District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office to accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Subsequent Report ☒ Final Report

Name of Company **Hilcorp Energy Company**	Contact **Lindsay Dumas**
Address **1111 Travis St. Houston, TX 77002**	Telephone No. **(281)794-9159**
Facility Name: **SJ 27-5 110N**	Facility Type: Gas

Surface Owner State	Mineral Owner State	API No.**3003927767**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	**02**	**27N**	**05W**	**920'**	**North**	**855**	**East**	**Rio Arriba**

Latitude 36.6067696 Longitude -107.3215485

NATURE OF RELEASE

Type of Release **Oil & Produced Water**	Volume of Release **33 bbls/ 17 bbls**	Volume Recovered **0 bbls**
Source of Release Production Tank	Date and Hour of Occurrence **11/29/17 12:50pm**	Date and Hour of Discovery **11/29/2017 12:50pm**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **NMOCD**	
By Whom? **Lisa Hunter**	Date and Hour **11/30/2017 7:40AM**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

If a Watercourse was Impacted, Describe Fully.*
N/A

NMOCD
JAN 03 2019
DISTRICT III

Describe Cause of Problem and Remedial Action Taken.*
The release as a result of corrosion on the bottom of the production tank. There was no standing product to recover.

Describe Area Affected and Cleanup Action Taken.*
Approximately 600 c/yds of soil were excavated and biopiled on site for remediation. The remediated soil was backfilled after soil sampling. All analytical results were below the regulatory standards, except for the base of the excavation. Potassium permanganate was applied to the sand-stone base on 5/7/2018 – no further action required. Sampling reports attached.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Lindsay Dumas	OIL CONSERVATION DIVISION
Printed Name: **Lindsay Dumas**	Approved by Env **DENIED**
Title: **Environmental Specialist**	Approval Date: BY: Cory Smith DATE: 1/8/19
E-mail Address: **Ldumas@hilcorp.com**	Conditions of Ap (505) 334-6178 Ext. 115
Date: 9/5/2018 Phone: **(281)794-9159**	

* Attach Additional Sheets If Necessary

#NCS1733529093

* Admistrly Incomplete - No Sample MAD
- Did not include Appraval for evidence

150

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Tuesday, January 8, 2019 3:36 PM
To: 'Lindsay Dumas'; Fields, Vanessa, EMNRD
Cc: 'Matt Henderson'
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

OCD received a Final C-141 for the San Juan 27-5 #110N on 1/3/19

After review the OCD has denied the final Report.

- HEC needs to submit the final C-141 on the new C-141
- HEC sample map does not include final sampling/ stock piles/ vadose zone sampling
- HEC did not include documentation/approval for the application of the oxidize (If there is none HEC needs to state so and why they went forward without an approved plan)

Please resubmit a final C-141 with all the required documents no later than January 28, 2019.

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

From: Smith, Cory, EMNRD
Sent: Thursday, November 15, 2018 11:40 AM
To: 'Lindsay Dumas' <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

OCD never received the hard copy of this closure report could you please send it in.

Thanks

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115

cory.smith@state.nm.us

From: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Wednesday, September 5, 2018 11:55 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Please find attached the update C-141.

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Tuesday, August 28, 2018 10:43 AM
To: Lindsay Dumas <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>; Matt Henderson <mhenderson@hilcorp.com>
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

OCD has denied the Final C-141 received on Aug, 6, 2018 for the San Juan 27-5 110N.

As per the below email please include documentation/approval for the application of the oxidize, a site sampling map and resubmit the C-141 final no later than September 11, 2018

Thank you,

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

From: Smith, Cory, EMNRD
Sent: Monday, August 6, 2018 3:58 PM
To: 'Lindsay Dumas' <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

Reviewing the final C-141, I don't see any pictures or mention of application of potassium permanganate.

Do you have any that I can include in the report, also I was able to piece together a sampling map from my notes with multiple samples named the same thing it might be helpful to include a sampling map.

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

From: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Thursday, August 2, 2018 7:09 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

The hardcopy was placed in the mail yesterday. Thanks!

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Thursday, August 2, 2018 8:08 AM
To: Lindsay Dumas <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>
Subject: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

Thank you, please make sure you send it Hard Copy to the Aztec OCD office for processing

Thanks,

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

From: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Wednesday, August 1, 2018 5:13 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Foley, Brandon M. <bfoley@slo.state.nm.us>
Subject: Final C-141: San Juan 27-5 110N

Please find attached the final C-141 for the remediation on the San Juan 27-5 110N.

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West

FIGURE 3

SOIL SAMPLING LOCATIONS, FIELD PID-OVM READINGS, LABORATORY ANALYTICAL RESULTS, AND EXCAVATION RECOMMENDATIONS DECEMBER 2017 AND JANUARY 2018

HILCORP ENERGY
SAN JUAN 27-5 UNIT 110N
NE¼ NE¼, SECTION 2, T27N, R5W
RIO ARRIBA COUNTY, NEW MEXICO
N36.60696, W107.32165

animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY:	DATE DRAWN:
C. Lameman	December 12, 2017
REVISIONS BY:	**DATE REVISED:**
C. Lameman	January 11, 2018
CHECKED BY:	**DATE CHECKED:**
E. McNally	January 11, 2018
APPROVED BY:	**DATE APPROVED:**
E. McNally	January 11, 2018

