098	2.941	0	87.0	70	130	6.27	20	
Surr: 4-Bromofluorobenzene	0.85		0.9804		87.1	39.1	146	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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
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: 2309913

RcptNo: 1

Received By: Juan Rojas 9/16/2023 7:00:00 AM *Juan Rojas*

Completed By: Juan Rojas 9/16/2023 7:16:11 AM *Juan Rojas*

Reviewed By: *[Signature]* 9/18/23

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
(<2 or >12 unless noted)
Adjusted? _____
Checked by: Juan Rojas 9/16/23

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: W 9/18/23

16. Additional remarks: Samples -01 -001, -002, -010 sample IDs/lines on COC do not match bottle labels. W 9/18/23

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	<u>4.0</u>	Good	Yes	Yogi		

W 4.0 9/18/23

Chain-of-Custody Record

Client: ENSOLUM

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: BISEI LF

Project #: _____

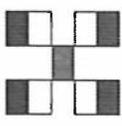
Project Manager: Stuart Hyde

Sampler: E. Carroll

On Ice: Yes No

of Coolers: 1

Cooler Temp (including CF): 4.1-0.1-40°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.
9-15	11:40	Soil	East line vadose	(1) 4oz Jar	Cool	2309913
	11:50		West line vadose			-001
	12:10		Petroleum vadose			-002
	12:20		Bisei Vadose			-003
	12:30		API 1 Vadose			-004
	12:35		API 2 Vadose			-005
	12:40		API 3 Vadose			-006
	12:45		API 4 Vadose			-007
	12:15		Crude Treatments			-008
	12:50		API Treatments			-009
						-010

Analysis Request	
<input checked="" type="checkbox"/> (BTEX) MTBE / TMBs (8021)	<input checked="" type="checkbox"/>
TPH:8015D(GRO / DRO / MRO)	<input checked="" type="checkbox"/>
8081 Pesticides/8082 PCB's	<input checked="" type="checkbox"/>
EDB (Method 504.1)	<input checked="" type="checkbox"/>
PAHs by 8310 or 8270SIMS	<input checked="" type="checkbox"/>
RCRA 8 Metals	<input checked="" type="checkbox"/>
Cl, F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	<input checked="" type="checkbox"/>
8260 (VOA)	<input checked="" type="checkbox"/>
8270 (Semi-VOA)	<input checked="" type="checkbox"/>
Total Coliform (Present/Absent)	<input checked="" type="checkbox"/>

Relinquished by: _____ Date: 9/15/23 Time: 1754

Relinquished by: Stuart Hyde Date: 9/15/23 Time: 1415

Received by: Stuart Hyde Date: 9/15/23 Time: 1415

Received by: Stuart Hyde Date: 9/16/23 Time: 1754

Remarks: Please report chloride to MDL < 50mg/kg



Eurofins Environment Testing South
Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 05, 2024

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

RE: Bisti LF

OrderNo.: 2312C51

Dear Stuart Hyde:

Eurofins Environment Testing South Central, LLC received 5 sample(s) on 12/21/2023 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 do not hesitate to contact Eurofins Albuquerque for any additional information or clarifications.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2312C51**

Date Reported: **1/5/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: west Line Vadose

Project: Bisti LF

Collection Date: 12/19/2023 10:00:00 AM

Lab ID: 2312C51-001

Matrix: SOIL

Received Date: 12/21/2023 6:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	1/4/2024 12:33:34 AM	79673
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/4/2024 12:33:34 AM	79673
Surr: DNOP	124	69-147		%Rec	1	1/4/2024 12:33:34 AM	79673
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/28/2023 7:04:02 AM	79594
Surr: BFB	122	15-244		%Rec	1	12/28/2023 7:04:02 AM	79594
EPA METHOD 8021B: VOLATILES							Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	12/28/2023 7:04:02 AM	79594
Toluene	ND	0.048		mg/Kg	1	12/28/2023 7:04:02 AM	79594
Ethylbenzene	ND	0.048		mg/Kg	1	12/28/2023 7:04:02 AM	79594
Xylenes, Total	ND	0.095		mg/Kg	1	12/28/2023 7:04:02 AM	79594
Surr: 4-Bromofluorobenzene	92.2	39.1-146		%Rec	1	12/28/2023 7:04:02 AM	79594

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2312C51**

Date Reported: **1/5/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: East Line Vadose

