

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

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

Form C-141
 Revised August 24, 2018
 Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

NMOCD

Responsible Party

JAN 30 2019

Responsible Party Hilcorp Energy Company	OGRID 372171
Contact Name Lindsay Dumas	Contact Telephone 832-839-4585
Contact email Ldumas@hilcorp.com	Incident # (assigned by OCD) NCS1733529093
Contact mailing address 1111 Travis St. Houston, TX 77002	

DISTRICT III

Location of Release Source

Latitude 36.6067696 _____ Longitude -107.3215485 _____
 (NAD 83 in decimal degrees to 5 decimal places)

Site Name San Juan 27-5 Unit 110N	Site Type Gas
Date Release Discovered 11/29/17 12:50pm	API# (if applicable) 3003927767

Unit Letter	Section	Township	Range	County
A	02	27N	05W	Rio Arriba

Surface Owner: State Federal Tribal Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 17bbls	Volume Recovered (bbls) 0 bbls
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Condensate	Volume Released (bbls) 33bbls	Volume Recovered (bbls) 0bbls
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was a result of corrosion on the bottom of the production tank. There was no standing product to recover.

67

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Wednesday, February 13, 2019 2:11 PM
To: 'Lindsay Dumas'
Cc: Fields, Vanessa, EMNRD
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

OCD has approved the Closure Report for the San Juan 27-5 #110N. HEC did not provide to the OCD approval for the application of Potassium Permanganate.

IF HEC application of Potassium Permanganate was found not to be sufficient in remediating the residual hydrocarbons HEC maybe required to perform additional remediation.

NCS1733529093 SAN JUAN 27 5 UNIT #110N @ 30-039-27767

General Incident Information

Site Name: SAN JUAN 27 5 UNIT #110N
Well: [30-039-27767] SAN JUAN 27 5 UNIT #110N
Facility:
Operator: [372171] HILCORP ENERGY COMPANY
Status: Closure Approved
Type: Oil Release
District: Aztec

Incident Location: A-02-27N-05W Lot: 1 920 FNL 855 FEL
Lat/Long: 36.6067696,-107.3215485 NAD83

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: Friday, January 25, 2019 2:55 PM
To: 'Lindsay Dumas' <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Per 19.15.29.7 (A) (a) an unauthorized release of a volume, excluding gas, of 25 barrels or more.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes, to Cory Smith (NMOCD), Vanessa Fields (NMOCD), and Brandon Foley (SLO) by Lisa Hunter (Hilcorp) on 11/30/17 at 7:40AM.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> been undertaken, explain why: All actions above were completed.
<p>NMOCD</p> <p>JAN 30 2019</p> <p>DISTRICT III</p>
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.
Printed Name: <u>Lindsay Dumas</u> Title: <u>Environmental Specialist</u> Signature: _____ Date: <u>1/9/19</u> email: <u>Ldumas@hilcorp.com</u> Telephone: <u>832-839-4585</u>
<p><u>OCD Only</u></p> Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

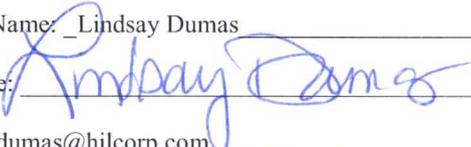
The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled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