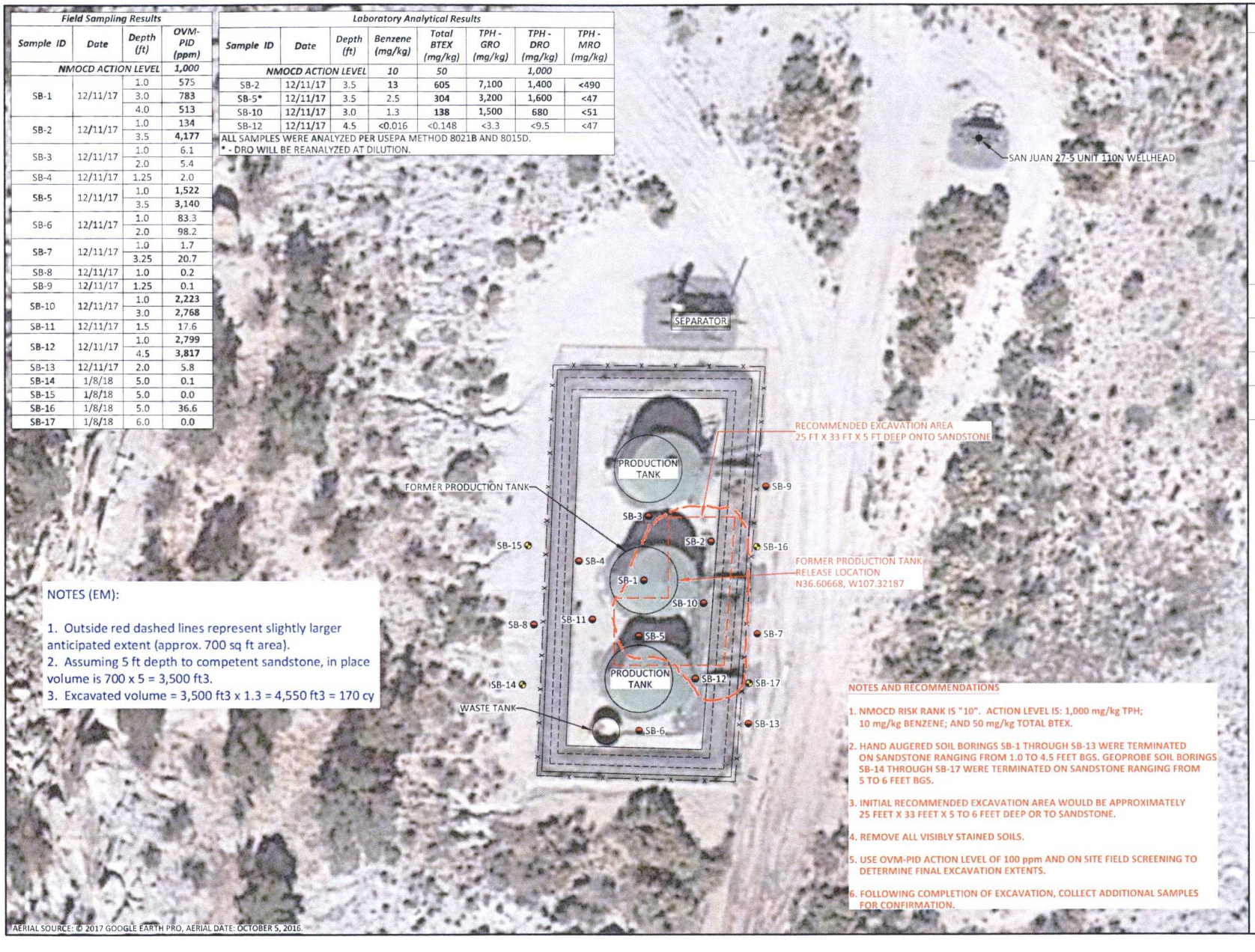
Field Sampling Results

Sample ID	Date	Depth (ft)	OVM-PID (ppm)
NMOCD ACTION LEVEL			1,000
SB-1	12/11/17	1.0	575
		3.0	**783**
		4.0	**513**
SB-2	12/11/17	1.0	134
		3.5	**4,177**
SB-3	12/11/17	1.0	6.1
		2.0	5.4
SB-4	12/11/17	1.25	2.0
SB-5	12/11/17	1.0	**1,522**
		3.5	**3,140**
SB-6	12/11/17	1.0	83.3
		2.0	98.2
SB-7	12/11/17	1.0	1.7
		3.25	20.7
SB-8	12/11/17	1.0	0.2
SB-9	12/11/17	1.25	0.1
SB-10	12/11/17	1.0	**2,223**
		3.0	**2,768**
SB-11	12/11/17	1.5	17.6
SB-12	12/11/17	1.0	**2,799**
		4.5	**3,817**
SB-13	12/11/17	2.0	5.8
SB-14	1/8/18	5.0	0.1
SB-15	1/8/18	5.0	0.0
SB-16	1/8/18	5.0	36.6
SB-17	1/8/18	6.0	0.0

Laboratory Analytical Results

Sample ID	Date	Depth (ft)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH - GRO (mg/kg)	TPH - DRO (mg/kg)	TPH - MRO (mg/kg)
NMOCD ACTION LEVEL			10	50		1,000	
SB-2	12/11/17	3.5	13	605	7,100	1,400	<490
SB-5*	12/11/17	3.5	2.5	304	3,200	1,600	<47
SB-10	12/11/17	3.0	1.3	138	1,500	680	<51
SB-12	12/11/17	4.5	<0.016	<0.148	<3.3	<9.5	<47

ALL SAMPLES WERE ANALYZED PER USEPA METHOD 8021B AND 8015D.
* - DRO WILL BE REANALYZED AT DILUTION.



NOTES (EM):

1. Outside red dashed lines represent slightly larger anticipated extent (approx. 700 sq ft area).
2. Assuming 5 ft depth to competent sandstone, in place volume is 700 x 5 = 3,500 ft3.
3. Excavated volume = 3,500 ft3 x 1.3 = 4,550 ft3 = 170 cy

NOTES AND RECOMMENDATIONS

1. NMOCD RISK RANK IS "10". ACTION LEVEL IS: 1,000 mg/kg TPH; 10 mg/kg BENZENE; AND 50 mg/kg TOTAL BTEX.
2. HAND AUGERED SOIL BORINGS SB-1 THROUGH SB-13 WERE TERMINATED ON SANDSTONE RANGING FROM 1.0 TO 4.5 FEET BGS. GEOPROBE SOIL BORINGS SB-14 THROUGH SB-17 WERE TERMINATED ON SANDSTONE RANGING FROM 5 TO 6 FEET BGS.
3. INITIAL RECOMMENDED EXCAVATION AREA WOULD BE APPROXIMATELY 25 FEET X 33 FEET X 5 TO 6 FEET DEEP OR TO SANDSTONE.
4. REMOVE ALL VISIBLY STAINED SOILS.
5. USE OVM-PID ACTION LEVEL OF 100 ppm AND ON SITE FIELD SCREENING TO DETERMINE FINAL EXCAVATION EXTENTS.
6. FOLLOWING COMPLETION OF EXCAVATION, COLLECT ADDITIONAL SAMPLES FOR CONFIRMATION.