Project: Bisti LF

Collection Date: 12/19/2023 10:10:00 AM

Lab ID: 2312C51-002

Matrix: SOIL

Received Date: 12/21/2023 6:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/4/2024 12:43:58 AM	79673
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/4/2024 12:43:58 AM	79673
Surr: DNOP	117	69-147		%Rec	1	1/4/2024 12:43:58 AM	79673
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	12/28/2023 7:27:37 AM	79594
Surr: BFB	101	15-244		%Rec	1	12/28/2023 7:27:37 AM	79594
EPA METHOD 8021B: VOLATILES							Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	12/28/2023 7:27:37 AM	79594
Toluene	ND	0.046		mg/Kg	1	12/28/2023 7:27:37 AM	79594
Ethylbenzene	ND	0.046		mg/Kg	1	12/28/2023 7:27:37 AM	79594
Xylenes, Total	ND	0.093		mg/Kg	1	12/28/2023 7:27:37 AM	79594
Surr: 4-Bromofluorobenzene	92.0	39.1-146		%Rec	1	12/28/2023 7:27:37 AM	79594

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2312C51**

Date Reported: **1/5/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Pettigrew Vadose

Project: Bisti LF

Collection Date: 12/19/2023 10:20:00 AM

Lab ID: 2312C51-003

Matrix: SOIL

Received Date: 12/21/2023 6:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/4/2024 12:54:25 AM	79677
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/4/2024 12:54:25 AM	79677
Surr: DNOP	121	69-147		%Rec	1	1/4/2024 12:54:25 AM	79677
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/29/2023 4:14:00 PM	79614
Surr: BFB	110	15-244		%Rec	1	12/29/2023 4:14:00 PM	79614
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	12/29/2023 4:14:00 PM	79614
Toluene	ND	0.047		mg/Kg	1	12/29/2023 4:14:00 PM	79614
Ethylbenzene	ND	0.047		mg/Kg	1	12/29/2023 4:14:00 PM	79614
Xylenes, Total	ND	0.094		mg/Kg	1	12/29/2023 4:14:00 PM	79614
Surr: 4-Bromofluorobenzene	102	39.1-146		%Rec	1	12/29/2023 4:14:00 PM	79614

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2312C51**

Date Reported: **1/5/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: Bisti Vadose

Project: Bisti LF

Collection Date: 12/19/2023 10:30:00 AM

Lab ID: 2312C51-004

Matrix: SOIL

Received Date: 12/21/2023 6:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	1/4/2024 1:04:51 AM	79677
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/4/2024 1:04:51 AM	79677
Surr: DNOP	123	69-147		%Rec	1	1/4/2024 1:04:51 AM	79677
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/29/2023 5:20:00 PM	79614
Surr: BFB	108	15-244		%Rec	1	12/29/2023 5:20:00 PM	79614
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.023		mg/Kg	1	12/29/2023 5:20:00 PM	79614
Toluene	ND	0.047		mg/Kg	1	12/29/2023 5:20:00 PM	79614
Ethylbenzene	ND	0.047		mg/Kg	1	12/29/2023 5:20:00 PM	79614
Xylenes, Total	ND	0.094		mg/Kg	1	12/29/2023 5:20:00 PM	79614
Surr: 4-Bromofluorobenzene	99.6	39.1-146		%Rec	1	12/29/2023 5:20:00 PM	79614

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2312C51**

Date Reported: **1/5/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM

Client Sample ID: API Vadose

Project: Bisti LF

Collection Date: 12/19/2023 10:40:00 AM

Lab ID: 2312C51-005

Matrix: SOIL

Received Date: 12/21/2023 6:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/4/2024 1:15:19 AM	79677
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/4/2024 1:15:19 AM	79677
Surr: DNOP	96.8	69-147		%Rec	1	1/4/2024 1:15:19 AM	79677
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/29/2023 6:25:00 PM	79614
Surr: BFB	103	15-244		%Rec	1	12/29/2023 6:25:00 PM	79614
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	12/29/2023 6:25:00 PM	79614
Toluene	ND	0.048		mg/Kg	1	12/29/2023 6:25:00 PM	79614
Ethylbenzene	ND	0.048		mg/Kg	1	12/29/2023 6:25:00 PM	79614
Xylenes, Total	ND	0.096		mg/Kg	1	12/29/2023 6:25:00 PM	79614
Surr: 4-Bromofluorobenzene	97.9	39.1-146		%Rec	1	12/29/2023 6:25:00 PM	79614