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

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

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

Printed Name: Lindsay Dumas Title: Environmental Specialist

Signature:  Date: 1/25/19

email: Ldumas@hilcorp.com Telephone: 832-839-4585

NMOCD

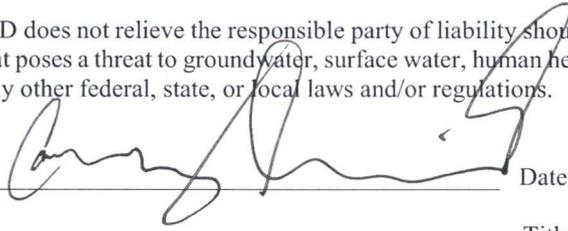
JAN 28 2019

OCD Only

DISTRICT III

Received by: OCD Date: 1/30/19

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by:  Date: 2/13/19

Printed Name: Cory Title: Environmental Spec

On 11/29/2017 Hilcorp had a release of 33bbls of condensate and 17 bbls of produced water on the San Juan 27-5 #110N. Hilcorp contracted Animas Environmental to delineate the release. Animas Environmental delineate the release on 12/11/2017 by hand auger, at 4.5 ft they hit auger refusal. On 1/8/18 a geoprobe was used to complete vertical and horizontal delineation of the site. Due to road conditions and distance to disposal facility, Hilcorp opted to remediate the release on site using bioremediation piles.

On 1/22/18 Hilcorp notified NMOCD & SLO that excavation would begin and sampling of the side walls and base was scheduled on 1/24/18. The Base, South Wall, and East Wall were above NMOCD threshold. The soil from this excavation was remediated on site using bioremediation piles. A subsequent C-141 was submitted with bioremediation pile location, sampling & closure plan, and SDS for the fertilizer Hilcorp added to the bioremediation piles. The piles were turned weekly from 1/29/18 until 3/8/18.

On 3/6/18, Hilcorp notified NMOCD & SLO that the Base, South Wall & East Wall would be excavated further and sampling was scheduled for 3/8/18. On 3/8/18, Hilcorp excavated the Base, South Wall, and East Wall of the excavation, all walls were below NMOCD threshold. Also on 3/8/18, the North Pile and South Pile of the bioremediation piles were sampled, all results were below NMOCD threshold. The soil that was excavated on 3/8/18, was piled separately from the initial soil that was excavated on 1/24/18.

On 5/1/18, Hilcorp notified NMOCD of their intent to spray the base of the excavation with potassium permanganate. On 5/2/18, a notification was sent to NMOCD that the excavation would be sprayed with potassium permanganate on 5/7/18 and Hilcorp planned to backfill on 5/8/18 with the remediated soil that passed sampling on 3/8/18.

On 5/7/18, Hilcorp sprayed the excavation with potassium permanganate. Hilcorp does not have pictures of this activity, but has provided a dated invoice for record. On 5/8/18, the excavation was backfilled with the remediated soil that was sampled on 3/8/18.

The soil that was excavated on 3/8/18, was turned weekly until 4/26/18 when it was sampled. On 4/23/18, Hilcorp asked NMOCD for their availability that week to sample the biopile soil, NMOCD responded on 4/23/18. On 4/25/18, Hilcorp confirmed that sampling would occur on 4/26/18. Both the North 6 and South 6 samples were below NMOCD threshold. At this time the excavation was backfilled using the remaining soil. Approximately 600 cubic yard of contaminated soil were remediated on site using biopiles.

On 6/27/18, the vadose zone was sampled with NMOCD on site. Hilcorp does not have record of notification to NMOCD, but believes this was a phone conversation with Cory Smith from NMOCD. North and South Vadose Zone samples were below NMOCD threshold.