LEGEND

- HAND AUGERED SOIL BORING LOCATION
- GEOPROBE SOIL BORING LOCATION
- SECONDARY CONTAINMENT BERM
- —x— FENCE

N

SCALE
20 10 0 20
5
(1 INCH = 20 FEET)

AERIAL SOURCE: © 2017 GOOGLE EARTH PRO, AERIAL DATE: OCTOBER 5, 2016.

NRE Field Services, LLC
3040 Southside River Road
Farmington, NM 87401
505-258-4259
office@nrefieldservices.com

Invoice

BILL TO
Hilcorp San Juan, L.P.
c/o Hilcorp Energy Company
PO Box 61529
Houston, TX 77208-1529

INVOICE #	DATE	TOTAL DUE	DUE DATE	TERMS	ENCLOSED
1390	05/10/2018	$729.70	06/09/2018	Net 30	

SALES REP
Travis Munkres

DATE	ACTIVITY	QTY	RATE	AMOUNT
05/07/2018	7009 - Unit 7009 Unit 7009	4	18.00	72.00T
05/07/2018	Potassium Permanganate Potassium	2.50	100.00	250.00T
05/07/2018	Water Trailer Charge Water Trailer Charge	4	15.00	60.00T
05/07/2018	Roustabout Operator Roustabout Operator	4	40.00	160.00T
05/07/2018	Roustabout Laborer Roustabout Laborer	4	34.00	136.00T

San Juan 27-5 Unit 110N
Spray location with Potassium Permangante
Thank you for your business

SUBTOTAL	678.00
TAX (7.625%)	51.70
TOTAL	729.70
BALANCE DUE	**$729.70**

Hilcorp Energy Company
Travis Munkres
AFE #: 1850852
Billing Category: 9110.113
Signature: Travis Munkres
Date: 5/22/18

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 07, 2018

Lindsay Dumas
Hilcorp Energy
PO Box 61529
Houston, TX 77208-1529
TEL: (337) 276-7676
FAX

RE: San Juan 27 5 110N OrderNo.: 1801C57

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 5 sample(s) on 1/26/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1801C57**
Date Reported: **2/7/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: San Juan 27 5 110N
Lab ID: 1801C57-001 **Matrix:** SOIL

Client Sample ID: Base
Collection Date: 1/24/2018 11:00:00 AM
Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	2/6/2018 3:21:27 AM	36356
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	550	9.7		mg/Kg	1	1/30/2018 4:48:43 PM	36249
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/30/2018 4:48:43 PM	36249
Surr: DNOP	113	70-130		%Rec	1	1/30/2018 4:48:43 PM	36249
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	2400	240		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Surr: BFB	220	15-316		%Rec	50	1/31/2018 3:19:06 PM	36238
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Methyl tert-butyl ether (MTBE)	ND	4.8		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Benzene	2.2	1.2		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Toluene	54	2.4		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Ethylbenzene	11	2.4		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Xylenes, Total	160	4.8		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	50	1/31/2018 3:19:06 PM	36238

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: San Juan 27 5 110N
Lab ID: 1801C57-002 **Matrix:** SOIL

Client Sample ID: West Wall
Collection Date: 1/24/2018 11:00:00 AM
Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	65	30		mg/Kg	20	2/6/2018 3:33:52 AM	36356
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	38	9.1		mg/Kg	1	1/30/2018 5:10:40 PM	36249
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/30/2018 5:10:40 PM	36249
Surr: DNOP	109	70-130		%Rec	1	1/30/2018 5:10:40 PM	36249
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	31	4.7		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Surr: BFB	239	15-316		%Rec	1	1/31/2018 3:42:17 PM	36238
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Benzene	0.038	0.024		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Toluene	0.60	0.047		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Ethylbenzene	0.082	0.047		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Xylenes, Total	3.7	0.095		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	1	1/31/2018 3:42:17 PM	36238

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: San Juan 27 5 110N
Lab ID: 1801C57-003 **Matrix:** SOIL

Client Sample ID: South Wall
Collection Date: 1/24/2018 11:00:00 AM
Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	76	30		mg/Kg	20	2/6/2018 4:11:06 AM	36356
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	920	10		mg/Kg	1	1/30/2018 5:32:52 PM	36249
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/30/2018 5:32:52 PM	36249
Surr: DNOP	106	70-130		%Rec	1	1/30/2018 5:32:52 PM	36249
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	3200	50		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Surr: BFB	747	15-316	S	%Rec	10	1/31/2018 4:05:33 PM	36238
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Methyl tert-butyl ether (MTBE)	ND	0.99		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Benzene	1.3	0.25		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Toluene	94	5.0		mg/Kg	100	2/1/2018 10:30:05 AM	36238
Ethylbenzene	20	0.50		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Xylenes, Total	290	9.9		mg/Kg	100	2/1/2018 10:30:05 AM	36238
Surr: 4-Bromofluorobenzene	141	80-120	S	%Rec	10	1/31/2018 4:05:33 PM	36238

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: San Juan 27 5 110N
Lab ID: 1801C57-004 **Matrix:** SOIL

