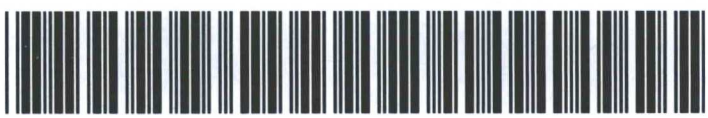
AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.



App Number: pEEM0112359690

NM2 - 10

WESTERN REFINING COMPANY L.P.

8/24/2017

Western Refining

2016 Annual Report

Bisti Landfarm

Western Refining Centralized Surface Waste Management Facility NM-02-0010

San Juan County, New Mexico

February 2017

Western Refining

WNR LISTED NYSE

OIL CONS. DIV DIST. 3
FEB 23 2017

February 22nd, 2017

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

UPS Tracking #:	1Z 881 839 01 4130 6752	(NMOCD - Santa Fe Office)
UPS Tracking #:	1Z 881 839 01 4116 8161	(NMOCD - Aztec Office)

Re: 2016 Annual Sampling Report
Western Refining Centralized Surface Waste Management Facility
Permit #: NM-02-0010
San Juan County, New Mexico

Dear Mr. Jones,

Please find enclosed the 2016 Annual Sampling Report for the Western Refining Centralized Surface Waste Management Facility located in San Juan County, New Mexico. This report summarizes the sampling activities performed in 2016.

As stated in the attached Annual Report, petroleum hydrocarbon-impacted soils have not been accepted at the Bisti Landfarm since 2010. The treatment zone monitoring results continue to demonstrate concentrations below the Treatment Zone Closure Performance Standards pursuant to Rule 36; however Western continues to till the treatment zone bi-weekly as required by Permit. Western will be requesting a meeting with the New Mexico Oil Conservation Division (NMOCD) to discuss options for permanent closure of the landfarm.

If you have any questions or require additional information, please do not hesitate to contact me directly at (505) 632-4166.

Sincerely,

Kelly Robinson

Kelly Robinson
Environmental Supervisor
Western Refining Southwest, Inc.

OIL CONS. DIV DIST. 3
FEB 23 2017

cc: R. Schmaltz – WNR
A. Hains – WNR
J. Kelly – NMOCD Aztec

2016 ANNUAL REPORT

BISTI LANDFARM
WESTERN REFINING CENTRALIZED SURFACE WASTE MANAGEMENT FACILITY NM-02-0010
SAN JUAN COUNTY, NEW MEXICO

FEBRUARY 2017

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

2016 ANNUAL REPORT

BISTI LANDFARM
WESTERN REFINING CENTRALIZED SURFACE WASTE MANAGEMENT FACILITY NM-02-0010
SAN JUAN COUNTY, NEW MEXICO

FEBRUARY 2017

Prepared for:

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

Prepared by:

LT ENVIRONMENTAL, INC.
848 East 2nd Avenue
Durango, Colorado 81301
(970) 385-1096

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EXECUTIVE SUMMARY

LT Environmental, Inc. (LTE), on behalf of Western Refining Southwest, Inc. (Western), has prepared this report detailing compliance-related soil monitoring activities completed between January 2016 through December 2016 at the Bisti Landfarm (Site), permit number NM-02-0010, in San Juan County, New Mexico.

The Site is located in the northwest quarter of the southeast quarter of Section 16, Township 25 North, Range 12 West in San Juan County, New Mexico. The Site was permitted in February 1998 under New Mexico Oil Conservation Division (NMOCD) Rule 711 to Giant Industries, Arizona (Giant). Giant disposed of petroleum hydrocarbon-impacted soil at the Site resulting in three cells: API Cell, Crude Cell (containing material originating from Pettigrew, East Line, Bisti, and West Line), and Cell 1. Cell 1 is inactive and no longer monitored or maintained. Western acquired the Site from Giant in June 2007.

The scope of work for this project consisted of soil sampling including semiannual treatment zone and vadose zone sampling as required by New Mexico Administrative Code 19.15.36.15 (Rule 36). The scope of work for this project also included the annual and quarterly vadose zone sampling as required by the original Rule 711 permit. Soil sampling was conducted to monitor the natural attenuation of contaminants of concern in the treatment zone and to monitor potential migration of contaminants of concern into the vadose zone.

Concentrations of total petroleum hydrocarbons and chloride in the treatment zone are within the range of impacted soil undergoing treatment at the Site and do not exceed Treatment Zone Closure Performance Standards identified in Rule 36. Laboratory analytical results for vadose zone sampling were consistent with historical monitoring results with chloride and other major cations/anions exceeding background concentrations in portions of the Crude Cell and API Cell. As treatment zone monitoring results do not exceed Treatment Zone Closure Performance Standards identified in Rule 36, Western will pursue closure of the landfarm in 2017.

1.0 INTRODUCTION

LT Environmental, Inc. (LTE), on behalf of Western Refining Southwest, Inc. (Western), has prepared this report detailing compliance soil sampling completed from January 2016 through December 2016 to monitor soil remediation at the Bisti Landfarm (Site), permit number NM-02-0010, in San Juan County, New Mexico.

1.1 SITE DESCRIPTION AND HISTORY

The Site occupies approximately 28 acres in the northwest quarter of the southeast quarter of Section 16, Township 25 North, Range 12 West in San Juan County, New Mexico (Figure 1). In 1998, Giant Industries, Arizona (Giant) permitted the Site as a surface waste management facility under the New Mexico Oil Conservation Division (NMOCD) Rule 711. Giant disposed of petroleum hydrocarbon-impacted soil at the Site resulting in three cells: API Cell, Crude Cell (containing material originating from Pettigrew, East Line, Bisti, and West Line) and Cell 1, which is currently inactive (Figure 2). In 2007, the NMOCD passed new rules (19.15.36 of the New Mexico Administrative Code [NMAC] [Rule 36]) pertaining to surface waste management facilities and required compliance with the transitional provisions of Rule 36. Western acquired the Site from Giant in June 2007 and disposed of petroleum hydrocarbon-impacted soil at the Site until 2010. Western continues to monitor and maintain the API Cell and the Crude Cell using the provisional requirements of Rule 711 and Rule 36 as a guide. Cell 1 is no longer tilled based on a letter dated March 8, 2004, from the NMOCD to Giant stating Cell 1 was approved for discontinued maintenance.

1.2 SCOPE OF WORK

The scope of work for this project consisted of soil sampling including semiannual treatment zone sampling and vadose zone sampling as required by Rule 36. Quarterly and annual vadose zone sampling as required by the original Rule 711 permit was also conducted. Soil sampling was conducted to monitor the natural attenuation of contaminants of concern in the treatment zone and to monitor potential migration of contaminants of concern into the vadose zone. A summary of field activities, laboratory analytical soil sampling results, and conclusions are presented in the subsequent sections of this report.

2.0 METHODOLOGY

All samples collected as part of quarterly, semiannual and annual sampling activities were placed on ice and sealed in a cooler for delivery to Hall Environmental Analysis Laboratory, Inc. (HEAL) of Albuquerque, New Mexico, for analysis. 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. The following is a summary of the sampling activities completed during 2016.

2.1 SEMIANNUAL TREATMENT ZONE MONITORING

Semiannual sampling activities of the treatment zones were conducted on March 22, 2016 and September 23, 2016 pursuant to the requirements of Rule 36 for treatment zone sampling. Sampling activities included the collection of composite samples in API and Crude cells. Each API Cell treatment zone composite sample included the collection of four aliquots from approximately 6 inches below the landfarm existing surface within the API Cell. Each composite sample collected from the Crude Cell treatment zone included the collection of four aliquots (one aliquot from each of the four source areas: Pettigrew, Bisti, West Line and East Line) 6 inches below existing landfarm surface. Figure 3 shows the approximate location of each aliquot collection point using a field GPS unit. The aliquots were placed into a 1-gallon plastic bag. The soil within the bag was thoroughly homogenized before filling clean glass sampling jars provided by the laboratory. Treatment zone samples were analyzed for total petroleum hydrocarbons (TPH) by United States Environmental Protection Agency (EPA) Method 418.1, TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and chloride by EPA Method 300.0.

2.2 QUARTERLY AND SEMI-ANNUAL VADOSE ZONE MONITORING

Discrete vadose zone samples were collected quarterly on March 22, June 16, September 23, and December 9, 2016, from the two active cells (API and Crude cells) to fulfill requirements for Rule 711 quarterly sampling. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B, and TPH-GRO and TPH-DRO by EPA Method 8015M. Additional analysis which included TPH by EPA Method 418.1 and Chloride by EPA Method 300.0 was run for the samples collected on March 22, 2016 and September 23, 2016 to comply with the requirements for Rule 36 semiannual sampling. The number of vadose zone samples collected within each cell was dependent on the size of the cell. One sample was collected from beneath the API Cell. For each sampling event, four soil samples were collected from the Crude Cell: one beneath the East Line source area, one beneath the West Line source area, one beneath the Pettigrew source area, and one beneath the Bisti source area. Figure 4 shows the approximately location of each vadose zone soil sample. All vadose zone soil samples were collected from 3 feet to 4 feet below the original ground surface and boreholes were filled with hydrated bentonite from total depth to existing ground surface upon completion.

2.3 ANNUAL VADOSE ZONE MONITORING

Discrete vadose zone soil samples collected on March 22, 2016 from the Crude Cell source areas (East Line, West Line, Bisti, and Pettigrew) and API cell were additionally analyzed for major anions/cations (alkalinity, bicarbonate, carbonate, sulfate, chloride, calcium, manganese, potassium, and sodium) by EPA Method 300.0, 6010B, and ASA10-3 and metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury) by EPA Method 6010B and EPA Method 7471 pursuant to the original Rule 711 permit annual sampling requirements. Figure 4 shows the approximately location of each vadose zone soil sample. All vadose zone soil samples were collected from 3 feet to 4 feet below the original ground surface and boreholes were filled with hydrated bentonite from total depth to existing ground surface upon completion.

3.0 ANALYTICAL RESULTS

3.1 SEMIANNUAL TREATMENT ZONE ANALYTICAL RESULTS

Table 1 presents the analytical results from the treatment zone monitoring events conducted in March and September 2016, which are compared to the Treatment Zone Closure Performance Standards defined in Rule 36. Concentrations of TPH and chloride did not exceed Treatment Zone Closure Performance Standards. The complete laboratory analytical reports are presented in Appendix A.

3.2 QUARTERLY AND SEMIANNUAL VADOSE ZONE ANALYTICAL RESULTS

The laboratory analytical results for BTEX and TPH from quarterly vadose zone soil samples compared to the laboratory practical quantitation limit (PQL) and background sample results are presented in Table 2. The laboratory analytical results for BTEX, DRO and GRO as combined fraction, TPH, and chloride from semiannual vadose zone soil samples compared to the laboratory practical quantitation limit (PQL) and background sample results are presented in Table 3. Chloride exceeded background concentrations and PQL in the API Vadose Zone, Bisti Vadose Zone, and Pettigrew Vadose Zone samples collected on March 22, 2016. Chloride also exceeded the background concentration in the Pettigrew Vadose Zone sample collected September 23, 2016. The complete laboratory analytical reports are presented in Appendix A.

3.3 ANNUAL VADOSE ZONE ANALYTICAL RESULTS

Per the original Rule 711 permit requirement for annual soil sampling, each vadose zone soil sample collected on March 22, 2016 was analyzed for alkalinity, bicarbonate, carbonate, sulfate, chloride, calcium, manganese, potassium, sodium, arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury. The bicarbonate concentrations exceeded the background concentrations in all samples. The sulfate concentration in the API Vadose Zone and Pettigrew Vadose Zone samples exceeded the background sample concentration. Chloride concentrations exceeded the background concentrations in the API Vadose Zone, Bisti Vadose Zone, and Pettigrew Vadose Zone samples. Calcium concentrations were elevated as compared to the background sample result in the West Line, East Line and Bisti source areas of the Crude Cell. Sodium was elevated in the Bisti and Pettigrew source areas, as well as in the API cell. All other analytes were below background concentrations and the PQL. The analytical results are presented in Table 4. The complete laboratory analytical reports are presented in Appendix A.