SOIL ANALYTICAL RESULTS

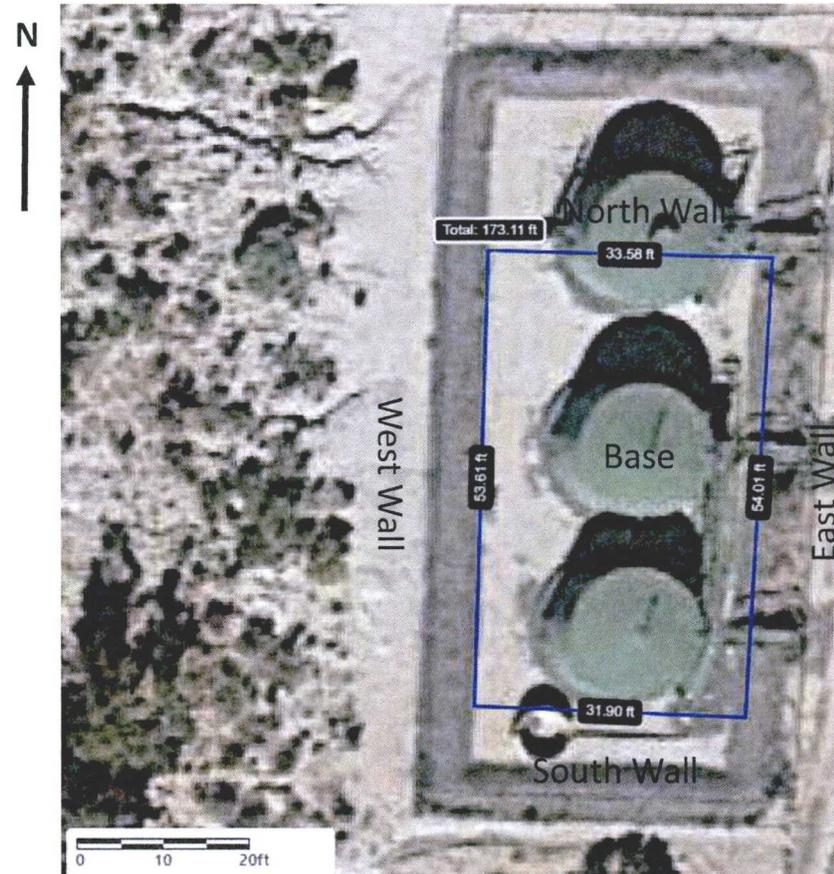
SJ 27-5 110N

HILCORP ENERGY - L48 WEST

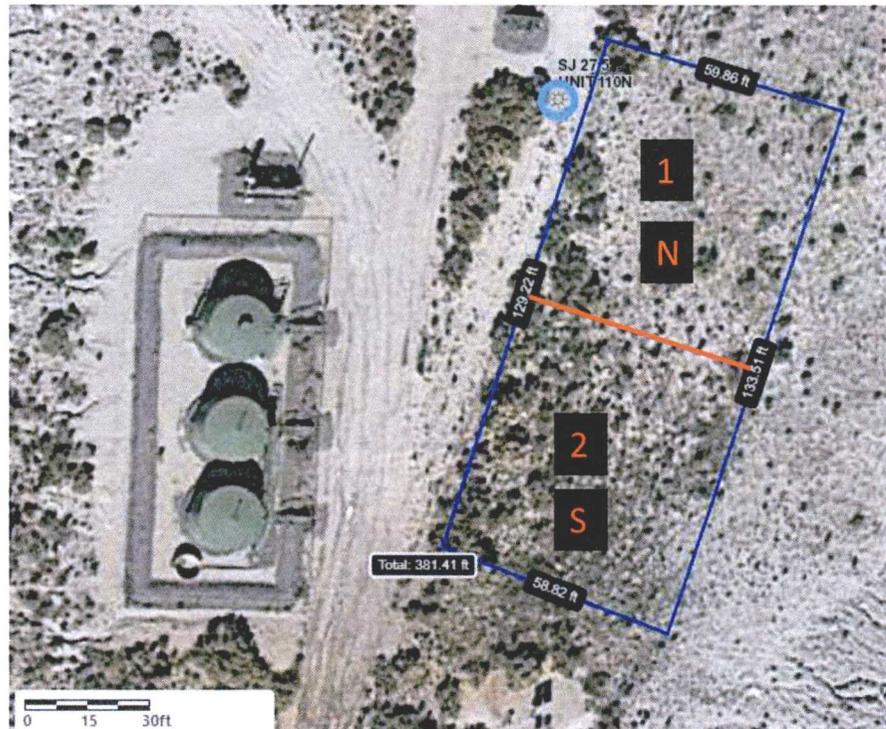
Soil Sample Identification	Sample Date	Chloride (ppm)	Field Headspace (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
Base	1/24/2018	ND		2.2	54	11	160	227.20	2400	550	0	2,950
West Wall	1/24/2018	65		0.038	0.6	0.082	3.7	4.42	31	38	0	69
South Wall	1/24/2018	76		1.3	94	20	290	405.30	3200	920	0	4,120
North Wall	1/24/2018	ND		0	0	0	0	0.00	0	0	0	0
East Wall	1/25/2018	ND		0	5	3	43	51.00	480	260	0	740
Biopile Comp 1	2/27/2018	-	-	0	0	0	0.49	0.49	85	160	0	245
Biopile Comp 2	2/27/2018	-	-	0	0	0	1.9	1.90	140	190	0	330
North Pile	3/8/2018	-	-	0	0	0	0	0.00	15	120	0	135
South Pile	3/8/2018	-	-	0	0	0.06	0	0.06	13	130	0	143
South Wall	3/8/2018	-	-	0	0.089	0	0.16	0.25	7	71	0	78
East Wall	3/8/2018	-	-	0	0.079	0	0.11	0.19	0	0	0	0
Base	3/8/2018	-	-	0	22	7.8	110	139.80	1400	660	0	2,060
South 6	4/26/2018	-	-	0	0	0	0	0.00	0	78	0	78
North 6	4/26/2018	-	-	0	0	0	0	0.00	0	54	0.00	54
S Vadose Zone	6/27/2018	-	-	0.00105	0	0	0	0.00	0	32	11.40	43
N Vadose Zone	6/27/2018	-	-	0.00155	0	0	0	0.00	0	22	7.72	30
NMOC Standards				10				50				1,000