Client Sample ID: North Wall
Collection Date: 1/24/2018 11:00:00 AM
Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	2/6/2018 4:23:31 AM	36356
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/30/2018 5:54:46 PM	36249
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	1/30/2018 5:54:46 PM	36249
Surr: DNOP	108	70-130		%Rec	1	1/30/2018 5:54:46 PM	36249
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Surr: BFB	112	15-316		%Rec	1	1/31/2018 4:28:55 PM	36238
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Benzene	ND	0.024		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Toluene	ND	0.049		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Ethylbenzene	ND	0.049		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Xylenes, Total	ND	0.097		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/31/2018 4:28:55 PM	36238

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: San Juan 27 5 110N
Lab ID: 1801C57-005 **Matrix:** SOIL

Client Sample ID: East Wall
Collection Date: 1/24/2018 11:00:00 AM
Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	2/6/2018 4:35:56 AM	36356
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	260	9.6		mg/Kg	1	1/30/2018 6:16:45 PM	36249
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/30/2018 6:16:45 PM	36249
Surr: DNOP	112	70-130		%Rec	1	1/30/2018 6:16:45 PM	36249
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	480	97	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Surr: BFB	193	15-316	D	%Rec	20	1/31/2018 4:52:13 PM	36238
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Methyl tert-butyl ether (MTBE)	ND	1.9	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Benzene	ND	0.49	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Toluene	5.0	0.97	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Ethylbenzene	3.0	0.97	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Xylenes, Total	43	1.9	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Surr: 4-Bromofluorobenzene	105	80-120	D	%Rec	20	1/31/2018 4:52:13 PM	36238

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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#: **1801C57**

07-Feb-18

Client: Hilcorp Energy
Project: San Juan 27 5 110N

Sample ID	**MB-36356**	SampType:	**mblk**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**PBS**	Batch ID:	**36356**		RunNo:	**48913**				
Prep Date:	**2/5/2018**	Analysis Date:	**2/6/2018**		SeqNo:	**1573995**	Units:	**mg/Kg**		

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

Sample ID	**LCS-36356**	SampType:	**lcs**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**LCSS**	Batch ID:	**36356**		RunNo:	**48913**				
Prep Date:	**2/5/2018**	Analysis Date:	**2/6/2018**		SeqNo:	**1573996**	Units:	**mg/Kg**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.5	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
PQL	Practical Quanitative Limit	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#: **1801C57**

07-Feb-18

Client: Hilcorp Energy
Project: San Juan 27 5 110N

Sample ID **LCS-36249**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **36249**	RunNo: **48775**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1569177** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.9	70	130			
Surr: DNOP	4.5		5.000		90.5	70	130			

Sample ID **MB-36249**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **36249**	RunNo: **48775**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1569178** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		97.6	70	130			

Sample ID **LCS-36240**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **36240**	RunNo: **48775**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570004** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.1		5.000		101	70	130			

Sample ID **MB-36240**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **36240**	RunNo: **48775**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570005** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		110	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
PQL	Practical Quanitative Limit	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#: **1801C57**

07-Feb-18

Client: Hilcorp Energy

Project: San Juan 27 5 110N

Sample ID **LCS-36238**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **36238**	RunNo: **48820**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570842** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	107	75.9	131			
Surr: BFB	1100		1000		115	15	316			

Sample ID **MB-36238**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **36238**	RunNo: **48820**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570844** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		101	15	316			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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#: **1801C57**

07-Feb-18

Client: Hilcorp Energy

Project: San Juan 27 5 110N

Sample ID **LCS-36238**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **36238**	RunNo: **48820**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570883** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.98	0.10	1.000	0	97.7	70.1	121			
Benzene	1.0	0.025	1.000	0	104	77.3	128			
Toluene	1.0	0.050	1.000	0	104	79.2	125			
Ethylbenzene	1.0	0.050	1.000	0	102	80.7	127			
Xylenes, Total	3.1	0.10	3.000	0	105	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Sample ID **MB-36238**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **36238**	RunNo: **48820**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570885** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		104	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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY Work Order Number: 1801C57 RcptNo: 1

Received By: **Erin Melendrez** 1/26/2018 8:00:00 AM

Completed By: **Dennis Suazo** 1/26/2018 8:59:45 AM

Reviewed By: ENM 1/26/18

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.4	Good	Not Present			

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: (Lindsay Dumas) Hilcorp

Mailing Address: 1111 Travis St. Houston, Tx 77002

Phone #: 281-794-9159

email or Fax#: LDUMAS@Hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other

☐ EDD (Type)

Turn Around Time:

☒ Standard ☐ Rush

Project Name: San Juan 27-5 #110N

Project #:

Project Manager: Lindsay Dumas

Sampler: Travis Munkres

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.1 - 0.7 (C.F.) = 2.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1801C57	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel) + MRO	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Chlorides 300				Air Bubbles (Y or N)
~~1/24/18~~	~~11:00~~	~~Soil~~																				
1/24/18	11:00	Soil	Base	jar 4oz		001	✓		✓									✓				
1/24/18	11:00	Soil	West Wall	jar 4oz		002	✓		✓									✓				
1/24/18	11:00	Soil	South Wall	jar 4oz		003	✓		✓									✓				
1/24/18	11:00	Soil	North Wall	jar 4oz		004	✓		✓									✓				
1/24/18	11:00	Soil	East Wall	jar 4oz.		005	✓		✓									✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/25/18	1555	Lindsay Dumas	Christa Walls	1/25/18	1555
1/25/18	1847	Christa Walls			

Remarks: Standard turnaround

Received by: [signature] Date: 1/26/18 Time: 0800

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

May 01, 2018

Lindsay Dumas

Hilcorp Energy
PO Box 61529
Houston, TX 77208-1529
TEL: (337) 276-7676
FAX

RE: SJ 27-5 110N Landfarm 2 OrderNo.: 1804D57

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/27/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27-5 110N Landfarm 2
Lab ID: 1804D57-001 **Matrix:** SOIL