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 Quantitative 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#: 2312C51

05-Jan-24

Client: ENSOLUM

Project: Bisti LF

Sample ID: LCS-79673	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 79673	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773287	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.8	61.9	130			
Surr: DNOP	5.6		5.000		112	69	147			

Sample ID: LCS-79674	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 79674	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773288	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	6.5		5.000		130	69	147			

Sample ID: LCS-79677	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 79677	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773289	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	105	61.9	130			
Surr: DNOP	5.8		5.000		117	69	147			

Sample ID: MB-79673	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 79673	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773290	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	15		10.00		145	69	147			

Sample ID: MB-79674	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 79674	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773291	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		116	69	147			

Sample ID: MB-79677	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 79677	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773292	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2312C51

05-Jan-24

Client: ENSOLUM

Project: Bisti LF

Sample ID: MB-79677	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 79677	RunNo: 102212								
Prep Date: 1/2/2024	Analysis Date: 1/3/2024	SeqNo: 3773292	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		122	69	147			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2312C51

05-Jan-24

Client: ENSOLUM

Project: Bisti LF

Sample ID: ics-79594	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 79594		RunNo: 102084							
Prep Date: 12/24/2023	Analysis Date: 12/27/2023		SeqNo: 3768473		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.6	70	130			
Surr: BFB	2100		1000		205	15	244			

Sample ID: mb-79594	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 79594		RunNo: 102084							
Prep Date: 12/24/2023	Analysis Date: 12/27/2023		SeqNo: 3768474		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.9	15	244			

Sample ID: ics-79614	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 79614		RunNo: 102164							
Prep Date: 12/27/2023	Analysis Date: 12/29/2023		SeqNo: 3771175		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	94.4	70	130			
Surr: BFB	2300		1000		227	15	244			

Sample ID: mb-79614	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 79614		RunNo: 102164							
Prep Date: 12/27/2023	Analysis Date: 12/29/2023		SeqNo: 3771176		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		105	15	244			

Sample ID: 2312c51-003ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: Pettigrew Vadose	Batch ID: 79614		RunNo: 102164							
Prep Date: 12/27/2023	Analysis Date: 12/29/2023		SeqNo: 3771178		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.7	23.36	0	101	70	130			
Surr: BFB	2200		934.6		234	15	244			

Sample ID: 2312c51-003amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: Pettigrew Vadose	Batch ID: 79614		RunNo: 102164							
Prep Date: 12/27/2023	Analysis Date: 12/29/2023		SeqNo: 3771179		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2312C51

05-Jan-24

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2312c51-003amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: Pettigrew Vadose	Batch ID: 79614	RunNo: 102164								
Prep Date: 12/27/2023	Analysis Date: 12/29/2023	SeqNo: 3771179	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.61	0	96.3	70	130	3.47	20	
Surr: BFB	2200		944.3		230	15	244	0	0	

Sample ID: ics-79645	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 79645	RunNo: 102164								
Prep Date: 12/28/2023	Analysis Date: 12/30/2023	SeqNo: 3771199	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2300		1000		226	15	244			

Sample ID: mb-79645	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 79645	RunNo: 102164								
Prep Date: 12/28/2023	Analysis Date: 12/30/2023	SeqNo: 3771200	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		102	15	244			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2312C51

05-Jan-24

Client: ENSOLUM

Project: Bisti LF

Sample ID: LCS-79594	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 79594		RunNo: 102084							
Prep Date: 12/24/2023	Analysis Date: 12/27/2023		SeqNo: 3768506		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	100	70	130			
Toluene	1.0	0.050	1.000	0	101	70	130			
Ethylbenzene	1.0	0.050	1.000	0	102	70	130			
Xylenes, Total	3.1	0.10	3.000	0	102	70	130			
Surr: 4-Bromofluorobenzene	1.0		1.000		99.7	39.1	146			

Sample ID: mb-79594	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 79594		RunNo: 102084							
Prep Date: 12/24/2023	Analysis Date: 12/27/2023		SeqNo: 3768507		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	0.92		1.000		92.0	39.1	146			