San Juan 27-5 110N

1/24/2018 Sampling Event – Base at 5.5'



Biopile Sampling 2/27/18 and 3/8/18

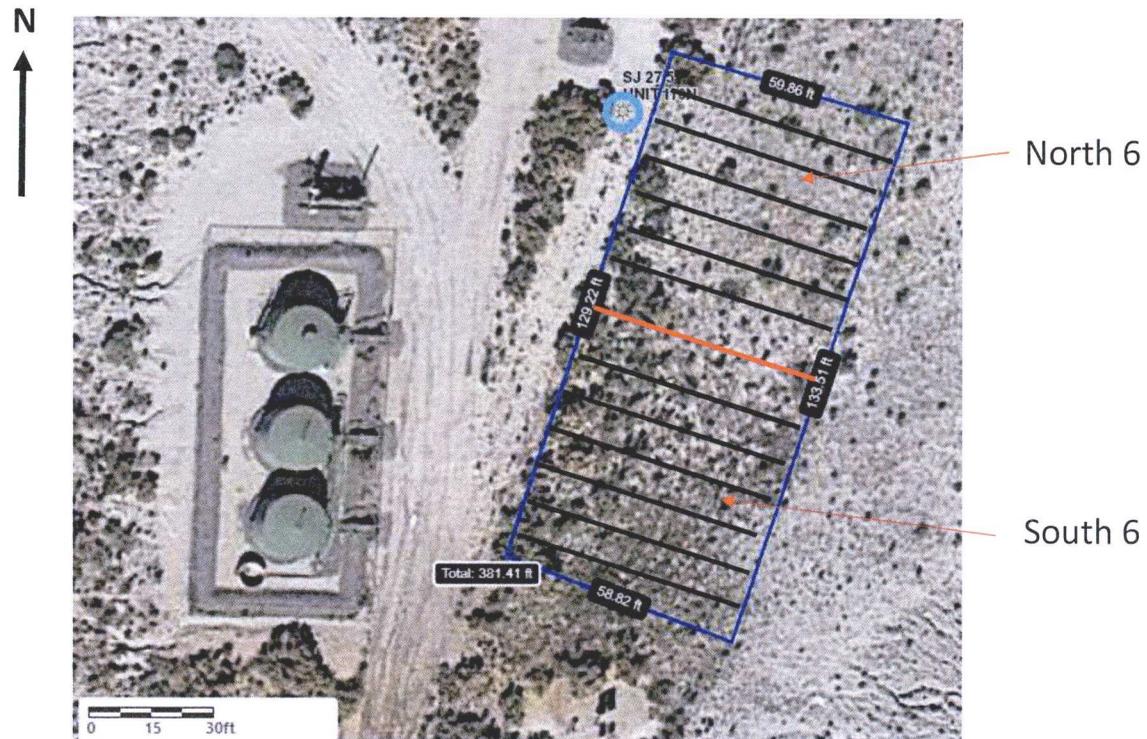


San Juan 27-5 110N

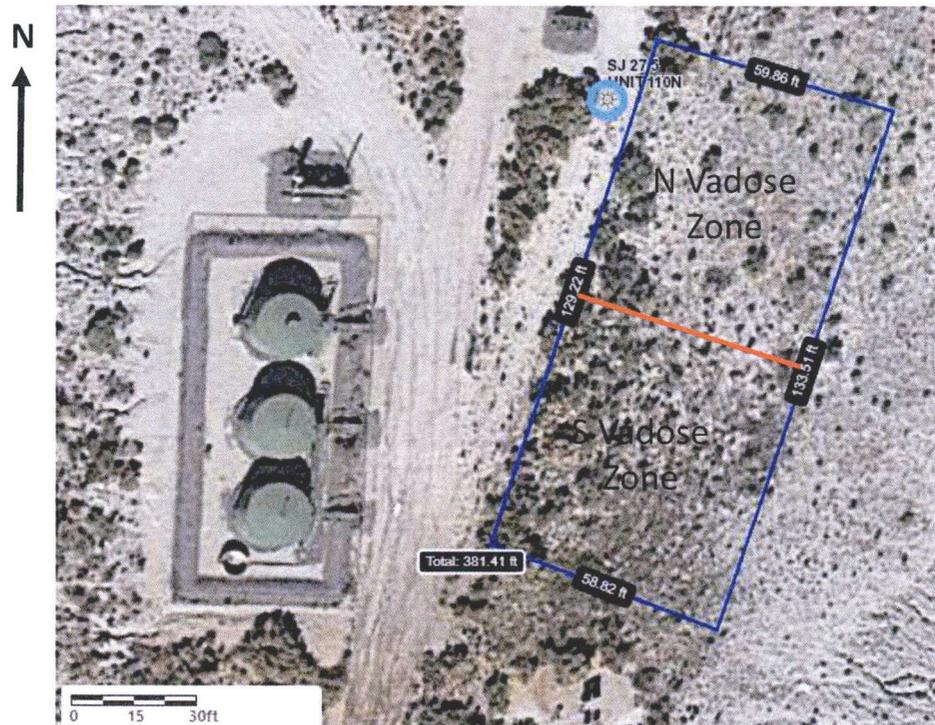
3/8/2018 Sampling Event – Base at 5.5-6'



Biopile Sampling 4/26/18



Vadose Zone Sampling 6/27/18



Biopile Pictures



1/24/18 Sampling Notification and Lab Results

Lindsay Dumas

From: Lindsay Dumas
Sent: Tuesday, January 23, 2018 11:48 AM
To: 'Smith, Cory, EMNRD'; 'Foley, Brandon M.'; 'Fields, Vanessa, EMNRD'
Cc: 'Baca, Kenneth'
Subject: RE: Subsequent C-141: SJ 27-5 110N

All sampling is being pushed to tomorrow afternoon. There was a delay in getting equipment to location due to road conditions. Thanks.

From: Lindsay Dumas
Sent: Monday, January 22, 2018 7:35 AM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>; Foley, Brandon M. <bfoley@slo.state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Baca, Kenneth <kbaca@slo.state.nm.us>
Subject: RE: Subsequent C-141: SJ 27-5 110N

I'm still working on finalizing the work plan, and it will be submitted soon. The excavation will begin tomorrow and we are planning to sample the base and walls tomorrow afternoon. Thanks!