Client Sample ID: South 6
Collection Date: 4/26/2018 10:00:00 AM
Received Date: 4/27/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	78	9.6		mg/Kg	1	4/30/2018 6:14:30 PM	37838
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/30/2018 6:14:30 PM	37838
Surr: DNOP	102	70-130		%Rec	1	4/30/2018 6:14:30 PM	37838
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Surr: BFB	106	15-316		%Rec	1	4/30/2018 11:15:42 AM	37835
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.094		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Benzene	ND	0.023		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Toluene	ND	0.047		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Ethylbenzene	ND	0.047		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Xylenes, Total	ND	0.094		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	4/30/2018 11:15:42 AM	37835

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: SJ 27-5 110N Landfarm 2
Lab ID: 1804D57-002 **Matrix:** SOIL

Client Sample ID: North 6
Collection Date: 4/26/2018 10:00:00 AM
Received Date: 4/27/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	54	9.2		mg/Kg	1	4/30/2018 6:36:45 PM	37838
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/30/2018 6:36:45 PM	37838
Surr: DNOP	107	70-130		%Rec	1	4/30/2018 6:36:45 PM	37838
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Surr: BFB	99.0	15-316		%Rec	1	4/30/2018 11:39:03 AM	37835
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Benzene	ND	0.024		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Toluene	ND	0.047		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Ethylbenzene	ND	0.047		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Xylenes, Total	ND	0.095		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	4/30/2018 11:39:03 AM	37835

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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#: **1804D57**

01-May-18

Client: Hilcorp Energy

Project: SJ 27-5 110N Landfarm 2

Sample ID **LCS-37838**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **37838**	RunNo: **50909**
Prep Date: **4/27/2018**	Analysis Date: **4/30/2018**	SeqNo: **1653303** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.0	70	130			
Surr: DNOP	4.8		5.000		96.3	70	130			

Sample ID **MB-37838**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **37838**	RunNo: **50909**
Prep Date: **4/27/2018**	Analysis Date: **4/30/2018**	SeqNo: **1653304** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		102	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
PQL	Practical Quanitative Limit	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#: **1804D57**

01-May-18

Client: Hilcorp Energy

Project: SJ 27-5 110N Landfarm 2

Sample ID	**MB-37835**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**37835**		RunNo:	**50929**				
Prep Date:	**4/27/2018**	Analysis Date:	**4/30/2018**		SeqNo:	**1653363**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.9	15	316			

Sample ID	**LCS-37835**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**37835**		RunNo:	**50929**				
Prep Date:	**4/27/2018**	Analysis Date:	**4/30/2018**		SeqNo:	**1653364**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	75.9	131			
Surr: BFB	1100		1000		107	15	316			

Sample ID	**MB-37842**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**37842**		RunNo:	**50929**				
Prep Date:	**4/27/2018**	Analysis Date:	**4/30/2018**		SeqNo:	**1653372**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	880		1000		87.7	15	316			

Sample ID	**LCS-37842**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**37842**		RunNo:	**50929**				
Prep Date:	**4/27/2018**	Analysis Date:	**4/30/2018**		SeqNo:	**1653373**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		106	15	316			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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#: **1804D57**

01-May-18

Client: Hilcorp Energy

Project: SJ 27-5 110N Landfarm 2

Sample ID **MB-37835**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **37835**	RunNo: **50929**
Prep Date: **4/27/2018**	Analysis Date: **4/30/2018**	SeqNo: **1653384** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		110	80	120			

Sample ID **LCS-37835**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **37835**	RunNo: **50929**
Prep Date: **4/27/2018**	Analysis Date: **4/30/2018**	SeqNo: **1653385** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.93	0.10	1.000	0	92.9	70.1	121			
Benzene	0.97	0.025	1.000	0	96.6	77.3	128			
Toluene	0.98	0.050	1.000	0	98.4	79.2	125			
Ethylbenzene	0.97	0.050	1.000	0	96.7	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.7	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		109	80	120			

Sample ID **1804D57-002AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **North 6**	Batch ID: **37835**	RunNo: **50929**
Prep Date: **4/27/2018**	Analysis Date: **4/30/2018**	SeqNo: **1653388** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.88	0.094	0.9363	0	94.4	56.9	130			
Benzene	0.90	0.023	0.9363	0	95.6	68.5	133			
Toluene	0.92	0.047	0.9363	0.008357	97.4	75	130			
Ethylbenzene	0.92	0.047	0.9363	0.01235	97.4	79.4	128			
Xylenes, Total	2.8	0.094	2.809	0.01709	101	77.3	131			
Surr: 4-Bromofluorobenzene	0.99		0.9363		106	80	120			

Sample ID **1804D57-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **North 6**	Batch ID: **37835**	RunNo: **50929**
Prep Date: **4/27/2018**	Analysis Date: **4/30/2018**	SeqNo: **1653389** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.85	0.095	0.9533	0	89.5	56.9	130	3.61	20	
Benzene	0.85	0.024	0.9533	0	89.6	68.5	133	4.66	20	
Toluene	0.91	0.048	0.9533	0.008357	95.0	75	130	0.677	20	
Ethylbenzene	0.93	0.048	0.9533	0.01235	96.5	79.4	128	0.808	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
PQL	Practical Quanitative Limit	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#: **1804D57**

01-May-18

Client: Hilcorp Energy

Project: SJ 27-5 110N Landfarm 2

Sample ID **1804D57-002AMSD** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **North 6** Batch ID: **37835** RunNo: **50929**

Prep Date: **4/27/2018** Analysis Date: **4/30/2018** SeqNo: **1653389** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	2.9	0.095	2.860	0.01709	100	77.3	131	1.60	20	
Surr: 4-Bromofluorobenzene	0.97		0.9533		102	80	120	0	0	

Sample ID **MB-37842** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **37842** RunNo: **50929**

Prep Date: **4/27/2018** Analysis Date: **4/30/2018** SeqNo: **1653392** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID **LCS-37842** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **37842** RunNo: **50929**

Prep Date: **4/27/2018** Analysis Date: **4/30/2018** SeqNo: **1653393** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		109	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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY Work Order Number: 1804D57 RcptNo: 1