Sample ID: lcs-79614	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 79614		RunNo: 102164							
Prep Date: 12/27/2023	Analysis Date: 12/29/2023		SeqNo: 3771228		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.7	70	130			
Toluene	0.98	0.050	1.000	0	97.6	70	130			
Ethylbenzene	1.0	0.050	1.000	0	99.8	70	130			
Xylenes, Total	3.0	0.10	3.000	0	100	70	130			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	39.1	146			

Sample ID: mb-79614	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 79614		RunNo: 102164							
Prep Date: 12/27/2023	Analysis Date: 12/29/2023		SeqNo: 3771229		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	1.0		1.000		101	39.1	146			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2312C51

05-Jan-24

Client: ENSOLUM

Project: Bisti LF

Sample ID: 2312c51-004ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: Bisti Vadose	Batch ID: 79614	RunNo: 102164								
Prep Date: 12/27/2023	Analysis Date: 12/29/2023	SeqNo: 3771232	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.023	0.9363	0	100	70	130			
Toluene	0.95	0.047	0.9363	0	102	70	130			
Ethylbenzene	0.97	0.047	0.9363	0	104	70	130			
Xylenes, Total	2.9	0.094	2.809	0	105	70	130			
Surr: 4-Bromofluorobenzene	0.93		0.9363		98.8	39.1	146			

Sample ID: 2312c51-004amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: Bisti Vadose	Batch ID: 79614	RunNo: 102164								
Prep Date: 12/27/2023	Analysis Date: 12/29/2023	SeqNo: 3771233	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.023	0.9337	0	98.9	70	130	1.93	20	
Toluene	0.93	0.047	0.9337	0	99.1	70	130	2.80	20	
Ethylbenzene	0.95	0.047	0.9337	0	102	70	130	2.42	20	
Xylenes, Total	2.9	0.093	2.801	0	102	70	130	2.89	20	
Surr: 4-Bromofluorobenzene	0.92		0.9337		98.5	39.1	146	0	0	

Sample ID: ics-79645	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 79645	RunNo: 102164								
Prep Date: 12/28/2023	Analysis Date: 12/30/2023	SeqNo: 3771253	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.98		1.000		97.9	39.1	146			

Sample ID: mb-79645	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 79645	RunNo: 102164								
Prep Date: 12/28/2023	Analysis Date: 12/30/2023	SeqNo: 3771254	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.97		1.000		96.8	39.1	146			

Qualifiers:

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



Sample Log-In Check List

Client Name: ENSOLUM Work Order Number: 2312C51 RcptNo: 1
Received By: Tracy Casarrubias 12/21/2023 6:40:00 AM
Completed By: Tracy Casarrubias 12/21/2023 11:21:30 AM
Reviewed By: *TC 12/21/23*

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: *JG 12-21-23*

Special Handling (if applicable)

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

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	Mailing address and phone number are missing on COC- TMC 12/21/23		

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.3	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Ensolium

Mailing Address:

Phone #:

email or Fax#: shyde@ensolium.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 #:

Project Manager:

Stuart Hyde

Sampler: E. Carroll

On Ice: Yes No 40g

of Coolers: 1

Cooler Temp (including CF): 0.3 - 0.3 (°C)

Container Type and #

1 4oz

Preservative Type

Cool

HEAL No.

2312051

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
12-19	10:00	Soil	Westline vadose	1 4oz	Cool	001
	10:10		Eastline vadose			002
	10:20		Pettigrew vadose			003
	10:30		Bisti vadose			004
	10:40		APE vadose			005

Date: 12-20 Time: 14:23

Relinquished by: [Signature]

Received by: [Signature] Date: 12/20/23 Time: 14:23

Date: 12/20/23 Time: 17:30

Relinquished by: [Signature]

Received by: [Signature] Date: 12/21/23 Time: 0:40

Remarks:

CC: e.carroll@ensolium.com

Analysis Request

BTEX / MTBE / TMS (8021)

TPH:8015D(GRO / DRO / MRO)

8081 Pesticides/8082 PCB's

EDB (Method 504.1)

PAHs by 8310 or 8270SIMS

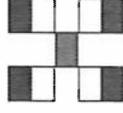
RCRA 8 Metals

Cl, F, Br, NO₃, NO₂, PO₄, SO₄

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)



HALL ENVIRONMENTAL ANALYSIS LABORATORY

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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 329580

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 329580
	Action Type: [C-137] Non-Fee SWMF Submittal (SWMF NON-FEE SUBMITTAL)

CONDITIONS

Created By	Condition	Condition Date
lbarr	None	9/25/2024