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Smith, Cory, EMNRD [<mailto:Cory.Smith@state.nm.us>]
Sent: Thursday, January 18, 2018 9:04 AM
To: Foley, Brandon M. <bfoley@slo.state.nm.us>; Lindsay Dumas <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Baca, Kenneth <kbaca@slo.state.nm.us>
Subject: RE: Subsequent C-141: SJ 27-5 110N

Lindsey,

Please submit a complete Work plan in hard copy for approval.

Please make sure you include all the information we talked about on the phone in the work plan. (The attached C-141 does not have everything)

Cory Smith
Environmental Specialist
Oil Conservation Division



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,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: Base

Project: San Juan 27 5 110N

Collection Date: 1/24/2018 11:00:00 AM

Lab ID: 1801C57-001

Matrix: SOIL

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 Quantitative 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

Client Sample ID: West Wall

Project: San Juan 27 5 110N

Collection Date: 1/24/2018 11:00:00 AM

Lab ID: 1801C57-002

Matrix: SOIL

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 Quantitative 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 Client Sample ID: South Wall
 Project: San Juan 27 5 110N Collection Date: 1/24/2018 11:00:00 AM
 Lab ID: 1801C57-003 Matrix: SOIL 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 Quantitative 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

Analytical ReportLab Order **1801C57**Date Reported: **2/7/2018****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Hilcorp Energy**Client Sample ID:** North Wall**Project:** San Juan 27 5 110N**Collection Date:** 1/24/2018 11:00:00 AM**Lab ID:** 1801C57-004**Matrix:** SOIL**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 Quantitative 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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- 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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- 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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



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

[Signature]

Completed By: Dennis Suazo

1/26/2018 8:59:45 AM

[Signature]

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
12. Are matrices correctly identified on Chain of Custody? Yes No
13. Is it clear what analyses were requested? Yes No
14. Were all holding times able to be met?
 (If no, notify customer for authorization.) Yes No

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

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

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) _____

Standard Rush

Project Name:

San Juan 27-S #110N

Project #:

Project Manager:

Lindsay Dumas

Sampler: Travis Munkres

On Ice: Yes No

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



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.	BTEX + MTBE + TMBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	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				<u>1801C57</u>													
<u>1/24/18</u>	<u>11:00</u>	<u>Soil</u>	<u>Base</u>	<u>jar 4oz</u>		<u>001</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
<u>1/24/18</u>	<u>11:00</u>	<u>Soil</u>	<u>West Wall</u>	<u>jar 4oz</u>		<u>002</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
<u>1/24/18</u>	<u>11:00</u>	<u>Soil</u>	<u>South Wall</u>	<u>jar 4oz</u>		<u>003</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
<u>1/24/18</u>	<u>11:00</u>	<u>Soil</u>	<u>North Wall</u>	<u>jar 4oz</u>		<u>004</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
<u>1/24/18</u>	<u>11:00</u>	<u>Soil</u>	<u>East Wall</u>	<u>jar 4oz</u>		<u>005</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
<u>1/25/18</u>	<u>1558</u>	<u>Lindsay Dumas</u>	<u>Christal Wells</u>	<u>1/25/18</u>	<u>1558</u>	<u>Standard turnaround</u>
Date:	Time:	Relinquished by:	Received by:	Date	Time	
<u>1/25/18</u>	<u>1847</u>	<u>Christal Wells</u>	<u>Travis Munkres</u>	<u>1/26/18</u>	<u>0800</u>	

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.