Received By: Anne Thorne 4/27/2018 7:00:00 AM Anne Thorne

Completed By: Anne Thorne 4/27/2018 7:44:01 AM Anne Thorne

Reviewed By: IMO 4/27/18

MW 4/27/18

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
MW 4/27/18
Checked by: _____

Special Handling (if applicable)

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

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

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Energy Company

Mailing Address: 1111 Travis St.
Houston TX 77002

Phone #: 832-839-4585

email or Fax#: LDumas@hilcorp.com

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
SJ27-5 110N Landfarm-2

Project #:

Project Manager:
Lindsay Dumas

Sampler: Travis Munkres
On Ice: ☒ Yes ☐ No
# of Coolers:
Cooler Temp (including CF): 1.0

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1804857	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4/24/18	10AM	Soil	South 6	4oz jar		-001	X	X								
4/24/18	10AM	Soil	North 6	4oz jar		-002	X	X								

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date Time	Remarks:
4/26/18	1650	Lindsay Dumas	Christa Walls		4/26/18 1650	Standard turn around time
4/26/18	1830	Christa Walls			04/27/18 0700	AFE # 1850852

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

March 14, 2018

Lindsay Dumas
Hilcorp Energy
PO Box 61529
Houston, TX 77208-1529
TEL: (337) 276-7676
FAX

RE: SJ 27-5 110N OrderNo.: 1803595

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/10/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1803595**
Date Reported: **3/14/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27-5 110N
Lab ID: 1803595-001 **Matrix:** SOIL

Client Sample ID: North Pile
Collection Date: 3/8/2018 1:00:00 PM
Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	120	9.2		mg/Kg	1	3/14/2018 5:19:10 AM	36967
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	3/14/2018 5:19:10 AM	36967
Surr: DNOP	117	70-130		%Rec	1	3/14/2018 5:19:10 AM	36967
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	15	4.8		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Surr: BFB	186	15-316		%Rec	1	3/13/2018 7:25:43 PM	36964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Benzene	ND	0.024		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Toluene	ND	0.048		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Ethylbenzene	ND	0.048		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Xylenes, Total	0.21	0.096		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Surr: 4-Bromofluorobenzene	96.1	80-120		%Rec	1	3/13/2018 7:25:43 PM	36964

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: SJ 27-5 110N
Lab ID: 1803595-002 **Matrix:** SOIL

Client Sample ID: South Pile
Collection Date: 3/8/2018 1:00:00 PM
Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	130	9.6		mg/Kg	1	3/14/2018 5:44:01 AM	36967
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/14/2018 5:44:01 AM	36967
Surr: DNOP	114	70-130		%Rec	1	3/14/2018 5:44:01 AM	36967
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	13	4.9		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Surr: BFB	164	15-316		%Rec	1	3/13/2018 7:49:12 PM	36964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.099		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Benzene	ND	0.025		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Toluene	0.060	0.049		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Ethylbenzene	ND	0.049		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Xylenes, Total	0.22	0.099		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Surr: 4-Bromofluorobenzene	97.4	80-120		%Rec	1	3/13/2018 7:49:12 PM	36964

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27-5 110N
Lab ID: 1803595-003 **Matrix:** SOIL

Client Sample ID: South
Collection Date: 3/8/2018 12:30:00 PM
Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	71	9.9		mg/Kg	1	3/14/2018 6:08:37 AM	36967
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/14/2018 6:08:37 AM	36967
Surr: DNOP	110	70-130		%Rec	1	3/14/2018 6:08:37 AM	36967
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	7.2	4.8		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Surr: BFB	139	15-316		%Rec	1	3/13/2018 8:12:44 PM	36964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Benzene	ND	0.024		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Toluene	0.089	0.048		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Ethylbenzene	ND	0.048		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Xylenes, Total	0.16	0.097		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Surr: 4-Bromofluorobenzene	94.3	80-120		%Rec	1	3/13/2018 8:12:44 PM	36964

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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: Hilcorp Energy
Project: SJ 27-5 110N
Lab ID: 1803595-004 **Matrix:** SOIL

Client Sample ID: East
Collection Date: 3/8/2018 12:30:00 PM
Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	3/14/2018 6:33:25 AM	36967
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	3/14/2018 6:33:25 AM	36967
Surr: DNOP	115	70-130		%Rec	1	3/14/2018 6:33:25 AM	36967
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Surr: BFB	99.7	15-316		%Rec	1	3/13/2018 8:36:15 PM	36964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Benzene	ND	0.024		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Toluene	0.079	0.049		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Ethylbenzene	ND	0.049		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Xylenes, Total	0.11	0.097		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Surr: 4-Bromofluorobenzene	91.9	80-120		%Rec	1	3/13/2018 8:36:15 PM	36964

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27-5 110N
Lab ID: 1803595-005 **Matrix:** SOIL

Client Sample ID: Base
Collection Date: 3/8/2018 12:30:00 PM
Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	660	9.4		mg/Kg	1	3/14/2018 6:57:51 AM	36967
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/14/2018 6:57:51 AM	36967
Surr: DNOP	114	70-130		%Rec	1	3/14/2018 6:57:51 AM	36967
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1400	240		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Surr: BFB	181	15-316		%Rec	50	3/13/2018 8:59:45 PM	36964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	4.9		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Benzene	ND	1.2		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Toluene	22	2.4		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Ethylbenzene	7.8	2.4		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Xylenes, Total	110	4.9		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	50	3/13/2018 8:59:45 PM	36964

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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#: **1803595**

14-Mar-18

Client: Hilcorp Energy
Project: SJ 27-5 110N

Sample ID	**LCS-36967**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**36967**		RunNo:	**49733**				
Prep Date:	**3/12/2018**	Analysis Date:	**3/13/2018**		SeqNo:	**1610106**	Units:	**mg/Kg**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	70	130			
Surr: DNOP	5.1		5.000		102	70	130			