4.0 CONCLUSIONS

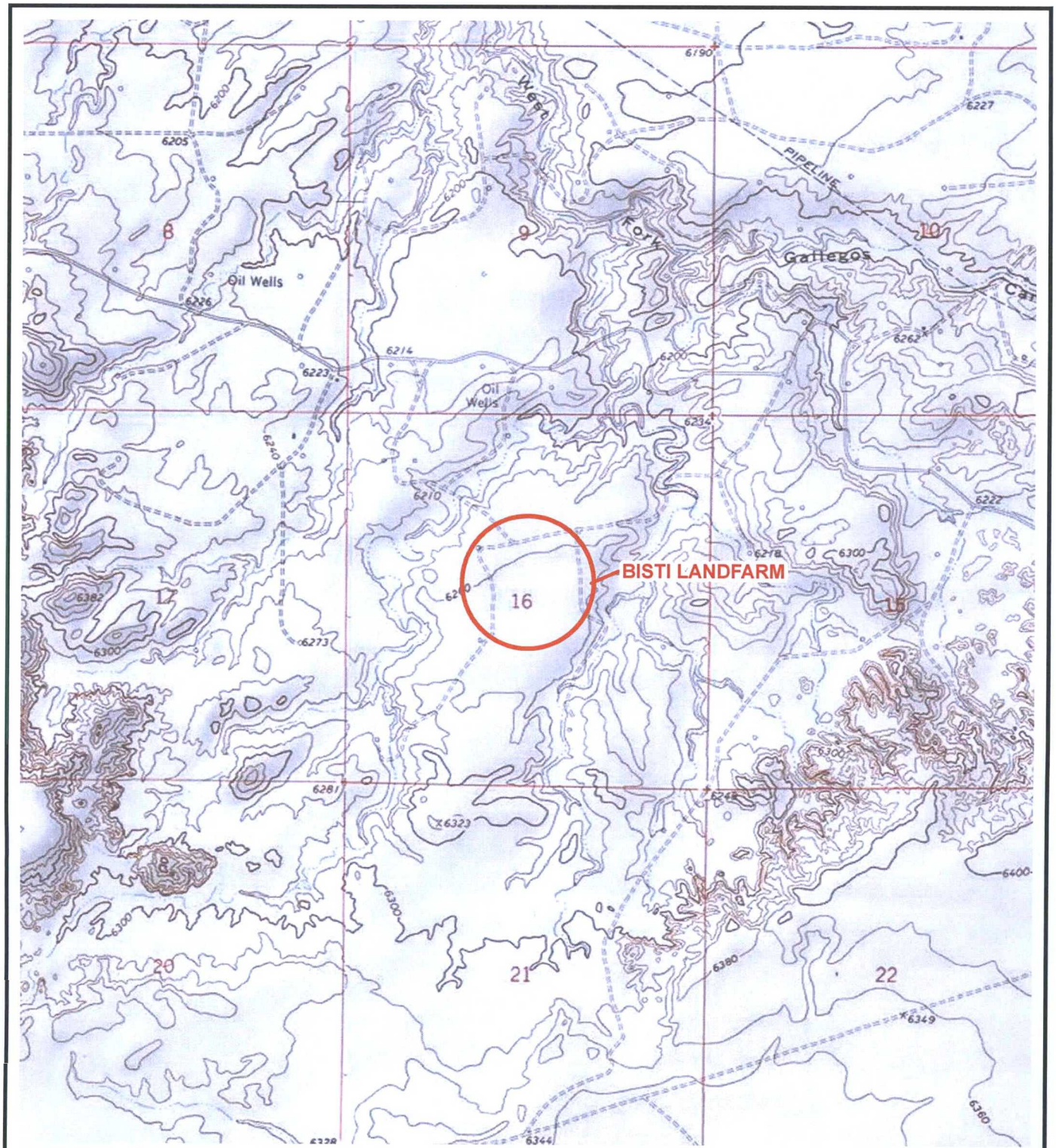
Concentrations of TPH and chloride in the treatment zone have been remediated to below Treatment Zone Closure Performance Standards identified in Rule 36.

Western conducted quarterly vadose zone soil sampling in accordance with the original Rule 711 permit and semiannual vadose zone sampling in accordance with Rule 36. The results for BTEX, TPH, and chloride were compared to laboratory PQLs and background concentrations. In the first quarter 2016 sampling event, chloride exceeded the background concentration from the sample collected from the API Cell and in samples collected from the Bisti and Pettigrew source areas of the Crude Cell. During the third quarter 2016 sampling event, the Pettigrew source area of the Crude Cell exceeded the background concentration.

Annual soil sample results from the vadose zone were also compared to background concentrations for major cations/anions and heavy metals. Bicarbonate, chloride, sulfate, and sodium exceeded the background sample result in the API Cell. The West Line and East Line source areas exceeded the background result for bicarbonate and calcium. The Bisti Source Area exceeded the background result for bicarbonate, calcium, chloride, and sodium. The Pettigrew Source Area exceeded the background concentration for bicarbonate, sulfate, chloride, and sodium. The API Cell exceeded background concentrations for bicarbonate, sulfate, chloride, and sodium. No heavy metals exceeded background concentrations.

5.0 RECOMMENDATIONS

Since 2010, Western is no longer accepting petroleum hydrocarbon-impacted soil at the Site. The treatment zone monitoring results continue to demonstrate concentrations below the Treatment Zone Closure Performance Standards pursuant to Rule 36. Western will be requesting to meet with NMOCD to discuss options for closure. As a follow-up to the agency meeting, Western will submit an Action Plan and pursue closure of the landfarm under a separate submittal. Western will continue monitoring the Site until a closure request is approved.



LEGEND

SITE LOCATION

IMAGE COURTESY OF ESRI/USGS

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

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LEGEND

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

IMAGE COURTESY OF ESRI

0 200 400
Feet

N

FIGURE 2
SITE MAP
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

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LEGEND

- API CELL TREATMENT ZONE ALIQUOT SAMPLE (3/22/2016)
- CRUDE CELL TREATMENT ZONE ALIQUOT SAMPLE (3/22/2016)
- API CELL TREATMENT ZONE ALIQUOT SAMPLE (9/23/2016)
- CRUDE CELL TREATMENT ZONE ALIQUOT SAMPLE (9/23/2016)
- X — X FENCE
- APPROXIMATE SOURCE IDENTITY BOUNDARY
- CELL 1 BOUNDARY
- API CELL BOUNDARY
- CRUDE CELL BOUNDARY

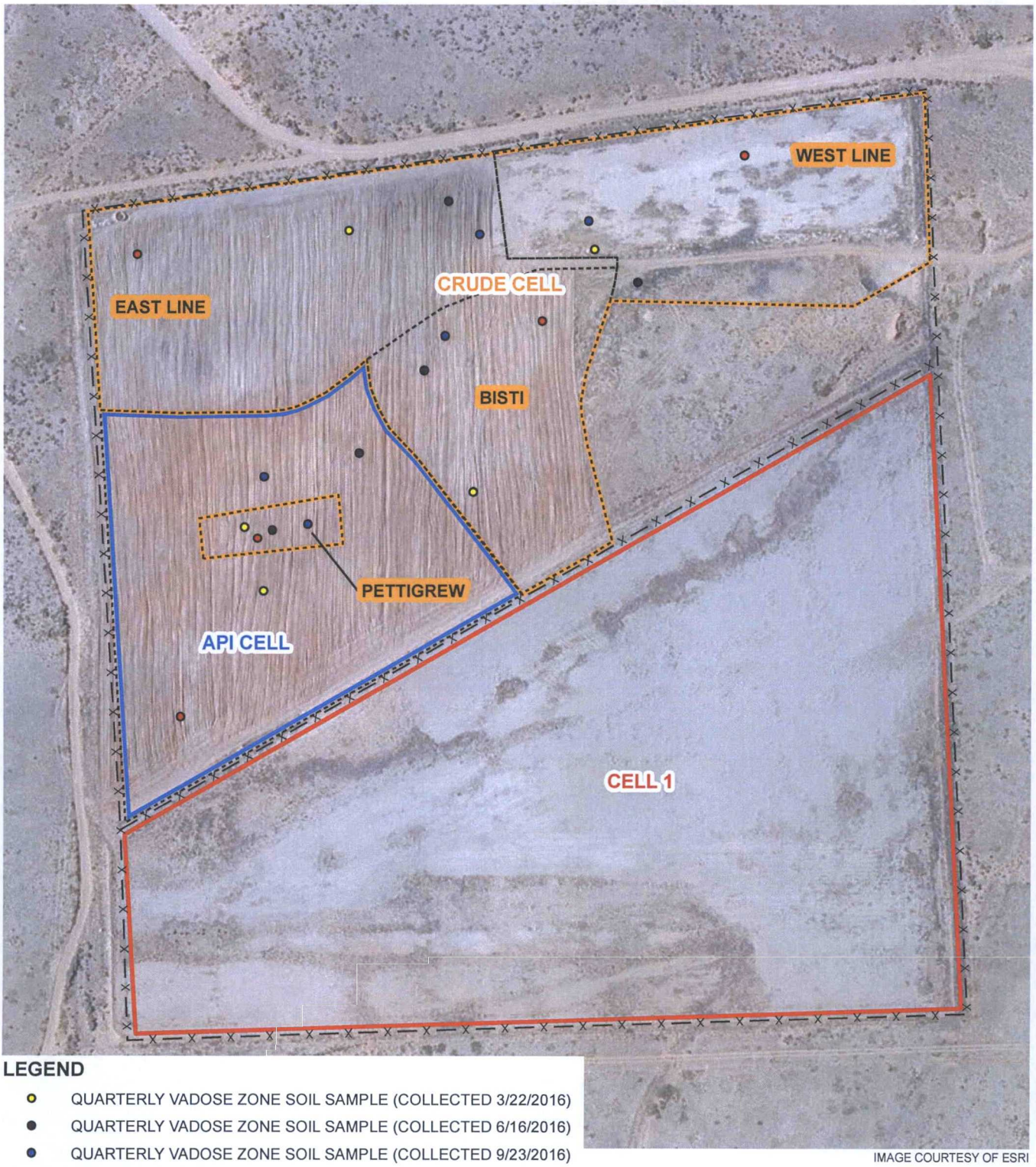
IMAGE COURTESY OF ESRI

0 200 400
Feet

N

FIGURE 3
TREATMENT ZONE SAMPLE LOCATION MAP
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1005 BISTI\WR1005_BISTI_FIG03_TREATMENT_ZONE_ANNUAL_2016_COMBINED.mxd



LEGEND

- QUARTERLY VADOSE ZONE SOIL SAMPLE (COLLECTED 3/22/2016)
- QUARTERLY VADOSE ZONE SOIL SAMPLE (COLLECTED 6/16/2016)
- QUARTERLY VADOSE ZONE SOIL SAMPLE (COLLECTED 9/23/2016)
- QUARTERLY VADOSE ZONE SOIL SAMPLE (COLLECTED 12/9/2016)
- X — X FENCE
- APPROXIMATE SOURCE IDENTITY BOUNDARY
- CELL 1 BOUNDARY
- API CELL BOUNDARY
- CRUDE CELL BOUNDARY

IMAGE COURTESY OF ESRI

0 200 400
Feet

N

FIGURE 4
VADOSE ZONE SAMPLE LOCATION MAP
BISTI LANDFARM
SEC 16 T25N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1005 BISTI\WR1005_BISTI_FIG04_VADOSE_ZONE_SS_LOC_2016_COMBINED.mxd

TABLES

TABLE 1
2016 SEMIANNUAL TREATMENT ZONE SOIL ANALYTICAL RESULTS

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

Cell	Sample ID	Sample Date	TPH-GRO (mg/Kg)	TPH-DRO (mg/Kg)	TPH 418.1 (mg/Kg)	Chloride (mg/Kg)
Crude Cell	Crude Treatment	22-Mar-16	<4.7	<9.1	<19	42
	Crude Cell Treatment Zone	23-Sep-16	<4.9	15	22	<30
API Cell	API Treatment	22-Mar-16	<4.9	37	140	250
	API Cell Treatment Zone	23-Sep-16	<4.7	19	<19	150
19.15.36.15 Treatment Zone Closure Performance Standards			**GRO + DRO = 500**		**2,500**	**1,000**

Notes:

GRO - gasoline range organics

DRO - diesel range organics

TPH - total petroleum hydrocarbons

mg/Kg - milligrams per kilograms

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

APPENDIX A

LABORATORY ANALYTICAL REPORTS

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

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

July 15, 2016

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

RE: Bisti OrderNo.: 1603B45

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/23/2016 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 qualifers 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1603B45**
Date Reported: **7/15/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti
Lab ID: 1603B45-001 **Matrix:** SOIL