3/8/18 Sampling Notification and Lab Results

Lindsay Dumas

From: Lindsay Dumas
Sent: Tuesday, March 6, 2018 7:42 AM
To: 'Smith, Cory, EMNRD'; 'Fields, Vanessa, EMNRD'; 'Brandon Foley'
Subject: RE: San Juan 27-5 Unit 110N

The excavation on the base and south wall of the 110N is scheduled for Thursday 3/8/18, with sampling to occur at noon. Please let me know if you have any questions.

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Lindsay Dumas
Sent: Monday, March 5, 2018 9:31 AM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Brandon Foley <bfoley@slo.state.nm.us>
Subject: RE: San Juan 27-5 Unit 110N

The plan is to keep them separate. I grabbed a sample of the biopiles last week (labs attached) and they are looking pretty good. I plan to have it sampled either at the same time we re-sample the excavation or the following week for formal closure. Once we know the soil is remediated, pile it up and have new windrows of the freshly excavated soil.

From: Smith, Cory, EMNRD [<mailto:Cory.Smith@state.nm.us>]
Sent: Monday, March 5, 2018 9:26 AM
To: Lindsay Dumas <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Brandon Foley <bfoley@slo.state.nm.us>
Subject: RE: San Juan 27-5 Unit 110N

Lindsay,

I would recommend to keep the new excavated soils separate from the soils that have been biopiled the last 5 weeks.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources



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,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: North Pile

Project: SJ 27-5 110N

Collection Date: 3/8/2018 1:00:00 PM

Lab ID: 1803595-001

Matrix: SOIL

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 Quantitative 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

Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: South Pile

Project: SJ 27-5 110N

Collection Date: 3/8/2018 1:00:00 PM

Lab ID: 1803595-002

Matrix: SOIL

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.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting 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

Client Sample ID: South

Project: SJ 27-5 110N

Collection Date: 3/8/2018 12:30:00 PM

Lab ID: 1803595-003

Matrix: SOIL

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 Quantitative 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

Client Sample ID: East

Project: SJ 27-5 110N

Collection Date: 3/8/2018 12:30:00 PM

Lab ID: 1803595-004

Matrix: SOIL

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.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting 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

Client Sample ID: Base

Project: SJ 27-5 110N

Collection Date: 3/8/2018 12:30:00 PM

Lab ID: 1803595-005

Matrix: SOIL

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



Hall Environmental Analysis Laboratory
 4901 Hawks 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 *IO*

Completed By: **Isaiah Ortiz** 3/12/2018 9:26:26 AM *IO*

Reviewed By: *Sze 03/12/18*

labeled by: AJ

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? Yes No
 (Note discrepancies on chain of custody)
 12. Are matrices correctly identified on Chain of Custody? Yes No
 13. Is it clear what analyses were requested? Yes No
 14. Were all holding times able to be met? Yes No
 (if no, notify customer for authorization.)

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

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 27-5 110 N

Project #:

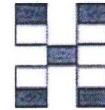
Project Manager:

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.	BTEX + MTBE + TMB's (802.1)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	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						1803595																			
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	<u>Lindsay Dumas</u>	<u>Christa Walt</u>	3/9/18	1320
Date:	Time:	Relinquished by:	Received by:	Date	Time
3/9/18	1804	<u>Christa Walt</u>	<u>J.O.</u>	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.

4/26/18 Sampling Notification and Lab Results

Lindsay Dumas

From: Lindsay Dumas
Sent: Wednesday, April 25, 2018 11:15 AM
To: 'Smith, Cory, EMNRD'
Cc: Fields, Vanessa, EMNRD
Subject: RE: SJ 27-6 110N - 1803595

Travis Munkres will be on location at 10AM 4-26-18 to sample. Please confirm that this time works for you.

-----Original Message-----

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Monday, April 23, 2018 3:28 PM
To: Lindsay Dumas <ldumas@hilcorp.com>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Subject: RE: SJ 27-6 110N - 1803595

Lindsay,

Thursday or Friday before 1:30PM preferably.

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

-----Original Message-----

From: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Monday, April 23, 2018 1:56 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Subject: RE: SJ 27-6 110N - 1803595

Cory - What day this week works for your schedule for us to sample the biopile?