Sample ID	**MB-36967**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**36967**		RunNo:	**49733**				
Prep Date:	**3/12/2018**	Analysis Date:	**3/13/2018**		SeqNo:	**1610107**	Units:	**mg/Kg**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	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
PQL	Practical Quanitative Limit	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#: **1803595**

14-Mar-18

Client: Hilcorp Energy
Project: SJ 27-5 110N

Sample ID **MB-36964**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **36964**	RunNo: **49750**
Prep Date: **3/12/2018**	Analysis Date: **3/13/2018**	SeqNo: **1609795** 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	930		1000		92.8	15	316			

Sample ID **LCS-36964**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **36964**	RunNo: **49750**
Prep Date: **3/12/2018**	Analysis Date: **3/13/2018**	SeqNo: **1609796** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	75.9	131			
Surr: BFB	1000		1000		104	15	316			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	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#: **1803595**

14-Mar-18

Client: Hilcorp Energy
Project: SJ 27-5 110N

Sample ID **MB-36964** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **36964** RunNo: **49750**
Prep Date: **3/12/2018** Analysis Date: **3/13/2018** SeqNo: **1609836** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.90		1.000		89.8	80	120			

Sample ID **LCS-36964** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **36964** RunNo: **49750**
Prep Date: **3/12/2018** Analysis Date: **3/13/2018** SeqNo: **1609837** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.0	0.10	1.000	0	103	70.1	121			
Benzene	1.0	0.025	1.000	0	105	77.3	128			
Toluene	1.0	0.050	1.000	0	104	79.2	125			
Ethylbenzene	1.0	0.050	1.000	0	103	80.7	127			
Xylenes, Total	3.1	0.10	3.000	0	105	81.6	129			
Surr: 4-Bromofluorobenzene	0.95		1.000		95.3	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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY | Work Order Number: 1803595 | RcptNo: 1

Received By: Isaiah Ortiz 3/10/2018 8:00:00 AM I
Completed By: Isaiah Ortiz 3/12/2018 9:26:26 AM I
Reviewed By: Sre 03/12/18 labeld by: AZ

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

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

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.4	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp

Mailing Address: 1111 Travis St.
Houston, Tx 77002

Phone #: 832-839-4585

email or Fax#: LDumas@hilcorp.com

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

Accreditation:
☐ NELAP ☐ Other_____

☐ EDD (Type)_____

Turn-Around Time:
☒ Standard ☐ Rush_____

Project Name:
SJ 27-5 110N

Project #:

Project Manager:
Lindsay Dumas

Sampler: Travis Munkres

On Ice: ☒ Yes ☐ No

Sample Temperature: 0.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1803595	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel + MRO)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
3/8	1:00	Soil	North pile	4oz jar	—	-001	X		X													
3/8	1:00	Soil	South pile	4oz jar	—	-002	X		X													
3/8	12:30	Soil	South	4oz jar	—	-003	X		X													
3/8	12:30	Soil	East	4oz jar	—	-004	X		X													
3/8	12:30	Soil	Base	4oz jar	—	-005	X		X													

Date	Time	Relinquished by:	Received by:	Date	Time
3/9/18	1320	Lindsay Dumas	Chasity Ward	3/9/18	1320
3/9/18	1804	Chasity Ward	J. Q	3/10/18	800

Remarks:
Standard turnaround time
AFE #1850852

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.

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 09, 2018

HilCorp-Farmington, NM

Sample Delivery Group:	L1005502
Samples Received:	06/29/2018
Project Number:	
Description:	
Site:	SJ 27-5 UNIT 110N
Report To:	Kurt Hoekstra and Lindsay Dumas 382 Road 3100 Aztec, NM 87401

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Technical Service Representative

TABLE OF CONTENTS

S VADOS L1005502-01 Solid

			Collected by	Collected date/time	Received date/time
			Kurt	06/27/18 13:50	06/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1132779	1	06/29/18 10:30	07/02/18 15:54	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1133536	1	07/05/18 18:32	07/06/18 16:57	MTJ

N VADOS L1005502-02 Solid

			Collected by	Collected date/time	Received date/time
			Kurt	06/28/18 13:55	06/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1132779	1	06/29/18 10:30	07/02/18 15:33	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1133536	1	07/05/18 18:32	07/06/18 16:30	MTJ

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00105		0.000500	1	07/02/2018 15:54	WG1132779
Toluene	ND		0.00500	1	07/02/2018 15:54	WG1132779
Ethylbenzene	ND		0.000500	1	07/02/2018 15:54	WG1132779
Total Xylene	ND		0.00150	1	07/02/2018 15:54	WG1132779
TPH (GC/FID) Low Fraction	ND		0.100	1	07/02/2018 15:54	WG1132779
(S) a,a,a-Trifluorotoluene(FID)	*99.5*		*77.0-120*		*07/02/2018 15:54*	WG1132779
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*07/02/2018 15:54*	WG1132779

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	31.9		4.00	1	07/06/2018 16:57	WG1133536
C28-C40 Oil Range	11.4		4.00	1	07/06/2018 16:57	WG1133536
(S) o-Terphenyl	*75.1*		*18.0-148*		*07/06/2018 16:57*	WG1133536

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00155		0.000500	1	07/02/2018 15:33	WG1132779
Toluene	ND		0.00500	1	07/02/2018 15:33	WG1132779
Ethylbenzene	ND		0.000500	1	07/02/2018 15:33	WG1132779
Total Xylene	ND		0.00150	1	07/02/2018 15:33	WG1132779
TPH (GC/FID) Low Fraction	ND		0.100	1	07/02/2018 15:33	WG1132779
(S) a,a,a-Trifluorotoluene(FID)	*99.3*		*77.0-120*		*07/02/2018 15:33*	WG1132779
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*07/02/2018 15:33*	WG1132779

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	22.1		4.00	1	07/06/2018 16:30	WG1133536
C28-C40 Oil Range	7.72		4.00	1	07/06/2018 16:30	WG1133536
(S) o-Terphenyl	*77.3*		*18.0-148*		*07/06/2018 16:30*	WG1133536