Client Sample ID: API Treatment
Collection Date: 3/22/2016 12:55:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	140	20		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	250	7.5		mg/Kg	5	4/4/2016 7:21:50 PM	24617
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	37	9.6		mg/Kg	1	3/29/2016 3:57:21 PM	24429
Surr: DNOP	124	70-130		%Rec	1	3/29/2016 3:57:21 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/24/2016 8:27:42 PM	24391
Surr: BFB	104	66.2-112		%Rec	1	3/24/2016 8:27:42 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1603B45**
Date Reported: **7/15/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti
Lab ID: 1603B45-002 **Matrix:** SOIL

Client Sample ID: Crude Treatment
Collection Date: 3/22/2016 1:05:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	42	1.5		mg/Kg	1	4/4/2016 8:11:29 PM	24617
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	3/28/2016 7:10:25 PM	24429
Surr: DNOP	75.1	70-130		%Rec	1	3/28/2016 7:10:25 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/24/2016 8:51:21 PM	24391
Surr: BFB	107	66.2-112		%Rec	1	3/24/2016 8:51:21 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B45**

15-Jul-16

Client: Western Refining Southwest, Inc.
Project: Bisti

Sample ID **MB-24617**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023338** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Bromide	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Phosphorus, Orthophosphate (As P	ND	1.5								
Sulfate	ND	1.5								

Sample ID **LCS-24617**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023339** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.30	1.500	0	101	90	110			
Chloride	14	1.5	15.00	0	95.3	90	110			
Nitrogen, Nitrite (As N)	2.9	0.30	3.000	0	96.5	90	110			
Bromide	8.4	0.30	7.500	0	111	90	110			S
Nitrogen, Nitrate (As N)	7.5	0.30	7.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	14	1.5	15.00	0	95.6	90	110			
Sulfate	31	1.5	30.00	0	102	90	110			

Sample ID **1603B45-001AMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **API Treatment**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023341** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	1.5	1.500	0.5170	66.2	15	100			
Chloride	270	7.5	15.00	253.4	113	64.2	131			
Nitrogen, Nitrite (As N)	2.5	1.5	3.000	0	83.6	76.9	103			
Nitrogen, Nitrate (As N)	25	1.5	7.500	17.31	99.0	87.6	109			
Phosphorus, Orthophosphate (As P	13	7.5	15.00	5.088	52.5	16.5	79.8			

Sample ID **1603B45-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **API Treatment**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023342** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	1.5	1.500	0.5170	64.3	15	100	200	20	
Chloride	250	7.5	15.00	253.4	5.64	64.2	131	6.13	20	S
Nitrogen, Nitrite (As N)	2.4	1.5	3.000	0	80.0	76.9	103	4.34	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B45**

15-Jul-16

Client: Western Refining Southwest, Inc.

Project: Bisti

Sample ID **1603B45-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **API Treatment**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023342** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	23	1.5	7.500	17.31	80.6	87.6	109	5.76	20	S
Phosphorus, Orthophosphate (As P	13	7.5	15.00	5.088	51.2	16.5	79.8	1.49	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B45**

15-Jul-16

Client: Western Refining Southwest, Inc.
Project: Bisti

Sample ID **MB-24419**	SampType: **MBLK**	TestCode: **EPA Method 418.1: TPH**
Client ID: **PBS**	Batch ID: **24419**	RunNo: **33169**
Prep Date: **3/24/2016**	Analysis Date: **3/30/2016**	SeqNo: **1018640** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID **LCS-24419**	SampType: **LCS**	TestCode: **EPA Method 418.1: TPH**
Client ID: **LCSS**	Batch ID: **24419**	RunNo: **33169**
Prep Date: **3/24/2016**	Analysis Date: **3/30/2016**	SeqNo: **1018641** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	100.0	0	109	83.4	127			

Sample ID **LCSD-24419**	SampType: **LCSD**	TestCode: **EPA Method 418.1: TPH**
Client ID: **LCSS02**	Batch ID: **24419**	RunNo: **33169**
Prep Date: **3/24/2016**	Analysis Date: **3/30/2016**	SeqNo: **1018642** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	100	20	100.0	0	102	83.4	127	6.58	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B45**

15-Jul-16

Client: Western Refining Southwest, Inc.

Project: Bisti

Sample ID **LCS-24429**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **24429**	RunNo: **33066**
Prep Date: **3/24/2016**	Analysis Date: **3/25/2016**	SeqNo: **1015745** 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	99.9	65.8	136			
Surr: DNOP	6.3		5.000		127	70	130			

Sample ID **MB-24429**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **24429**	RunNo: **33066**
Prep Date: **3/24/2016**	Analysis Date: **3/25/2016**	SeqNo: **1015746** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	13		10.00		126	70	130			

Sample ID **1603B45-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **API Treatment**	Batch ID: **24429**	RunNo: **33126**
Prep Date: **3/24/2016**	Analysis Date: **3/29/2016**	SeqNo: **1017669** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	9.5	47.53	36.50	44.0	31.2	162			
Surr: DNOP	5.1		4.753		108	70	130			

Sample ID **1603B45-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **API Treatment**	Batch ID: **24429**	RunNo: **33126**
Prep Date: **3/24/2016**	Analysis Date: **3/29/2016**	SeqNo: **1017670** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	62	9.6	47.89	36.50	52.6	31.2	162	7.21	31.7	
Surr: DNOP	5.3		4.789		111	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B45**

15-Jul-16

Client: Western Refining Southwest, Inc.

Project: Bisti

Sample ID **MB-24391**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **24391**	RunNo: **33039**
Prep Date: **3/23/2016**	Analysis Date: **3/24/2016**	SeqNo: **1014105** 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		103	66.2	112			

Sample ID **LCS-24391**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **24391**	RunNo: **33039**
Prep Date: **3/23/2016**	Analysis Date: **3/24/2016**	SeqNo: **1014106** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.5	80	120			
Surr: BFB	1100		1000		111	66.2	112			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1603B45 RcptNo: 1

Received by/date: 03/23/16

Logged By: Lindsay Mangin 3/23/2016 7:15:00 AM

Completed By: Lindsay Mangin 3/23/2016 9:53:25 AM

Reviewed By: 03/23/16

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. 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: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

Chain-of-Custody Record

Client:	Kelly Robinson
	Western Refining
Mailing Address:	111 CR 4990
	Bloomfield, NM
Phone #:	505-632-8013
Email or Fax#:	Kelly.Robinson@WNR.com
QA/QC Package:	
Standard	☐ Level 4 (Full Validation)
Accreditation	
NELAP	☐ Other
EDD (Type)	

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: Bisti

Project #: WR1005

Project Manager: Devin Hencmann

Sampler: Alyx Crooks / Josh Adams

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.6 - 1.0 Def = 1.6

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 Request ID	Container Type and #	Preservative Type	HEAL No.
2/16	1255	Soil	API Treatment	1 4oz	cool	1602815 -001
2/16	1305	Soil	Crude Treatment	1 4oz	cool	-002

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX, DRO/GRO, TPH	Chlorides, Cations/Anions	Heavy metals	4 Hall Event	Air Bubbles (Y or N)
											←	←	←	←	
											←	←	←	←	

Date	Time	Relinquished by:	Received by:	Date	Time
2/16	1455	Alex Green	Christ Waeler	3/22/16	1455
3/16	1747	Christ Waeler		03/23/16	0745

Remarks:

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

TABLE 3

BISTI LANDFARM
2015 SAMPLING SCHEDULE
WESTERN REFINING SOUTHWEST, INC

	March	June	September	Decmeber
TREATMENT ZONE 1 composite (4 discrete samples each) from the API and 1 composite from the Crude (discrete from bisti, eastline, westline, pettigrew)				
DRO and GRO as Combined Fraction (USEPA 8015M)	x		x	
TPH (USEPA 418.1)	x		x	
Chlorides (USEPA 300.0)	x		x	
VADOSE ZONE Collect samples 3 feet below original ground surface				
BTEX (USEPA 8021)	x		x	x
DRO and GRO as Combined Fraction **(USEPA 8015M)***	x		x	x
TPH (USEPA 418.1)	x		x	
Chlorides (USEPA 300.0)	x		x	
Major Cations/ Anions	x			
Heavy Metals	x			

NOTE: Discuss Method 8015M with lab

Major Cations/Anions (USEPA Method)	Metals (USEPA Method)
Alkalinity (ASA10-3)	Arsenic (6010B)
Bicarbonate (ASA10-3	Barium (6010B)
Carbonate (ASA10-3)	Cadmium (6010B)
Sulfate (300.0)	Chromium (6010B)
Chloride (300.0)	Lead (6010B)
Calcium (6010B)	Selenium (6010B)
Manganese (6010B)	Silver (6010B)
Potassium (6010B)	Mercury (7471)
Sodium (6010B)	

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 17, 2017

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

RE: Bisti Landfarm OrderNo.: 1603B48

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/23/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued April 08, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1603B48**
Date Reported: **2/17/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1603B48-001 **Matrix:** SOIL

Client Sample ID: Westline Vadose Zone
Collection Date: 3/22/2016 12:35:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	22	1.5		mg/Kg	1	4/4/2016 9:01:08 PM	24617
Sulfate	14	1.5		mg/Kg	1	4/4/2016 9:01:08 PM	24617
EPA METHOD 7471: MERCURY						Analyst: **pmf**	
Mercury	ND	0.033		mg/Kg	1	3/29/2016 5:57:50 PM	24495
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**	
Arsenic	ND	2.5		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Barium	79	0.10		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Cadmium	ND	0.10		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Calcium	4800	25		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Chromium	1.6	0.30		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Lead	2.1	0.25		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Manganese	110	0.10		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Potassium	510	50		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Selenium	ND	2.5		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Silver	ND	0.25		mg/Kg	1	3/29/2016 2:53:56 PM	24470
Sodium	45	25		mg/Kg	1	3/29/2016 2:53:56 PM	24470
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/25/2016 6:06:07 PM	24429
Surr: DNOP	131	70-130	S	%Rec	1	3/25/2016 6:06:07 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/24/2016 9:14:56 PM	24391
Surr: BFB	107	66.2-112		%Rec	1	3/24/2016 9:14:56 PM	24391
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	3/24/2016 9:14:56 PM	24391
Toluene	ND	0.047		mg/Kg	1	3/24/2016 9:14:56 PM	24391
Ethylbenzene	ND	0.047		mg/Kg	1	3/24/2016 9:14:56 PM	24391
Xylenes, Total	ND	0.095		mg/Kg	1	3/24/2016 9:14:56 PM	24391
Surr: 4-Bromofluorobenzene	111	80-120		%Rec	1	3/24/2016 9:14:56 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1603B48**
Date Reported: **2/17/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1603B48-002 **Matrix:** SOIL

Client Sample ID: Eastline Vadose Zone
Collection Date: 3/22/2016 12:45:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	36	20		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	1.6	1.5		mg/Kg	1	4/4/2016 9:50:47 PM	24617
Sulfate	94	1.5		mg/Kg	1	4/4/2016 9:50:47 PM	24617
EPA METHOD 7471: MERCURY						Analyst: **pmf**	
Mercury	ND	0.032		mg/Kg	1	3/29/2016 5:59:34 PM	24495
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**	
Arsenic	ND	2.5		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Barium	98	0.10		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Cadmium	ND	0.10		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Calcium	4500	25		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Chromium	1.8	0.30		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Lead	2.2	0.25		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Manganese	100	0.10		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Potassium	680	51		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Selenium	ND	2.5		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Silver	ND	0.25		mg/Kg	1	3/29/2016 2:57:22 PM	24470
Sodium	50	25		mg/Kg	1	3/29/2016 2:57:22 PM	24470
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	15	9.9		mg/Kg	1	3/25/2016 6:27:31 PM	24429
Surr: DNOP	109	70-130		%Rec	1	3/25/2016 6:27:31 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/24/2016 9:38:25 PM	24391
Surr: BFB	106	66.2-112		%Rec	1	3/24/2016 9:38:25 PM	24391
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	3/24/2016 9:38:25 PM	24391
Toluene	ND	0.049		mg/Kg	1	3/24/2016 9:38:25 PM	24391
Ethylbenzene	ND	0.049		mg/Kg	1	3/24/2016 9:38:25 PM	24391
Xylenes, Total	ND	0.099		mg/Kg	1	3/24/2016 9:38:25 PM	24391
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	1	3/24/2016 9:38:25 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1603B48**
Date Reported: **2/17/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1603B48-003 **Matrix:** SOIL

Client Sample ID: Bisti Vadose Zone
Collection Date: 3/22/2016 12:25:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	80	30		mg/Kg	20	4/4/2016 10:28:01 PM	24617
Sulfate	60	1.5		mg/Kg	1	4/4/2016 10:15:37 PM	24617
EPA METHOD 7471: MERCURY						Analyst: **pmf**	
Mercury	ND	0.032		mg/Kg	1	3/29/2016 6:01:18 PM	24495
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**	
Arsenic	ND	2.5		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Barium	120	0.10		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Cadmium	ND	0.10		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Calcium	3800	25		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Chromium	2.1	0.30		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Lead	2.3	0.25		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Manganese	120	0.10		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Potassium	750	51		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Selenium	ND	2.5		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Silver	ND	0.25		mg/Kg	1	3/29/2016 3:00:43 PM	24470
Sodium	210	25		mg/Kg	1	3/29/2016 3:00:43 PM	24470
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	3/25/2016 6:49:02 PM	24429
Surr: DNOP	103	70-130		%Rec	1	3/25/2016 6:49:02 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	3/24/2016 10:01:55 PM	24391
Surr: BFB	105	66.2-112		%Rec	1	3/24/2016 10:01:55 PM	24391
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	3/24/2016 10:01:55 PM	24391
Toluene	ND	0.050		mg/Kg	1	3/24/2016 10:01:55 PM	24391
Ethylbenzene	ND	0.050		mg/Kg	1	3/24/2016 10:01:55 PM	24391
Xylenes, Total	ND	0.099		mg/Kg	1	3/24/2016 10:01:55 PM	24391
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	3/24/2016 10:01:55 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1603B48-004 **Matrix:** SOIL

Client Sample ID: Pedigrew Vadose Zone
Collection Date: 3/22/2016 12:05:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	3500	150		mg/Kg	100	4/5/2016 7:26:22 PM	24617
Sulfate	340	30		mg/Kg	20	4/4/2016 10:52:51 PM	24617
EPA METHOD 7471: MERCURY						Analyst: **pmf**	
Mercury	ND	0.033		mg/Kg	1	3/29/2016 6:03:02 PM	24495
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**	
Arsenic	ND	2.5		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Barium	71	0.098		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Cadmium	ND	0.098		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Calcium	2100	25		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Chromium	1.5	0.29		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Lead	1.9	0.25		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Manganese	84	0.098		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Potassium	550	49		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Selenium	ND	2.5		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Silver	ND	0.25		mg/Kg	1	3/29/2016 3:09:35 PM	24470
Sodium	2800	25		mg/Kg	1	3/29/2016 3:09:35 PM	24470
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/25/2016 7:10:24 PM	24429
Surr: DNOP	124	70-130		%Rec	1	3/25/2016 7:10:24 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/24/2016 10:25:26 PM	24391
Surr: BFB	105	66.2-112		%Rec	1	3/24/2016 10:25:26 PM	24391
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	3/24/2016 10:25:26 PM	24391
Toluene	ND	0.048		mg/Kg	1	3/24/2016 10:25:26 PM	24391
Ethylbenzene	ND	0.048		mg/Kg	1	3/24/2016 10:25:26 PM	24391
Xylenes, Total	ND	0.097		mg/Kg	1	3/24/2016 10:25:26 PM	24391
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	3/24/2016 10:25:26 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1603B48-005 **Matrix:** SOIL

Client Sample ID: API Vadose Zone
Collection Date: 3/22/2016 12:15:00 PM
Received Date: 3/23/2016 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **TOM**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	3/30/2016 12:00:00 PM	24419
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	4800	300		mg/Kg	200	4/5/2016 8:16:01 PM	24617
Sulfate	800	30		mg/Kg	20	4/4/2016 11:42:30 PM	24617
EPA METHOD 7471: MERCURY						Analyst: **pmf**	
Mercury	ND	0.033		mg/Kg	1	3/29/2016 6:04:47 PM	24495
EPA METHOD 6010B: SOIL METALS						Analyst: **MED**	
Arsenic	ND	2.5		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Barium	60	0.10		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Cadmium	ND	0.10		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Calcium	2300	25		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Chromium	2.1	0.30		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Lead	2.4	0.25		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Manganese	110	0.10		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Potassium	670	50		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Selenium	ND	2.5		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Silver	ND	0.25		mg/Kg	1	3/29/2016 3:12:59 PM	24470
Sodium	3600	25		mg/Kg	1	3/29/2016 3:12:59 PM	24470
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	3/25/2016 7:31:52 PM	24429
Surr: DNOP	113	70-130		%Rec	1	3/25/2016 7:31:52 PM	24429
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/24/2016 10:48:52 PM	24391
Surr: BFB	106	66.2-112		%Rec	1	3/24/2016 10:48:52 PM	24391
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	3/24/2016 10:48:52 PM	24391
Toluene	ND	0.048		mg/Kg	1	3/24/2016 10:48:52 PM	24391
Ethylbenzene	ND	0.048		mg/Kg	1	3/24/2016 10:48:52 PM	24391
Xylenes, Total	ND	0.096		mg/Kg	1	3/24/2016 10:48:52 PM	24391
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	1	3/24/2016 10:48:52 PM	24391

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B16031988-001
Client Sample ID: 1603B48-001B Westline Vadose Zone

Revised Date: 07/20/16
Report Date: 04/01/16
Collection Date: 03/22/16 12:35
DateReceived: 03/24/16
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	116	mg/kg		4		ASA10-3	03/31/16 15:50 / cnm
Bicarbonate, 1:2	142	mg/kg		4		ASA10-3	03/31/16 15:50 / cnm
Carbonate, 1:2	ND	mg/kg		4		ASA10-3	03/31/16 15:50 / cnm

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B16031988-002
Client Sample ID: 1603B48-002B Eastline Vadose Zone

Revised Date: 07/20/16
Report Date: 04/01/16
Collection Date: 03/22/16 12:45
DateReceived: 03/24/16
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	247	mg/kg		4		ASA10-3	03/30/16 17:05 / cnm
Bicarbonate, 1:2	302	mg/kg		4		ASA10-3	03/30/16 17:05 / cnm
Carbonate, 1:2	ND	mg/kg		4		ASA10-3	03/30/16 17:05 / cnm

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B16031988-003
Client Sample ID: 1603B48-003B Bisti Vadose Zone

Revised Date: 07/20/16
Report Date: 04/01/16
Collection Date: 03/22/16 12:25
DateReceived: 03/24/16
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	164	mg/kg		4		ASA10-3	03/30/16 17:17 / cnm
Bicarbonate, 1:2	200	mg/kg		4		ASA10-3	03/30/16 17:17 / cnm
Carbonate, 1:2	ND	mg/kg		4		ASA10-3	03/30/16 17:17 / cnm

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B16031988-004
Client Sample ID: 1603B48-004B Pedigrew Vadose Zone

Revised Date: 07/20/16
Report Date: 04/01/16
Collection Date: 03/22/16 12:05
DateReceived: 03/24/16
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	105	mg/kg		4		ASA10-3	03/30/16 17:27 / cnm
Bicarbonate, 1:2	128	mg/kg		4		ASA10-3	03/30/16 17:27 / cnm
Carbonate, 1:2	ND	mg/kg		4		ASA10-3	03/30/16 17:27 / cnm

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B16031988-005
Client Sample ID: 1603B48-005B API Vadose Zone

Revised Date: 07/20/16
Report Date: 04/01/16
Collection Date: 03/22/16 12:15
DateReceived: 03/24/16
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
WATER EXTRACTABLE CONSTITUENTS							
Alkalinity, 1:2	120	mg/kg		4		ASA10-3	03/30/16 17:34 / cnm
Bicarbonate, 1:2	147	mg/kg		4		ASA10-3	03/30/16 17:34 / cnm
Carbonate, 1:2	ND	mg/kg		4		ASA10-3	03/30/16 17:34 / cnm

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 07/20/16
Report Date: 04/01/16
Work Order: B16031988

Client: Hall Environmental
Project: Not Indicated

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3									Batch: 98022
Lab ID: LCS-98022	Laboratory Control Sample				Run: AR50_160330A				03/30/16 16:47
Alkalinity, 1:2	107	mg/kg	4.0	97	70	130			
Method: ASA10-3									Batch: 98022
Lab ID: B16031988-001A DUP	Sample Duplicate				Run: AR50_160331A				03/31/16 15:55
Alkalinity, 1:2	119	mg/kg	4.0				2.5	20	
Carbonate, 1:2	ND	mg/kg	4.0					20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **MB-24617**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023338** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Bromide	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Phosphorus, Orthophosphate (As P	ND	1.5								
Sulfate	ND	1.5								

Sample ID **LCS-24617**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023339** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.30	1.500	0	101	90	110			
Chloride	14	1.5	15.00	0	95.3	90	110			
Nitrogen, Nitrite (As N)	2.9	0.30	3.000	0	96.5	90	110			
Bromide	8.4	0.30	7.500	0	111	90	110			S
Nitrogen, Nitrate (As N)	7.5	0.30	7.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	14	1.5	15.00	0	95.6	90	110			
Sulfate	31	1.5	30.00	0	102	90	110			

Sample ID **1603B48-001AMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Westline Vadose Zo**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023349** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.4	0.30	1.500	1.481	63.4	15	100			
Chloride	37	1.5	15.00	21.68	104	64.2	131			
Nitrogen, Nitrite (As N)	2.8	0.30	3.000	0	94.0	76.9	103			
Nitrogen, Nitrate (As N)	8.7	0.30	7.500	1.180	99.7	87.6	109			
Phosphorus, Orthophosphate (As P	7.1	1.5	15.00	0	47.2	16.5	79.8			
Sulfate	43	1.5	30.00	13.62	98.1	44.1	140			

Sample ID **1603B48-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Westline Vadose Zo**	Batch ID: **24617**	RunNo: **33305**
Prep Date: **4/4/2016**	Analysis Date: **4/4/2016**	SeqNo: **1023350** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.5	0.30	1.500	1.481	65.1	15	100	1.07	20	
Chloride	39	1.5	15.00	21.68	114	64.2	131	3.74	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **1603B48-001AMSD** SampType: **MSD** TestCode: **EPA Method 300.0: Anions**

Client ID: **Westline Vadose Zo** Batch ID: **24617** RunNo: **33305**

Prep Date: **4/4/2016** Analysis Date: **4/4/2016** SeqNo: **1023350** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	2.8	0.30	3.000	0	94.6	76.9	103	0.554	20	
Nitrogen, Nitrate (As N)	8.7	0.30	7.500	1.180	101	87.6	109	1.03	20	
Phosphorus, Orthophosphate (As P	7.1	1.5	15.00	0	47.1	16.5	79.8	0.173	20	
Sulfate	42	1.5	30.00	13.62	94.2	44.1	140	2.77	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

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

Sample ID **MB-24419**	SampType: **MBLK**	TestCode: **EPA Method 418.1: TPH**
Client ID: **PBS**	Batch ID: **24419**	RunNo: **33169**
Prep Date: **3/24/2016**	Analysis Date: **3/30/2016**	SeqNo: **1018640** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID **LCS-24419**	SampType: **LCS**	TestCode: **EPA Method 418.1: TPH**
Client ID: **LCSS**	Batch ID: **24419**	RunNo: **33169**
Prep Date: **3/24/2016**	Analysis Date: **3/30/2016**	SeqNo: **1018641** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	100.0	0	109	83.4	127			

Sample ID **LCSD-24419**	SampType: **LCSD**	TestCode: **EPA Method 418.1: TPH**
Client ID: **LCSS02**	Batch ID: **24419**	RunNo: **33169**
Prep Date: **3/24/2016**	Analysis Date: **3/30/2016**	SeqNo: **1018642** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	100	20	100.0	0	102	83.4	127	6.58	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **LCS-24429**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **24429**	RunNo: **33066**
Prep Date: **3/24/2016**	Analysis Date: **3/25/2016**	SeqNo: **1015745** 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	99.9	65.8	136			
Surr: DNOP	6.3		5.000		127	70	130			

Sample ID **MB-24429**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **24429**	RunNo: **33066**
Prep Date: **3/24/2016**	Analysis Date: **3/25/2016**	SeqNo: **1015746** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	13		10.00		126	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

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

Sample ID **MB-24391**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **24391**	RunNo: **33039**
Prep Date: **3/23/2016**	Analysis Date: **3/24/2016**	SeqNo: **1014105** 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		103	66.2	112			

Sample ID **LCS-24391**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **24391**	RunNo: **33039**
Prep Date: **3/23/2016**	Analysis Date: **3/24/2016**	SeqNo: **1014106** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.5	80	120			
Surr: BFB	1100		1000		111	66.2	112			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **MB-24391**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **24391**	RunNo: **33039**
Prep Date: **3/23/2016**	Analysis Date: **3/24/2016**	SeqNo: **1014146** Units: **mg/Kg**

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

Sample ID **LCS-24391**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **24391**	RunNo: **33039**
Prep Date: **3/23/2016**	Analysis Date: **3/24/2016**	SeqNo: **1014147** 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	101	75.3	123			
Toluene	0.99	0.050	1.000	0	99.3	80	124			
Ethylbenzene	1.0	0.050	1.000	0	99.9	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	99.4	83.9	122			
Surr: 4-Bromofluorobenzene	1.1		1.000		113	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID	**MB-24495**	SampType:	**mblk**	TestCode:	**EPA Method 7471: Mercury**				
Client ID:	**PBS**	Batch ID:	**24495**	RunNo:	**33146**				
Prep Date:	**3/29/2016**	Analysis Date:	**3/29/2016**	SeqNo:	**1017719**	Units:	**mg/Kg**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID	**LCS-24495**	SampType:	**lcs**	TestCode:	**EPA Method 7471: Mercury**				
Client ID:	**LCSS**	Batch ID:	**24495**	RunNo:	**33146**				
Prep Date:	**3/29/2016**	Analysis Date:	**3/29/2016**	SeqNo:	**1017720**	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	99.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1603B48**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **MB-24470**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **24470**	RunNo: **33133**
Prep Date: **3/28/2016**	Analysis Date: **3/29/2016**	SeqNo: **1017331** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Calcium	ND	25								
Chromium	ND	0.30								
Lead	ND	0.25								
Manganese	ND	0.10								
Potassium	ND	50								
Selenium	ND	2.5								
Silver	ND	0.25								
Sodium	ND	25								

Sample ID **LCS-24470**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **24470**	RunNo: **33133**
Prep Date: **3/28/2016**	Analysis Date: **3/29/2016**	SeqNo: **1017332** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	26	2.5	25.00	0	104	80	120			
Barium	25	0.10	25.00	0	100	80	120			
Cadmium	25	0.10	25.00	0	102	80	120			
Calcium	2500	25	2500	0	101	80	120			
Chromium	25	0.30	25.00	0	99.6	80	120			
Lead	24	0.25	25.00	0	97.4	80	120			
Manganese	25	0.10	25.00	0	98.7	80	120			
Potassium	2500	50	2500	0	98.8	80	120			
Selenium	27	2.5	25.00	0	106	80	120			
Silver	4.9	0.25	5.000	0	98.2	80	120			
Sodium	2500	25	2500	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1603B48 RcptNo: 1

Received by/date: 03/23/16

Logged By: Lindsay Mangin 3/23/2016 7:15:00 AM

Completed By: Lindsay Mangin 3/23/2016 10:12:49 AM

Reviewed By: 03/23/16

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. 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: ____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

Chain-of-Custody Record

Client: Kelly Robinson
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #: 505-632-8013
email or Fax#: kelly.robinson@wnr.com
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____
Project Name: Bisti Landfarm
Project #: WR1005
Project Manager: Devin Henckmann
Sampler: Alex Crooks / Josh Adams
On Ice: ☑ Yes ☐ No
Sample Temperature: 2.6 - 1.0 = 1.6

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 Request ID	Container Type and #	Preservative Type	HEAL No. 1603848
3-22-16	1235	soil	Westline Vadose Zone	1 4oz	cool	-001
	1245		Eastline Vadose Zone			-002
	1225		Bisti Vadose Zone			-003
	1205		Pedigree Vadose Zone			-004
	1215		API Vadose Zone			-005

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX DRO/GRO TPH	Chloride & Carbonates/Anions	Heavy metals	Arsenic in water	Air Bubbles (Y or N)
											↓	↓	↓	↓	

Date	Time	Relinquished by:	Received by:	Date	Time
3/22/16	1455	Kelly Crooks	[illegible]	3/22/16	1455
3/22/16	1747	Mista Weller	[illegible]	03/23/16	0715

Remarks:

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

TABLE 3

BISTI LANDFARM
2015 SAMPLING SCHEDULE
WESTERN REFINING SOUTHWEST, INC

	March	June	September	Decmeber
TREATMENT ZONE 1 composite ([illegible] discrete samples each) from the [illegible] and 1 composite from the [illegible]				
DRO and GRO as Combined Fraction (USEPA 8015M)	x		x	
TPH (USEPA 418.1)	x		x	
Chlorides (USEPA 300.0)	x		x	
VADOSE ZONE Collect samples 3 feet below original ground surface				
BTEX (USEPA 8021)	x	x	x	x
DRO and GRO as Combined Fraction **(USEPA 8015M)***	x		x	x
TPH (USEPA 418.1)	x		x	
Chlorides (USEPA 300.0)	x		x	
Major Cations/ Anions	x			
Heavy Metals	x			

NOTE: Discuss Method 8015M with lab

Major Cations/Anions (USEPA Method)	Metals (USEPA Method)
Alkalinity (ASA10-3)	Arsenic (6010B)
Bicarbonate (ASA10-3	Barium (6010B)
Carbonate (ASA10-3)	Cadmium (6010B)
Sulfate (300.0)	Chromium (6010B)
Chloride (300.0)	Lead (6010B)
Calcium (6010B)	Selenium (6010B)
Manganese (6010B)	Silver (6010B)
Potassium (6010B)	Mercury (7471)
Sodium (6010B)	

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

June 28, 2016

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

RE: Bisti Landfarm OrderNo.: 1606A49

Dear Brook Herb:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/17/2016 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 qualifers 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1606A49**
Date Reported: **6/28/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1606A49-001 **Matrix:** SOIL

Client Sample ID: East Line Vadose Zone
Collection Date: 6/16/2016 12:30:00 PM
Received Date: 6/17/2016 7:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/23/2016 2:07:43 PM	25944
Surr: DNOP	119	70-130		%Rec	1	6/23/2016 2:07:43 PM	25944
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/25/2016 2:10:32 AM	25945
Surr: BFB	96.9	80-120		%Rec	1	6/25/2016 2:10:32 AM	25945
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.024		mg/Kg	1	6/25/2016 2:10:32 AM	25945
Toluene	ND	0.048		mg/Kg	1	6/25/2016 2:10:32 AM	25945
Ethylbenzene	ND	0.048		mg/Kg	1	6/25/2016 2:10:32 AM	25945
Xylenes, Total	ND	0.095		mg/Kg	1	6/25/2016 2:10:32 AM	25945
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	6/25/2016 2:10:32 AM	25945

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1606A49-002 **Matrix:** SOIL

Client Sample ID: West Line Vadose Zone
Collection Date: 6/16/2016 12:45:00 PM
Received Date: 6/17/2016 7:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/23/2016 4:42:44 PM	25944
Surr: DNOP	91.4	70-130		%Rec	1	6/23/2016 4:42:44 PM	25944
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/25/2016 2:33:56 AM	25945
Surr: BFB	96.7	80-120		%Rec	1	6/25/2016 2:33:56 AM	25945
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.025		mg/Kg	1	6/25/2016 2:33:56 AM	25945
Toluene	ND	0.049		mg/Kg	1	6/25/2016 2:33:56 AM	25945
Ethylbenzene	ND	0.049		mg/Kg	1	6/25/2016 2:33:56 AM	25945
Xylenes, Total	ND	0.099		mg/Kg	1	6/25/2016 2:33:56 AM	25945
Surr: 4-Bromofluorobenzene	90.2	80-120		%Rec	1	6/25/2016 2:33:56 AM	25945

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1606A49-003 **Matrix:** SOIL

Client Sample ID: Bisti Vadose Zone
Collection Date: 6/16/2016 12:55:00 PM
Received Date: 6/17/2016 7:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/23/2016 5:05:02 PM	25944
Surr: DNOP	92.9	70-130		%Rec	1	6/23/2016 5:05:02 PM	25944
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/25/2016 2:57:23 AM	25945
Surr: BFB	97.1	80-120		%Rec	1	6/25/2016 2:57:23 AM	25945
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.024		mg/Kg	1	6/25/2016 2:57:23 AM	25945
Toluene	ND	0.048		mg/Kg	1	6/25/2016 2:57:23 AM	25945
Ethylbenzene	ND	0.048		mg/Kg	1	6/25/2016 2:57:23 AM	25945
Xylenes, Total	ND	0.096		mg/Kg	1	6/25/2016 2:57:23 AM	25945
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	6/25/2016 2:57:23 AM	25945

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1606A49-004 **Matrix:** SOIL

Client Sample ID: API Vadose Zone
Collection Date: 6/16/2016 1:00:00 PM
Received Date: 6/17/2016 7:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/23/2016 5:27:07 PM	25944
Surr: DNOP	94.8	70-130		%Rec	1	6/23/2016 5:27:07 PM	25944
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2016 3:20:45 AM	25945
Surr: BFB	97.5	80-120		%Rec	1	6/25/2016 3:20:45 AM	25945
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.024		mg/Kg	1	6/25/2016 3:20:45 AM	25945
Toluene	ND	0.047		mg/Kg	1	6/25/2016 3:20:45 AM	25945
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2016 3:20:45 AM	25945
Xylenes, Total	ND	0.094		mg/Kg	1	6/25/2016 3:20:45 AM	25945
Surr: 4-Bromofluorobenzene	93.4	80-120		%Rec	1	6/25/2016 3:20:45 AM	25945

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1606A49-005 **Matrix:** SOIL

Client Sample ID: Petigrew Vadose Zone
Collection Date: 6/16/2016 1:15:00 PM
Received Date: 6/17/2016 7:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/23/2016 5:49:10 PM	25944
Surr: DNOP	91.7	70-130		%Rec	1	6/23/2016 5:49:10 PM	25944
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2016 3:44:04 AM	25945
Surr: BFB	95.5	80-120		%Rec	1	6/25/2016 3:44:04 AM	25945
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.024		mg/Kg	1	6/25/2016 3:44:04 AM	25945
Toluene	ND	0.047		mg/Kg	1	6/25/2016 3:44:04 AM	25945
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2016 3:44:04 AM	25945
Xylenes, Total	ND	0.095		mg/Kg	1	6/25/2016 3:44:04 AM	25945
Surr: 4-Bromofluorobenzene	89.7	80-120		%Rec	1	6/25/2016 3:44:04 AM	25945

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1606A49**

28-Jun-16

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **MB-25944**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **25944**	RunNo: **35116**
Prep Date: **6/20/2016**	Analysis Date: **6/23/2016**	SeqNo: **1086562** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	8.8		10.00		88.1	70	130			

Sample ID **LCS-25944**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **25944**	RunNo: **35116**
Prep Date: **6/20/2016**	Analysis Date: **6/23/2016**	SeqNo: **1086657** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	38	10	50.00	0	75.2	62.6	124			
Surr: DNOP	4.4		5.000		87.1	70	130			

Sample ID **1606A49-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **East Line Vadose Z**	Batch ID: **25944**	RunNo: **35116**
Prep Date: **6/20/2016**	Analysis Date: **6/23/2016**	SeqNo: **1087103** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	36	9.5	47.71	0	74.5	33.9	141			
Surr: DNOP	4.7		4.771		98.4	70	130			

Sample ID **1606A49-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **East Line Vadose Z**	Batch ID: **25944**	RunNo: **35116**
Prep Date: **6/20/2016**	Analysis Date: **6/23/2016**	SeqNo: **1087104** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	9.6	48.22	0	76.1	33.9	141	3.27	20	
Surr: DNOP	4.8		4.822		98.6	70	130	0	0	

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1606A49**

28-Jun-16

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID	**MB-25945**	SampType: **MBLK**			TestCode: **EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID: **25945**			RunNo: **35048**					
Prep Date:	**6/20/2016**	Analysis Date: **6/21/2016**			SeqNo: **1084262**		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	80	120			

Sample ID	**LCS-25945 C**	SampType: **LCS**			TestCode: **EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID: **25945**			RunNo: **35048**					
Prep Date:		Analysis Date: **6/21/2016**			SeqNo: **1084263**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.4	80	120			
Surr: BFB	1200		1000		117	80	120			

Sample ID	**5ML-RB**	SampType: **MBLK**			TestCode: **EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID: **R35158**			RunNo: **35158**					
Prep Date:		Analysis Date: **6/24/2016**			SeqNo: **1087655**		Units: **%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	970		1000		97.3	80	120			

Sample ID	**2.5NG GRO LCS**	SampType: **LCS**			TestCode: **EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID: **R35158**			RunNo: **35158**					
Prep Date:		Analysis Date: **6/24/2016**			SeqNo: **1088007**		Units: **%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		113	80	120			

Sample ID	**LCS-26055**	SampType: **LCS**			TestCode: **EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID: **26055**			RunNo: **35174**					
Prep Date:	**6/24/2016**	Analysis Date: **6/25/2016**			SeqNo: **1088117**		Units: **%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		107	80	120			

Sample ID	**MB-26055**	SampType: **MBLK**			TestCode: **EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID: **26055**			RunNo: **35174**					
Prep Date:	**6/24/2016**	Analysis Date: **6/25/2016**			SeqNo: **1088118**		Units: **%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	970		1000		97.4	80	120			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1606A49**

28-Jun-16

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

Sample ID **LCS-25945**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **25945**	RunNo: **35158**
Prep Date: **6/20/2016**	Analysis Date: **6/24/2016**	SeqNo: **1088034** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.7	75.3	123			
Toluene	0.98	0.050	1.000	0	98.1	80	124			
Ethylbenzene	1.0	0.050	1.000	0	100	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	99.4	83.9	122			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID **MB-25945**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **25945**	RunNo: **35158**
Prep Date: **6/20/2016**	Analysis Date: **6/25/2016**	SeqNo: **1088035** 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	0.95		1.000		95.4	80	120			

Sample ID **LCS-26055**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26055**	RunNo: **35174**
Prep Date: **6/24/2016**	Analysis Date: **6/25/2016**	SeqNo: **1088135** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.99		1.000		98.6	80	120			

Sample ID **MB-26055**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26055**	RunNo: **35174**
Prep Date: **6/24/2016**	Analysis Date: **6/25/2016**	SeqNo: **1088136** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.94		1.000		94.4	80	120			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1606A49** RcptNo: **1**

Received by/date: AT 06/17/16
Logged By: **Lindsay Mangin** **6/17/2016 7:45:00 AM**
Completed By: **Lindsay Mangin** **6/20/2016 5:58:28 AM**
Reviewed By: 06/20/16

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? UPS

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. 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:

Special Handling (if applicable)

16. 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:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: Kelly Robinson
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #: (505) 632-8013
Email or Fax#: Kelly.Robinson@WNR.com
QA/QC Package: ☑ Standard ☐ Level 4 (Full Validation)
Accreditation: NELAP ☐ Other
EDD (Type)

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: Bisti Landfarm
Project #: PO# 12615525
Project Manager: Brooke Herb
Sampler: Michael A Wicker / Josh Adams
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.4

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 Request ID	Container Type and #	Preservative Type	HEAL No. 1600414
10-16	1230	Soil	East Line Vadose Zone	(2) 4oz	Cool	-001
	1245		West Line Vadose Zone			-002
	1255		Bisti Vadose Zone			-003
	1300		API Vadose Zone			-004
↓	1315	↓	Petigrew Vadose Zone	↓	↓	-005

Analysis Request

BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		8015M (GRO/DRO) Combined Fraction			Air Bubbles (Y or N)
↓												↓			

Date:	Time:	Relinquished by:	Received by:	Date	Time
10-16-16	1500			10/16/16	1545
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: CC BHerb@LTEnv.com
MWicker@LTEnv.com
JAdams@LTEnv.com

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 15, 2017

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

RE: Bisti Landfarm OrderNo.: 1609D98

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/24/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 05, 2016..

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1609D98**
Date Reported: **2/15/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D98-001 **Matrix:** SOIL

Client Sample ID: Crude Cell Treatment Zone
Collection Date: 9/23/2016 11:05:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	22	19		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	10/4/2016 2:22:51 AM	27860
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	15	9.1		mg/Kg	1	9/28/2016 2:16:32 PM	27707
Surr: DNOP	100	70-130		%Rec	1	9/28/2016 2:16:32 PM	27707
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/29/2016 11:38:54 PM	27690
Surr: BFB	81.2	68.3-144		%Rec	1	9/29/2016 11:38:54 PM	27690

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D98-002 **Matrix:** SOIL

Client Sample ID: API Cell Treatment Zone
Collection Date: 9/23/2016 11:15:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	150	30		mg/Kg	20	10/4/2016 2:35:15 AM	27860
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	19	9.8		mg/Kg	1	9/28/2016 5:51:09 AM	27706
Surr: DNOP	106	70-130		%Rec	1	9/28/2016 5:51:09 AM	27706
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/28/2016 10:03:38 PM	27699
Surr: BFB	92.3	68.3-144		%Rec	1	9/28/2016 10:03:38 PM	27699

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D98**

15-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID	**MB-27860**	SampType:	**mblk**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**27860**		RunNo:	**37656**					
Prep Date:	**10/3/2016**	Analysis Date:	**10/3/2016**		SeqNo:	**1172612**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	ND	1.5									

Sample ID	**LCS-27860**	SampType:	**lcs**		TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**27860**		RunNo:	**37656**					
Prep Date:	**10/3/2016**	Analysis Date:	**10/3/2016**		SeqNo:	**1172613**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	14	1.5	15.00	0	95.6	90	110				

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D98**

15-Feb-17

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

Sample ID **MB-27703**	SampType: **MBLK**	TestCode: **EPA Method 418.1: TPH**							
Client ID: **PBS**	Batch ID: **27703**	RunNo: **37499**							
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1165981**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID **LCS-27703**	SampType: **LCS**	TestCode: **EPA Method 418.1: TPH**							
Client ID: **LCSS**	Batch ID: **27703**	RunNo: **37499**							
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1165982**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	100	20	100.0	0	101	80.7	121			

Sample ID **LCSD-27703**	SampType: **LCSD**	TestCode: **EPA Method 418.1: TPH**							
Client ID: **LCSS02**	Batch ID: **27703**	RunNo: **37499**							
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1165983**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	100.0	0	105	80.7	121	4.00	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D98**

15-Feb-17

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

Sample ID **MB-27707**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **27707**	RunNo: **37494**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166802** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	8.7		10.00		87.3	70	130			

Sample ID **LCS-27707**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **27707**	RunNo: **37494**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166803** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	10	50.00	0	111	62.6	124			
Surr: DNOP	4.9		5.000		98.9	70	130			

Sample ID **MB-27706**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **27706**	RunNo: **37493**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166914** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	9.4		10.00		94.4	70	130			

Sample ID **LCS-27706**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **27706**	RunNo: **37493**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166917** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.1	62.6	124			
Surr: DNOP	5.2		5.000		104	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D98**

15-Feb-17

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

Sample ID **MB-27699**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166632** 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	810		1000		81.5	68.3	144			

Sample ID **LCS-27699**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166633** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	5.0	25.00	0	122	74.6	123			
Surr: BFB	990		1000		99.2	68.3	144			

Sample ID **MB-27690**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **27690**	RunNo: **37528**
Prep Date: **9/26/2016**	Analysis Date: **9/28/2016**	SeqNo: **1167758** 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	830		1000		82.8	68.3	144			

Sample ID **LCS-27690**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **27690**	RunNo: **37528**
Prep Date: **9/26/2016**	Analysis Date: **9/28/2016**	SeqNo: **1167759** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	110	74.6	123			
Surr: BFB	910		1000		90.7	68.3	144			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1609D98** RcptNo: **1**

Received by/date: 09/24/16

Logged By: **Lindsay Mangin** **9/24/2016 9:30:00 AM**

Completed By: **Lindsay Mangin** **9/25/2016 11:30:51 AM**

Reviewed By: 09/26/16

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. 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: _____

Special Handling (if applicable)

16. 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: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

Chain-of-Custody Record

Client: Kelly Robinson
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #: (505) 632-8013
email or Fax#: Kelly.Robinson@WNR.com
QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____
Project Name: Bisti Landfarm
Project #: PO # 12615527
Project Manager: Devin Hencmann Josh Adams
Sampler: ~~Danny Burns~~ JW / Michael Wicker
On Ice: ☐ Yes ☐ No
Sample Temperature: 1.6

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 Request ID	Container Type and #	Preservative Type	HEAL No. 1609598
9-23-16	1105	Soil	Crude Cell Treatment Zone	(2)-4oz	Cool	-001
9-23-16	1115	Soil	API Cell Treatment Zone	(2)4-oz	Cool	-002

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		TPH-GRO/DRO Combined Fraction 8015(M)	Chloride 300.0		Air Bubbles (Y or N)
			X									X	X		
			X									X	X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
9-23-16	1307			9/23/14	1307
9/23/16	1959	Christine Walker		09/24/16	0930

Remarks: cc: MWicker@LTEnv.com
DHencmann@LTEnv.com

TPH-GRO/DRO 8015 (M)

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 17, 2017

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

RE: Bisti Landfarm OrderNo.: 1609D99

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 5 sample(s) on 9/24/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 11, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1609D99**
Date Reported: **2/17/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D99-001 **Matrix:** SOIL

Client Sample ID: Westline Vadose Zone
Collection Date: 9/23/2016 10:30:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	10/4/2016 2:47:40 AM	27860
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/29/2016 2:54:07 AM	27738
Surr: DNOP	106	70-130		%Rec	1	9/29/2016 2:54:07 AM	27738
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/28/2016 10:27:47 PM	27699
Surr: BFB	86.5	68.3-144		%Rec	1	9/28/2016 10:27:47 PM	27699
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	9/27/2016 11:04:43 PM	27699
Toluene	ND	0.046		mg/Kg	1	9/27/2016 11:04:43 PM	27699
Ethylbenzene	ND	0.046		mg/Kg	1	9/27/2016 11:04:43 PM	27699
Xylenes, Total	ND	0.092		mg/Kg	1	9/27/2016 11:04:43 PM	27699
Surr: 4-Bromofluorobenzene	91.5	80-120		%Rec	1	9/27/2016 11:04:43 PM	27699

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1609D99**
Date Reported: **2/17/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D99-002 **Matrix:** SOIL

Client Sample ID: Eastline Vadose Zone
Collection Date: 9/23/2016 10:40:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	10/4/2016 3:00:05 AM	27860
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/29/2016 3:17:11 AM	27738
Surr: DNOP	104	70-130		%Rec	1	9/29/2016 3:17:11 AM	27738
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/28/2016 10:51:56 PM	27699
Surr: BFB	90.8	68.3-144		%Rec	1	9/28/2016 10:51:56 PM	27699
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2016 12:38:26 AM	27699
Toluene	ND	0.049		mg/Kg	1	9/28/2016 12:38:26 AM	27699
Ethylbenzene	ND	0.049		mg/Kg	1	9/28/2016 12:38:26 AM	27699
Xylenes, Total	ND	0.098		mg/Kg	1	9/28/2016 12:38:26 AM	27699
Surr: 4-Bromofluorobenzene	95.4	80-120		%Rec	1	9/28/2016 12:38:26 AM	27699

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D99-003 **Matrix:** SOIL

Client Sample ID: Bisti Vadose Zone
Collection Date: 9/23/2016 10:50:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	10/4/2016 3:12:30 AM	27860
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/29/2016 3:40:05 AM	27738
Surr: DNOP	104	70-130		%Rec	1	9/29/2016 3:40:05 AM	27738
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/28/2016 11:16:03 PM	27699
Surr: BFB	92.3	68.3-144		%Rec	1	9/28/2016 11:16:03 PM	27699
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	9/28/2016 1:01:54 AM	27699
Toluene	ND	0.046		mg/Kg	1	9/28/2016 1:01:54 AM	27699
Ethylbenzene	ND	0.046		mg/Kg	1	9/28/2016 1:01:54 AM	27699
Xylenes, Total	ND	0.093		mg/Kg	1	9/28/2016 1:01:54 AM	27699
Surr: 4-Bromofluorobenzene	91.3	80-120		%Rec	1	9/28/2016 1:01:54 AM	27699

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D99-004 **Matrix:** SOIL

Client Sample ID: Pettigrew Vadose Zone
Collection Date: 9/23/2016 11:10:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	ND	19		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	310	30		mg/Kg	20	10/4/2016 11:28:38 AM	27890
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/29/2016 4:03:04 AM	27738
Surr: DNOP	103	70-130		%Rec	1	9/29/2016 4:03:04 AM	27738
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/28/2016 11:40:10 PM	27699
Surr: BFB	89.2	68.3-144		%Rec	1	9/28/2016 11:40:10 PM	27699
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2016 1:25:19 AM	27699
Toluene	ND	0.047		mg/Kg	1	9/28/2016 1:25:19 AM	27699
Ethylbenzene	ND	0.047		mg/Kg	1	9/28/2016 1:25:19 AM	27699
Xylenes, Total	ND	0.094		mg/Kg	1	9/28/2016 1:25:19 AM	27699
Surr: 4-Bromofluorobenzene	89.9	80-120		%Rec	1	9/28/2016 1:25:19 AM	27699

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1609D99-005 **Matrix:** SOIL

Client Sample ID: API Vadose Zone
Collection Date: 9/23/2016 11:00:00 AM
Received Date: 9/24/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH						Analyst: **MAB**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	9/27/2016 12:00:00 PM	27703
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	10/4/2016 12:05:52 PM	27890
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/29/2016 4:25:58 AM	27738
Surr: DNOP	96.8	70-130		%Rec	1	9/29/2016 4:25:58 AM	27738
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/29/2016 12:04:13 AM	27699
Surr: BFB	88.2	68.3-144		%Rec	1	9/29/2016 12:04:13 AM	27699
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2016 1:48:49 AM	27699
Toluene	ND	0.049		mg/Kg	1	9/28/2016 1:48:49 AM	27699
Ethylbenzene	ND	0.049		mg/Kg	1	9/28/2016 1:48:49 AM	27699
Xylenes, Total	ND	0.097		mg/Kg	1	9/28/2016 1:48:49 AM	27699
Surr: 4-Bromofluorobenzene	90.5	80-120		%Rec	1	9/28/2016 1:48:49 AM	27699

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D99**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **MB-27860**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **27860**	RunNo: **37656**
Prep Date: **10/3/2016**	Analysis Date: **10/3/2016**	SeqNo: **1172612** Units: **mg/Kg**

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

Sample ID **LCS-27860**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **27860**	RunNo: **37656**
Prep Date: **10/3/2016**	Analysis Date: **10/3/2016**	SeqNo: **1172613** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.6	90	110			

Sample ID **MB-27890**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **27890**	RunNo: **37687**
Prep Date: **10/4/2016**	Analysis Date: **10/4/2016**	SeqNo: **1173758** Units: **mg/Kg**

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

Sample ID **LCS-27890**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **27890**	RunNo: **37687**
Prep Date: **10/4/2016**	Analysis Date: **10/4/2016**	SeqNo: **1173759** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.6	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D99**

17-Feb-17

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

Sample ID **MB-27703**	SampType: **MBLK**	TestCode: **EPA Method 418.1: TPH**
Client ID: **PBS**	Batch ID: **27703**	RunNo: **37499**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1165981** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID **LCS-27703**	SampType: **LCS**	TestCode: **EPA Method 418.1: TPH**
Client ID: **LCSS**	Batch ID: **27703**	RunNo: **37499**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1165982** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	100	20	100.0	0	101	80.7	121			

Sample ID **LCSD-27703**	SampType: **LCSD**	TestCode: **EPA Method 418.1: TPH**
Client ID: **LCSS02**	Batch ID: **27703**	RunNo: **37499**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1165983** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	100.0	0	105	80.7	121	4.00	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D99**

17-Feb-17

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

Sample ID **MB-27738**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **27738**	RunNo: **37494**
Prep Date: **9/27/2016**	Analysis Date: **9/28/2016**	SeqNo: **1167146** 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	8.7		10.00		87.1	70	130			

Sample ID **LCS-27738**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **27738**	RunNo: **37494**
Prep Date: **9/27/2016**	Analysis Date: **9/28/2016**	SeqNo: **1167147** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.8	62.6	124			
Surr: DNOP	4.6		5.000		91.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D99**

17-Feb-17

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

Sample ID **MB-27699**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166632** 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	810		1000		81.5	68.3	144			

Sample ID **LCS-27699**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166633** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	5.0	25.00	0	122	74.6	123			
Surr: BFB	990		1000		99.2	68.3	144			

Sample ID **1609D99-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Westline Vadose Zo**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166634** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.7	23.67	0	109	59.3	143			
Surr: BFB	870		947.0		92.3	68.3	144			

Sample ID **1609D99-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Westline Vadose Zo**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166635** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	29	5.0	24.80	0	117	59.3	143	11.9	20	
Surr: BFB	900		992.1		91.2	68.3	144	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1609D99**

17-Feb-17

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

Sample ID **MB-27699**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166656** 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	0.96		1.000		96.2	80	120			

Sample ID **LCS-27699**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **27699**	RunNo: **37497**
Prep Date: **9/26/2016**	Analysis Date: **9/27/2016**	SeqNo: **1166657** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	87.1	75.3	123			
Toluene	0.96	0.050	1.000	0	95.7	80	124			
Ethylbenzene	1.0	0.050	1.000	0	101	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	99.8	83.9	122			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1609D99** RcptNo: **1**

Received by/date: 09/24/16

Logged By: **Lindsay Mangin** **9/24/2016 9:30:00 AM**

Completed By: **Lindsay Mangin** **9/25/2016 11:35:56 AM**

Reviewed By: 09/26/16

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. 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: _____

Special Handling (if applicable)

16. 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: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

Chain-of-Custody Record

Client: Kelly Robinson
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #: (505) 632-8013
email or Fax#: Kelly.Robinson@WNR.com
QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____
Project Name: Bisti Landfarm
Project #: PO# 12615527
Project Manager: Devin Hencmann
~~Brooke Herb~~ MW Josh Adcock
Sampler: ~~Danny Burns~~ MW / Michael Wicker
On Ice: ☑ Yes ☐ No
Sample Temperature: 1.6

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 Request ID	Container Type and #	Preservative Type	HEAL No. 1609D99	BTEX + ~~MTBE~~ + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		TPH-GRO/DRO Combined Report 8015 (M)	Chloride 300.0		Air Bubbles (Y or N)
9-23-16	1030	Soil	Westline Vadose Zone	(2) 4-oz	Cool	-001	X			X									X	X		
	1040		Eastline Vadose Zone			-002																
	1050		Bisti Vadose Zone			-003																
	1110		Pettigrew Vadose Zone			-004																
↓	1100	↓	API Vadose Zone	↓	↓	-005	↓			↓									↓	↓		

Date:	Time:	Relinquished by:	Received by:	Date	Time
9-23-16	1307			9/23/16	1307
9/23/16	1954	Christine Walker		09/24/16	0930

Remarks: cc: MWicker@LTEnv.com
DHencmann@LTEnv.com

TPH-GRO/DRO 8015 (M)

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

January 25, 2017

Devin Hencmann
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: Bisti Landfarm OrderNo.: 1612574

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 5 sample(s) on 12/10/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued December 15, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1612574**
Date Reported: **1/25/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1612574-001 **Matrix:** SOIL

Client Sample ID: Westline Vadose Zone
Collection Date: 12/9/2016 11:16:00 AM
Received Date: 12/10/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	12/13/2016 7:34:08 PM	29134
Surr: DNOP	84.5	70-130		%Rec	1	12/13/2016 7:34:08 PM	29134
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/13/2016 2:30:35 PM	29139
Surr: BFB	87.3	68.3-144		%Rec	1	12/13/2016 2:30:35 PM	29139
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/13/2016 2:30:35 PM	29139
Toluene	ND	0.047		mg/Kg	1	12/13/2016 2:30:35 PM	29139
Ethylbenzene	ND	0.047		mg/Kg	1	12/13/2016 2:30:35 PM	29139
Xylenes, Total	ND	0.094		mg/Kg	1	12/13/2016 2:30:35 PM	29139
Surr: 4-Bromofluorobenzene	97.0	80-120		%Rec	1	12/13/2016 2:30:35 PM	29139

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1612574-002 **Matrix:** SOIL

Client Sample ID: Eastline Vadose Zone
Collection Date: 12/9/2016 10:20:00 AM
Received Date: 12/10/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/13/2016 8:01:05 PM	29134
Surr: DNOP	83.1	70-130		%Rec	1	12/13/2016 8:01:05 PM	29134
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/13/2016 6:24:59 PM	29139
Surr: BFB	88.3	68.3-144		%Rec	1	12/13/2016 6:24:59 PM	29139
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/13/2016 6:24:59 PM	29139
Toluene	ND	0.048		mg/Kg	1	12/13/2016 6:24:59 PM	29139
Ethylbenzene	ND	0.048		mg/Kg	1	12/13/2016 6:24:59 PM	29139
Xylenes, Total	ND	0.095		mg/Kg	1	12/13/2016 6:24:59 PM	29139
Surr: 4-Bromofluorobenzene	96.6	80-120		%Rec	1	12/13/2016 6:24:59 PM	29139

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1612574-003 **Matrix:** SOIL

Client Sample ID: Bisti Vadose Zone
Collection Date: 12/9/2016 10:50:00 AM
Received Date: 12/10/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/13/2016 8:28:07 PM	29134
Surr: DNOP	92.4	70-130		%Rec	1	12/13/2016 8:28:07 PM	29134
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/13/2016 6:48:30 PM	29139
Surr: BFB	87.9	68.3-144		%Rec	1	12/13/2016 6:48:30 PM	29139
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/13/2016 6:48:30 PM	29139
Toluene	ND	0.048		mg/Kg	1	12/13/2016 6:48:30 PM	29139
Ethylbenzene	ND	0.048		mg/Kg	1	12/13/2016 6:48:30 PM	29139
Xylenes, Total	ND	0.095		mg/Kg	1	12/13/2016 6:48:30 PM	29139
Surr: 4-Bromofluorobenzene	96.9	80-120		%Rec	1	12/13/2016 6:48:30 PM	29139

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1612574-004 **Matrix:** SOIL

Client Sample ID: Pettigrew Vadose Zone
Collection Date: 12/9/2016 10:25:00 AM
Received Date: 12/10/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/13/2016 8:55:04 PM	29134
Surr: DNOP	83.0	70-130		%Rec	1	12/13/2016 8:55:04 PM	29134
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/13/2016 7:11:56 PM	29139
Surr: BFB	87.3	68.3-144		%Rec	1	12/13/2016 7:11:56 PM	29139
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/13/2016 7:11:56 PM	29139
Toluene	ND	0.048		mg/Kg	1	12/13/2016 7:11:56 PM	29139
Ethylbenzene	ND	0.048		mg/Kg	1	12/13/2016 7:11:56 PM	29139
Xylenes, Total	ND	0.095		mg/Kg	1	12/13/2016 7:11:56 PM	29139
Surr: 4-Bromofluorobenzene	95.2	80-120		%Rec	1	12/13/2016 7:11:56 PM	29139

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Bisti Landfarm
Lab ID: 1612574-005 **Matrix:** SOIL

Client Sample ID: API Vadose Zone
Collection Date: 12/9/2016 10:40:00 AM
Received Date: 12/10/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/13/2016 9:22:05 PM	29134
Surr: DNOP	82.8	70-130		%Rec	1	12/13/2016 9:22:05 PM	29134
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/13/2016 7:35:29 PM	29139
Surr: BFB	85.8	68.3-144		%Rec	1	12/13/2016 7:35:29 PM	29139
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	12/13/2016 7:35:29 PM	29139
Toluene	ND	0.047		mg/Kg	1	12/13/2016 7:35:29 PM	29139
Ethylbenzene	ND	0.047		mg/Kg	1	12/13/2016 7:35:29 PM	29139
Xylenes, Total	ND	0.093		mg/Kg	1	12/13/2016 7:35:29 PM	29139
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	12/13/2016 7:35:29 PM	29139

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1612574**

25-Jan-17

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

Sample ID **LCS-29134**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **29134**	RunNo: **39356**
Prep Date: **12/12/2016**	Analysis Date: **12/13/2016**	SeqNo: **1231856** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	89.0	63.8	116			
Surr: DNOP	4.2		5.000		84.4	70	130			

Sample ID **MB-29134**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **29134**	RunNo: **39356**
Prep Date: **12/12/2016**	Analysis Date: **12/13/2016**	SeqNo: **1231857** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	7.8		10.00		78.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1612574**

25-Jan-17

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

Sample ID **MB-29139**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **29139**	RunNo: **39349**
Prep Date: **12/12/2016**	Analysis Date: **12/13/2016**	SeqNo: **1231993** 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		87.8	68.3	144			

Sample ID **LCS-29139**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **29139**	RunNo: **39349**
Prep Date: **12/12/2016**	Analysis Date: **12/13/2016**	SeqNo: **1231994** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	29	5.0	25.00	0	116	74.6	123			
Surr: BFB	1200		1000		117	68.3	144			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1612574**

25-Jan-17

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

Sample ID **MB-29139**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **29139**	RunNo: **39349**
Prep Date: **12/12/2016**	Analysis Date: **12/13/2016**	SeqNo: **1232019** 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	0.97		1.000		97.4	80	120			

Sample ID **LCS-29139**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **29139**	RunNo: **39349**
Prep Date: **12/12/2016**	Analysis Date: **12/13/2016**	SeqNo: **1232020** 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	103	75.2	115			
Toluene	0.95	0.050	1.000	0	95.3	80.7	112			
Ethylbenzene	0.93	0.050	1.000	0	93.4	78.9	117			
Xylenes, Total	2.8	0.10	3.000	0	93.9	79.2	115			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.3	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1612574 RcptNo: 1

Received by/date: AT 12/10/16

Logged By: Anne Thorne 12/10/2016 10:00:00 AM Anne Thorne

Completed By: Anne Thorne 12/12/2016 9:19:05 AM Anne Thorne

Reviewed By: 12/12/16

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. 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: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Kelly Robinson Western Refining	Turn-Around Time: ☑ Standard ☐ Rush
Mailing Address: 111 CR 4990 Bloomfield, NM	Project Name: BISTI LANDFARM
Phone #: (505) 632-8013	Project #: PO# 12615527
Email or Fax#: Kelly.Robinson@wnr.com	Project Manager: Devin Hencmann
QA/QC Package: ☑ Standard ☐ Level 4 (Full Validation)	Sampler: J. Adams / E. Skyles
Accreditation: ☑ NELAP ☐ Other	On Ice: ☑ Yes ☐ No
EDD (Type)	Sample Temperature: 3.4

Date Sampled	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1612574	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	TPH - GRO/DRO 8015(M)				Air Bubbles (Y or N)
12/8/16	1116	Soil	Westline Vadose Zone	2-4oz.	cool	001	X											X				
12/8/16	1120	Soil	Eastline Vadose Zone	2-4oz.	cool	002	X											X				
12/8/16	1050	Soil	Bisti Vadose Zone	2-4oz.	cool	003	X											X				
12/8/16	1025	Soil	Pettigrew Vadose Zone	2-4oz.	cool	004	X											X				
12/8/16	1040	Soil	API Vadose Zone	2-4oz.	cool	005	X											X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/8/16	1227			12/9/16	1227
12/9/16	1010			12/9/16	1000

Remarks: cc: DHencmann@ltenv.com

per ES collection date is 12/09/16 / AT 12/13/16

Please Note: TPH - GRO/DRO per 8015M

2016 QUARTERLY VADOSE ZONE SOIL ANALYTICAL RESULTS
BISTI LANDFARM
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

Cell	Source Area	Sample ID	Sample Date	TPH-GRO (mg/Kg)	TPH-DRO (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)
Crude Cell	West Line	Westline Vadose Zone	22-Mar-16	<4.7	<10	<0.024	<0.047	<0.047	<0.095
		West Line Vadose Zone	16-Jun-16	<4.9	<10	<0.025	<0.049	<0.049	<0.099
		Westline Vadose Zone	23-Sep-16	<4.6	<10	<0.023	<0.046	<0.046	<0.092
		Westline Vadose Zone	9-Dec-16	<4.7	<9.2	<0.024	<0.047	<0.047	<0.094
	East Line	Eastline Vadose Zone	22-Mar-16	<4.9	15	<0.025	<0.049	<0.049	<0.099
		East Line Vadose Zone	16-Jun-16	<4.8	<9.9	<0.024	<0.048	<0.048	<0.095
		Eastline Vadose Zone	23-Sep-16	<4.9	<9.8	<0.024	<0.049	<0.049	<0.098
		Eastline Vadose Zone	9-Dec-16	<4.8	<9.6	<0.024	<0.048	<0.048	<0.095
	Bisti	Bisti Vadose Zone	22-Mar-16	<5.0	<9.5	<0.025	<0.050	<0.050	<0.099
		Bisti Vadose Zone	16-Jun-16	<4.8	<9.7	<0.024	<0.048	<0.048	<0.096
		Bisti Vadose Zone	23-Sep-16	<4.6	<9.9	<0.023	<0.046	<0.046	<0.093
		Bisti Vadose Zone	9-Dec-16	<4.8	<9.8	<0.024	<0.048	<0.048	<0.095
	Pettigrew	Pettigrew Vadose Zone	22-Mar-16	<4.8	<10	<0.024	<0.048	<0.048	<0.097
		Pettigrew Vadose Zone	16-Jun-16	<4.7	<9.9	<0.024	<0.047	<0.047	<0.095
		Pettigrew Vadose Zone	23-Sep-16	<4.7	<10	<0.024	<0.047	<0.047	<0.094
		Pettigrew Vadose Zone	9-Dec-16	<4.8	<10	<0.024	<0.048	<0.048	<0.095
API Cell	API	API Vadose Zone	22-Mar-16	<4.8	<9.7	<0.024	<0.048	<0.048	<0.096
		API Vadose Zone	16-Jun-16	<4.7	<9.9	<0.024	<0.047	<0.047	<0.094
		API Vadose Zone	23-Sep-16	<4.9	<10	<0.024	<0.049	<0.049	<0.097
		API Vadose Zone	9-Dec-16	<4.7	<9.4	<0.023	<0.047	<0.047	<0.093
Background Sample Result			27-Mar-98 and 1-Sep-15	<4.8*	<50	<0.05	<0.05	<0.05	<0.05

Notes:
DRO - diesel range organics
GRO - gasoline range organics
mg/Kg - milligrams per kilograms
TPH- total petroleum hydrocarbons
< indicates result is less than the stated laboratory method practical quantitation limit
* - Indicates data from the September 1, 2015 background sample. All other background analytes are from the March 27, 1998 sample.
BOLD indicates results exceed the higher of the background sample result or practical quantitation limit

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

Cell	Source Area	Sample ID	Sample Date	TPH-GRO (mg/Kg)	TPH-DRO (mg/Kg)	TPH 418.1 (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Chloride (mg/Kg)
Crude Cell	West Line	Westline Vadose Zone	22-Mar-16	<4.7	<10	<20	<0.024	<0.047	<0.047	<0.095	22
		Westline Vadose Zone	23-Sep-16	<4.6	<10	<20	<0.023	<0.046	<0.046	<0.092	<30
	East Line	Eastline Vadose Zone	22-Mar-16	<4.9	15	36	<0.025	<0.049	<0.049	<0.099	1.6
		Eastline Vadose Zone	23-Sep-16	<4.9	<9.8	<19	<0.024	<0.049	<0.049	<0.098	<30
	Bisti	Bisti Vadose Zone	22-Mar-16	<5.0	<9.5	<20	<0.025	<0.050	<0.050	<0.099	**80**
		Bisti Vadose Zone	23-Sep-16	<4.6	<9.9	<19	<0.023	<0.046	<0.046	<0.093	<30
	Pettigrew	Pettigrew Vadose Zone	22-Mar-16	<4.8	<10	<20	<0.024	<0.048	<0.048	<0.097	**3,500**
		Pettigrew Vadose Zone	23-Sep-16	<4.7	<10	<19	<0.024	<0.047	<0.047	<0.094	**310**
API Cell	API	API Vadose Zone	22-Mar-16	<4.8	<9.7	<20	<0.024	<0.048	<0.048	<0.096	**4,800**
		API Vadose Zone	23-Sep-16	<4.9	<10	<20	<0.024	<0.049	<0.049	<0.097	<30
Background Sample Result			27-Mar-98 and 1-Sep-15	<4.8*	<50	<20*	<0.05	<0.05	<0.05	<0.05	<50

Notes:

DRO - diesel range organics
GRO - gasoline range organics
mg/Kg - milligrams per kilograms
NA - not analyzed
TPH- total petroleum hydrocarbons
< indicates result is less than the stated laboratory method practical quantitation limit
* - Indicates data from the September 1, 2015 background sample. All other background analytes are from the March 27, 1998 sample.
BOLD indicates results exceed the higher of the background sample result or practical quantitation limit

WESTERN REFINING SOUTHWEST, INC.

Cell	Source Area	Sample ID	Sample Date	Alkalinity (mg/Kg)	Bicarbonate (mg/Kg)	Carbonate (mg/Kg)	Sulfate (mg/Kg)	Chloride (mg/Kg)	Calcium (mg/Kg)	Manganese (mg/Kg)	Potassium (mg/Kg)	Sodium (mg/Kg)	Arsenic (mg/Kg)	Barium (mg/Kg)	Cadmium (mg/Kg)	Chromium (mg/Kg)	Lead (mg/Kg)	Selenium (mg/Kg)	Silver (mg/Kg)	Mercury (mg/Kg)
Crude Cell	**West Line**	West Line Vadose Zone	22-Mar-16	116	**142**	<4	14	22	**4,800**	110	510	45	<2.5	79	<0.10	1.6	2.1	<2.5	<0.25	<0.033
	East Line	East Line Vadose Zone	22-Mar-16	247	**302**	<4	94	1.6	**4,500**	100	680	50	<2.5	98	<0.10	1.8	2.2	<2.5	<0.25	<0.032
	Bisti	Bisti Vadose Zone	22-Mar-16	164	**200**	<4	60	**80**	**3,800**	120	750	**210**	<2.5	120	<0.10	2.1	2.3	<2.5	<0.25	<0.032
	Pettigrew	Pettigrew Vadose Zone	22-Mar-16	105	**128**	<4	**340**	**3,500**	2,100	84	550	**2,800**	<2.5	71	<0.098	1.5	1.9	<2.5	<0.25	<0.033
API Cell	**API**	API Vadose Zone	22-Mar-16	120	**147**	<4	**800**	**4,800**	2,300	110	670	**3,600**	<2.5	60	<0.10	2.1	2.4	<2.5	<0.25	<0.033
Background Sample Result			27-Mar-98 and 1-Sep-15	NA	110	26	140	<50	2,500	150	810	90	2.8	180	<1.3	<5.0	6.8	<2.5	<1.3	<0.50

Notes:

BOLD - samples that exceeded backgroud concentrations

mg/Kg - milligrams per kilograms

NA - not analyzed

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

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

Cell	Source Area	Sample ID	Sample Date	Alkalinity (mg/Kg)	Bicarbonate (mg/Kg)	Carbonate (mg/Kg)	Sulfate (mg/Kg)	Chloride (mg/Kg)	Calcium (mg/Kg)	Manganese (mg/Kg)	Potassium (mg/Kg)	Sodium (mg/Kg)	Arsenic (mg/Kg)	Barium (mg/Kg)	Cadmium (mg/Kg)	Chromium (mg/Kg)	Lead (mg/Kg)	Selenium (mg/Kg)	Silver (mg/Kg)	Mercury (mg/Kg)
Crude Cell	**West Line**	West Line Vadose Zone	22-Mar-16	116	**142**	<4	14	22	**4,800**	110	510	45	<2.5	79	<0.10	1.6	2.1	<2.5	<0.25	<0.033
	East Line	East Line Vadose Zone	22-Mar-16	247	**302**	<4	94	1.6	**4,500**	100	680	50	<2.5	98	<0.10	1.8	2.2	<2.5	<0.25	<0.032
	Bisti	Bisti Vadose Zone	22-Mar-16	164	**200**	<4	60	**80**	**3,800**	120	750	**210**	<2.5	120	<0.10	2.1	2.3	<2.5	<0.25	<0.032
	Pettigrew	Pettigrew Vadose Zone	22-Mar-16	105	**128**	<4	**340**	**3,500**	2,100	84	550	**2,800**	<2.5	71	<0.098	1.5	1.9	<2.5	<0.25	<0.033
API Cell	**API**	API Vadose Zone	22-Mar-16	120	**147**	<4	**800**	**4,800**	2,300	110	670	**3,600**	<2.5	60	<0.10	2.1	2.4	<2.5	<0.25	<0.033
Background Sample Result			27-Mar-98 and 1-Sep-15	NA	110	26	140	<50	2,500	150	810	90	2.8	180	<1.3	<5.0	6.8	<2.5	<1.3	<0.50

Notes:
BOLD - samples that exceeded backgroud concentrations
mg/Kg - milligrams per kilograms
NA - not analyzed
< indicates result is less than the stated laboratory method practical quantitation limit