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

-----Original Message-----



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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 1804D57

Date Reported: 5/1/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: South 6

Project: SJ 27-5 110N Landfarm 2

Collection Date: 4/26/2018 10:00:00 AM

Lab ID: 1804D57-001

Matrix: SOIL

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 Quantitative 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

Client Sample ID: North 6

Project: SJ 27-5 110N Landfarm 2

Collection Date: 4/26/2018 10:00:00 AM

Lab ID: 1804D57-002

Matrix: SOIL

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 Quantitative 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 Quantitative 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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- 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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- 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 Quantitative 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 |



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? Yes No
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes No
13. Is it clear what analyses were requested? Yes No
14. Were all holding times able to be met? Yes No
 (If no, notify customer for authorization.)

of preserved bottles checked for pH: 12
 (20.0 ± 0.2 unless noted)
 Adjusted: _____
 Checked by: MW 4/27/18

Special Handling (if applicable)

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

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

Cooler Information

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

5/7/18 Potassium Permanganate Spraying

Lindsay Dumas

From: Lindsay Dumas
Sent: Wednesday, May 2, 2018 4:08 PM
To: 'Smith, Cory, EMNRD'; Fields, Vanessa, EMNRD
Subject: RE: SJ 27-5 110N Landfarm Results

Currently, the excavation is scheduled to be sprayed with potassium permanganate on May 7th and backfilled on May 8th. Please let me know if you have any concerns.

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Wednesday, May 2, 2018 8:01 AM
To: Lindsay Dumas <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Subject: RE: SJ 27-5 110N Landfarm Results

Lindsay,

Do you have the samples from the last round of excavation sampling?

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: Tuesday, May 1, 2018 12:08 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Subject: SJ 27-5 110N Landfarm Results

Please see the attached landfarm results. Based on these I'd like to propose spraying the existing excavation with potassium permanganate and backfilling with the remediated soil. Should I send an updated C-141 with this info?

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

Hilcorp Energy Company's address is 1111 Travis St, Houston, TX 77002

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 Permanganate
 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

6/27/18 Vadose Zone Sampling and Lab Results

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 Richards
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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		⁹ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



S VADOS L1005502-01 Solid

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

1
Cp

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

2
Tc

N VADOS L1005502-02 Solid

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

4
Cn

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

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



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 Richards
 Technical Service Representative

¹ Cp

² Tc

³ Ss

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Collected date/time: 06/27/18 13:50

L1005502

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	1 Cp
Toluene	ND		0.00500	1	07/02/2018 15:54	WG1132779	2 Tc
Ethylbenzene	ND		0.000500	1	07/02/2018 15:54	WG1132779	3 Ss
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	4 Cn
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	99.5		77.0-120		07/02/2018 15:54	WG1132779	
(S) <i>a,a,a</i> -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	6 Qc
C28-C40 Oil Range	11.4		4.00	1	07/06/2018 16:57	WG1133536	7 GI
(S) <i>o</i> -Terphenyl	75.1		18.0-148		07/06/2018 16:57	WG1133536	8 AI
							9 Sc



Collected date/time: 06/28/18 13:55

L1005502

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	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

1 Cp

2 Tc

3 Ss

4 Cn

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	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

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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				

7 GI

8 AI

9 Sc

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	



Volatile Organic Compounds (GC) by Method 8015/8021

L1005502-01,02

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	<u>E J6</u>	<u>E J6</u>	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				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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				

7 GI

8 AI

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
<i>(S) o-Terphenyl</i>	88.6			18.0-148

¹ Cp

² Tc

³ Ss

⁴ Cn

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
<i>(S) o-Terphenyl</i>				94.0	102	18.0-148				

⁵ Sr

⁷ Gl

⁸ Al

⁹ Sc



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.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁸ Al

⁹ Sc

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	LA000356
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.