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

Method Blank (MB)

(MB) R3322588-4 07/02/18 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*108*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3322588-1 07/02/18 09:22 • (LCSD) R3322588-2 07/02/18 09:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0444	0.0449	88.8	89.7	71.0-121			1.06	20
Toluene	0.0500	0.0466	0.0469	93.3	93.8	72.0-120			0.548	20
Ethylbenzene	0.0500	0.0533	0.0535	107	107	76.0-121			0.428	20
Total Xylene	0.150	0.163	0.163	109	109	75.0-124			0.184	20
(S) a,a,a-Trifluorotoluene(FID)				*99.9*	*99.6*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*104*	*104*	*75.0-128*				

Laboratory Control Sample (LCS)

(LCS) R3322588-3 07/02/18 10:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.26	95.7	70.0-136	
(S) a,a,a-Trifluorotoluene(FID)			*85.6*	*77.0-120*	
(S) a,a,a-Trifluorotoluene(PID)			*111*	*75.0-128*	

L1004629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1004629-01 07/02/18 16:36 • (MS) R3322588-5 07/02/18 16:57 • (MSD) R3322588-6 07/02/18 17:18

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	13.3	66.4	65.7	106	105	1000	10.0-146			1.10	29
Toluene	0.0500	155	186	212	62.6	115	1000	10.0-143			13.1	30
Ethylbenzene	0.0500	80.0	129	136	98.5	111	1000	10.0-147			4.78	31
Total Xylene	0.150	543	612	640	46.0	64.7	1000	10.0-149	E J6	E J6	4.47	30
(S) a,a,a-Trifluorotoluene(FID)					*101*	*96.6*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*107*	*107*		*75.0-128*				

L1004629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1004629-01 07/02/18 16:36 • (MS) R3322588-7 07/02/18 17:39 • (MSD) R3322588-8 07/02/18 18:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6210	10700	10800	82.0	82.7	1000	10.0-147			0.351	30
(S) a,a,a-Trifluorotoluene(FID)					*92.4*	*92.4*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*113*	*114*		*75.0-128*				

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

Method Blank (MB)

(MB) R3323648-1 07/06/18 13:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*88.6*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3323648-2 07/06/18 14:13 • (LCSD) R3323648-3 07/06/18 14:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	47.2	50.0	94.3	100	50.0-150			5.92	20
(S) o-Terphenyl				*94.0*	*102*	*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

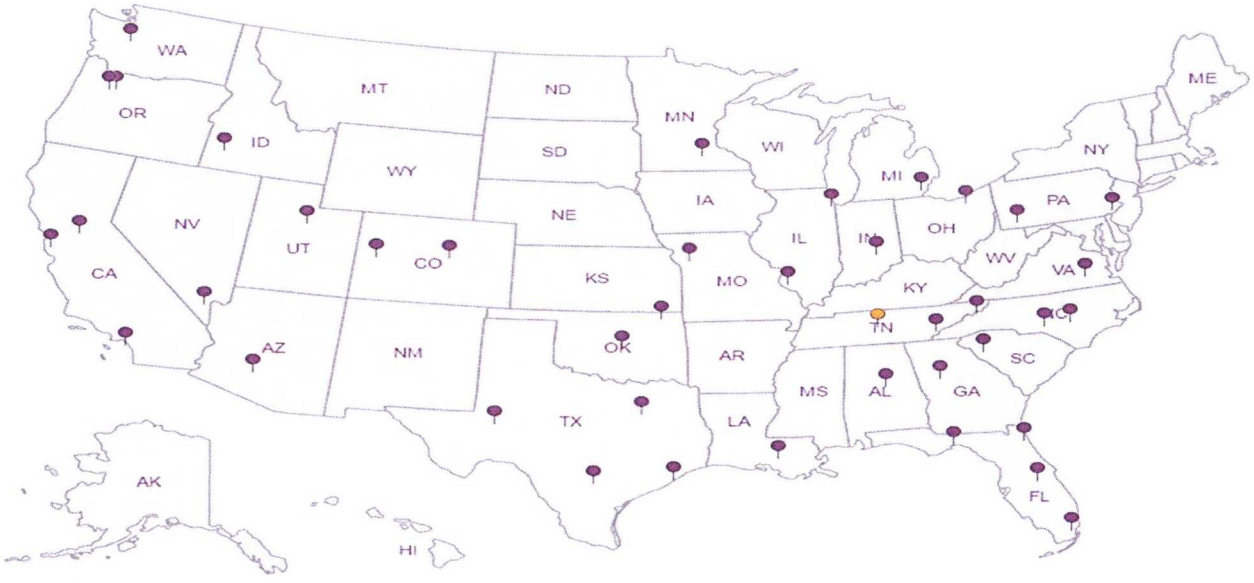
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



HilCorp
382 Road 3100
Aztec, NM 87401

Billing Information:

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORIES

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to: **Kurt Hoekstra**

Email To: LINDSAY DUMAS **khoekstra@hilcorp.com**

Project Description:

City/State Collected:

Phone:
Fax:

Client Project #

Lab Project #

L# 1005502

A018

Collected by (print): KURT

Site/Facility ID #: S.J. 27-5 UNIT 110N

P.O. #

Collected by (signature): Kurt Hoekstra

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: STANDARD TURNAROUND

Acctnum: **HILCORANM**

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH 8015 - DRO, GRO, MRO	BTEX 8021	Remarks	Sample # (lab only)
S. VADOS	Comp	S	0-6"	6-27-18	1:50	1	X	X		01
N. VADOS	Comp	S	0-6"	6-27-18	1:55	1	X	X		02

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other ___

Remarks:

pH ___ Temp ___

Flow ___ Other ___

Samples returned via:
__UPS __FedEx __Courier ___

Tracking # 7305 8947 4790

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Kurt Hoekstra	6-28-18	7:00	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes (No) HCL / MeoH TBR

Temp: 3.8 °C Bottles Received: 2

Date: 6/29/18 Time: 845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK