

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

NMOCD

MAY 14 2018

Form C-141
Revised April 3, 2017

Submit a Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company Hilcorp Energy Company	Contact Jennifer Deal	
Address 9a CR 5793	Telephone No. (505) 324-5128	
Facility Name Scott 2A	Facility Type Gas Well	
Surface Owner Federal	Mineral Owner Private	API No. 30-045-21994

LOCATION OF RELEASE

Unit Letter I	Section 31	Township 32N	Range 10W	Feet from the 1650	North/South Line South	Feet from the 980	East/West Line East	County San Juan County
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Latitude 36.9390869 Longitude -107.9182434 NAD83

NATURE OF RELEASE

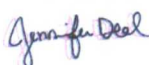
Type of Release Produced Water/Hydrocarbon	Volume of Release 5bbls	Volume Recovered none
Source of Release Hole in bottom of Condensate tank	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 3/6/2018 at 9:00am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		

Describe Cause of Problem and Remedial Action Taken.*
Operator discovered spill due to corrosion. One call was placed and contents of tank were pulled and tank moved

Describe Area Affected and Cleanup Action Taken.*
Excavation was approximately 38'x38'x8' deep. Approximately 650 c/yds of soil was transported to IEI Land Farm and approximately 650 c/yds of clean soil was transported from Mesa and placed in the excavation site. Analytical results were below the regulatory standards on the North, West, and East Walls and the base. The south wall came back at 116tph and the southeast wall came back at 356tph. Due to the soil being very hard consolidated sandstone and the TPH sample results DRO and MRO considered to be immobile, the NMOCD granted Hilcorp Energy a variance on the south wall and approved an alternative remediation method on the southeast wall. On 4/30/2018 Envirotech sprayed 15 gallons of Potassium permanganate on the southeast wall. No further action is required.

Hilcorp Energy Company will delineate the affected area using a truck mounted rotary rig to assess the soil. Waiting to hear back on contractor's schedule to schedule the delineation. Delineation occurred on 3/22/2018 by Timberwolf Environmental.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Jennifer Deal	Approved by Environmental Specialist: 	
Title: Environmental Specialist	Approval Date: 5/14/18	Expiration Date:
E-mail Address: jdeal@hilcorp.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 5/11/2018	Phone: (505) 324-5128	

* Attach Additional Sheets If Necessary

#NWVF1807954320

78

Jennifer Deal

From: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Sent: Monday, April 30, 2018 7:23 AM
To: Kurt Hoekstra; Smith, Cory, EMNRD
Cc: Jennifer Deal; Chad Perkins
Subject: RE: Request for alternative remediation method

Good morning Kurt,

The OCD grants approval of HilCorp's variance request on the south east wall to spray potassium permanganate.

Please include this email in your final C-141.

Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463
vanessa.fields@state.nm.us

From: Kurt Hoekstra <khoekstra@hilcorp.com>
Sent: Friday, April 27, 2018 3:17 PM
To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Jennifer Deal <jdeal@hilcorp.com>; Chad Perkins <cperkins@hilcorp.com>
Subject: Request for alternative remediation method

Hi Vanessa, The south east wall at the Scott # 2A came back above the 100 ppm TPH standard for this site at 96 ppm DRO and 260 ppm MRO the rest of the excavation has lab results below standards. Hilcorp Energy **proposes to spray the south east wall with potassium permanganate. Due to the consolidated very hard sandstone, and all DRO and MRO constituents, that are considered immobile Hilcorp Energy believes this method of remediation would be effective and there would be no threat to human health and the environment. Can we use this method and then close this excavation?**

Thank You.

Kurt Hoekstra
Field Environmental Specialist
505-486-9543
khoekstra@hilcorp.com

Jennifer Deal

From: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Sent: Wednesday, April 25, 2018 11:22 AM
To: Kurt Hoekstra; Smith, Cory, EMNRD
Cc: Jennifer Deal
Subject: RE: Variance Scott # 2A

Good morning Kurt,

Per our conversation this morning the OCD grants a variance request on the south wall.

Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463
vanessa.fields@state.nm.us

From: Kurt Hoekstra <khoekstra@hilcorp.com>
Sent: Wednesday, April 25, 2018 8:19 AM
To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Jennifer Deal <jdeal@hilcorp.com>
Subject: Variance Scott # 2A

Hi Vanessa, per our conversation this morning Hilcorp would like to request a variance for the 100 ppm THP closure for the south wall of the excavation at the Scott # 2A wellsite. The preliminary lab results are TPH DRO, 46 ppm, MRO 70 ppm, all other constituents were non detect. Hilcorp is requesting this variance based on the soil being a very hard consolidated sandstone and the TPH sample results DRO and MRO considered to be immobile and only 16 ppm above the 100 ppm for this site. Thank you for your consideration of this matter.

Thanks.

Kurt Hoekstra
Field Environmental Specialist
505-486-9543
khoekstra@hilcorp.com

Jennifer Deal

From: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Sent: Monday, April 30, 2018 7:29 AM
To: Kurt Hoekstra; Smith, Cory, EMNRD
Cc: Jennifer Deal; Chad Perkins
Subject: RE: Request for alternative remediation method

Kurt,

HilCorp may backfill the areas of the excavation that are below the regulatory standards. The OCD does not need to be present during the potassium application. Please provide a picture of the application in your final C-141.

Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463
vanessa.fields@state.nm.us

From: Kurt Hoekstra <khoekstra@hilcorp.com>
Sent: Monday, April 30, 2018 7:26 AM
To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Jennifer Deal <jdeal@hilcorp.com>; Chad Perkins <cperkins@hilcorp.com>
Subject: RE: Request for alternative remediation method

Thank you Vanessa, do you want to be present when it is applied? After the potassium permanganate is applied, and we already have sample results below standards for the rest of the excavation, may we begin backfilling?

Thank you.

From: Fields, Vanessa, EMNRD [<mailto:Vanessa.Fields@state.nm.us>]
Sent: Monday, April 30, 2018 7:23 AM
To: Kurt Hoekstra <khoekstra@hilcorp.com>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Jennifer Deal <jdeal@hilcorp.com>; Chad Perkins <cperkins@hilcorp.com>
Subject: RE: Request for alternative remediation method

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Thank you,

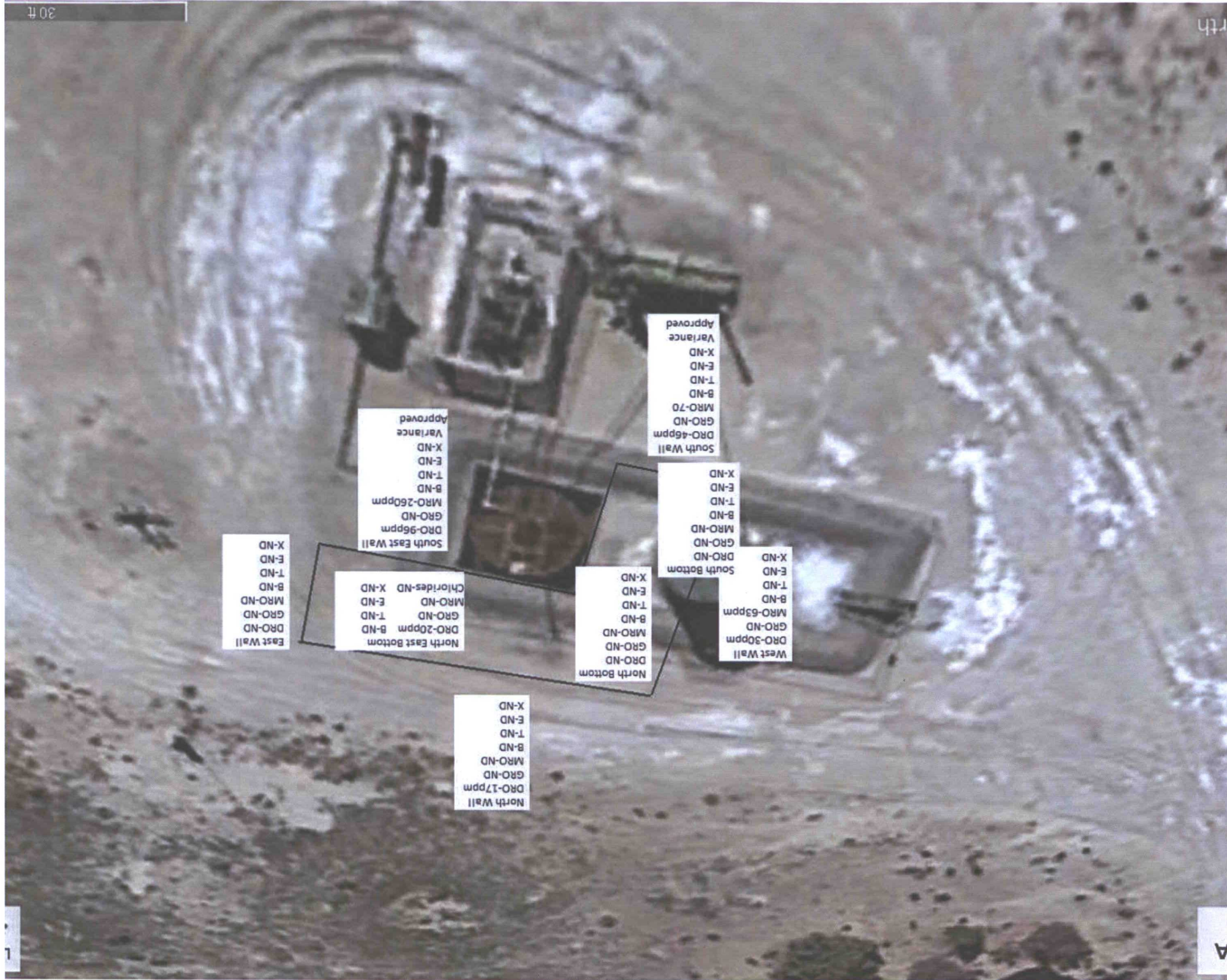
Vanessa Fields
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From: Kurt Hoekstra <khoekstra@hilcorp.com>
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Subject: Request for alternative remediation method

Hi Vanessa, The south east wall at the Scott # 2A came back above the 100 ppm TPH standard for this site at 96 ppm DRO and 260 ppm MRO the rest of the excavation has lab results below standards. Hilcorp Energy **proposes to spray the south east wall with potassium permanganate. Due to the consolidated very hard sandstone, and all DRO and MRO constituents, that are considered immobile Hilcorp Energy believes this method of remediation would be effective and there would be no threat to human health and the environment. Can we use this method and then close this excavation?**

Thank You.

Kurt Hoekstra
Field Environmental Specialist
505-486-9543
khoekstra@hilcorp.com



Approved Variance
X-ND
E-ND
T-ND
B-ND
MRO-70
GRO-ND
DRO-46ppm
South Wall

X-ND
E-ND
T-ND
B-ND
MRO-ND
GRO-ND
DRO-ND
South Bottom

X-ND
E-ND
T-ND
B-ND
MRO-63ppm
GRO-ND
DRO-30ppm
West Wall

X-ND
E-ND
T-ND
B-ND
MRO-ND
GRO-ND
DRO-ND
North Bottom

DRO-20ppm B-ND
GRO-ND T-ND
MRO-ND E-ND
Chlorides-ND X-ND
North East Bottom

Approved Variance
X-ND
E-ND
T-ND
B-ND
MRO-260ppm
GRO-ND
DRO-96ppm
South East Wall

X-ND
E-ND
T-ND
B-ND
MRO-ND
GRO-ND
DRO-ND
East Wall

X-ND
E-ND
T-ND
B-ND
MRO-ND
GRO-ND
DRO-17ppm
North Wall



1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

April 5, 2018

Ms. Jennifer Deal
Hilcorp Energy Company
9A Road 5793
Farmington, New Mexico 87401

Re: Site Assessment and Remedial Action Plan
Scott 2A Release
San Juan County, New Mexico
Timberwolf Project Number: HEC-180017

Dear Ms. Deal:

At the request of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this report to document the collection and analysis of soil samples following a liquid condensate release from the Scott 2A (Site). The Site is located approximately 1.8 miles west of Cedar Hill, San Juan County, New Mexico (Figures 1 – 3).

A tank failure due to corrosion, resulted in an estimated 5 barrels (bbls) release of oil. The contents of the tank were emptied, and the tank was removed from service. Released fluids were contained by the facility's berm. Majority of released fluids evaporated or were absorbed by underlying soil.

Initial remedial efforts included removing the tank and excavating the impacted soil with a backhoe. Sandstone was encountered within the upper foot and the excavation was terminated at approximately 2.5 feet (ft) below ground surface (bgs).

The Scott 2A consist of a well head, meters and separation equipment, an oil storage tank, and a below grade open top water tank (i.e., pit tank).

Environmental Setting

The Site is situated at the base of a northern-sloping ridge. Watershed at the Site forms headwaters of intermittent tributaries, which drain into the Animas River approximately 1.1 miles south-southeast of the Site.

Vegetation at the Site is sparse and consists primarily of native grasses and cedar trees. Area topography is comprised of steep hills.

According to the U.S. Department of Agriculture – Natural Resources Conservation Service, the soil units at the Site consists of the Badlands complex, with steep to very steep terrain. Typical surface horizons for this soil series consists of highly erodible clayey shales and sandy siltstones with interbedded layers of sandstone. Additionally, the surface consists of intermittent drainage washes containing fine sandy loam. Subsurface soil textures underlying the surface horizon of each soil series are comprised of sandstones and bedrock.

Regulatory Criteria

The New Mexico Oil Conservation Division (NMOCD) established remediation action levels for soils impacted by oilfield products or wastes, which are documented in the *Guidelines for Remediation of Leaks and Releases*. The closure criteria utilize a ranking system that scores the potential to contaminate based upon a site's distance to water resources. The ranking system is summarized in Table 1 below.

Table 1. NMOCD Ranking System

Category	Distance to Resource (Feet)	Score
Depth to groundwater	< 50	20
	50 to 99	10
	> 100	0
Water wellhead protection	< 200	20
	> 200	0
Surface water protection	< 200	20
	200 to 1,000	10
	> 1,000	0

NMOCD – New Mexico Oil Conservation Division

Sites receive a score from each category. The three (3) scores are summed to reach a total ranking score that correspond to site-specific remedial action levels.

Based on prior drilling activities in this portion of the San Juan Basin, the upper groundwater-bearing unit is expected to be greater than 100 ft bgs, which results in a score of zero (0). No perennial surface water bodies were identified within 1,000 ft of the Site. However, an intermittent stream is situated 170 ft north of the Site, which results in a score of ten (10). No water wellheads are located within 200 ft of the Site, which results in a score of zero (0).

Therefore, the total ranking score at the Site is zero (10). Based on the NMOCD criteria, the site-specific remedial action levels are presented in Table 2.

Table 2. NMOCD Remediation Action Levels by Total Ranking Score

Constituent	Total Ranking Score		
	> 19	10-19	0-9
	Corresponding Remediation Action Level (mg/kg)		
Benzene	10	10	10
Total BTEX	50	50	50
TPH	100	1,000	5,000
Chlorides	250	500	1,000

BTEX – benzene, toluene, ethylbenzene and xylenes

TPH – total petroleum hydrocarbons

mg/kg – milligrams per kilogram

Bold – scores utilized for the Site

NMOCD – New Mexico Oil and Conservation Division

Collection and Analysis of Soil Samples

On 03/22/18, Timberwolf contracted with Geomat Inc. of Farmington, New Mexico for drilling services. When Timberwolf arrived at the Site, the oil storage tank had been removed and an excavation approximately 10 ft X 14 ft was located northeast of the former tank location. The excavation extended from the base of the tank to the western edge of the pit tank. The depth of the excavation at the deepest point was 2.5 ft bgs. Excavated soil was stockpiled on Site, awaiting disposal.

Timberwolf collected samples from seven (7) borings (i.e., SB1 – SB7) using a rotary drilling rig. Borings were drilled using augers; discrete samples were collected every 2.5 ft using a split spoon and geotechnical hammer. The total depths of each boring ranged from 7 to 11 ft bgs; auger refusal was encountered at 11 ft in SB4. Note: To facilitate drilling SB4 and SB5, the excavation was backfilled.

Soil borings were logged and screened for volatile organic compounds (VOCs) with a photoionization detector (PID). Soil boring logs describing soil morphology are attached; PID readings are recorded on soil boring logs. Soils encountered at the Site consisted primarily of sandstone.

Timberwolf additionally investigated sediment within the pit tank. Elevated PID readings were observed along the western edge of the pit tank (i.e., between the western pit wall and the water tank). Soil (i.e., sediment) exhibiting elevated PID readings was removed from the pit tank and stockpiled for disposal.

Two samples were collected using hand sampling tools (HA1 and HA2) from the pit tank. A total of thirteen (13) samples were submitted for laboratory analysis. Sample locations are shown in Figure 4. The location and purpose of each boring are presented in Table 3 below.

**Table 3. Location and Purpose of Soil Borings
Scott 2A Release**

Soil Boring	Location – Purpose
SB4	Collected near the point of release to determine the vertical extent of impacted soil
SB1 and SB5	Collected adjacent to the point of the release to evaluate the degree and vertical extent of impacted soil. Note: SB5 was situated within the previously excavated area
SB2, SB3, SB6, and SB7	Collected from the perimeter of the release area, for horizontal delineation
HA1 and HA2	Collected within the pit tank at the edge of removed sediment to ensure all impacted sediment was removed

Soil samples were selected for laboratory analysis based on PID readings and morphological characteristics. Selected samples were placed in laboratory-provided sample containers, stored on ice, and transported by courier under proper chain-of-custody protocol to Hall Environmental Analysis Laboratories in Albuquerque, New Mexico.

The laboratory report and chain-of-custody documents are attached; laboratory methods are documented in the laboratory report. Results are summarized in Table 4.

**Table 4. Analytical Results of Soil Samples
Scott 2A Release**

Sample ID	Sample Date	Volatile Organic Compounds (mg/Kg)					GRO (mg/Kg)	DRO (mg/Kg)	MRO (mg/Kg)	TPH (mg/Kg)
		B	T	E	X	Total BTEX				
SB1 2.5'	03/22/18	< 0.24	1.6	3.8	52	57.4	1,000	890	160	2,050
SB1 5'	03/22/18	< 0.12	0.54	2.1	29	31.64	580	620	140	1,340
SB1 7.5'	03/22/18	< 0.023	< 0.047	< 0.047	< 0.093	< 0.093	< 4.7	< 10	< 51	< 51
SB2 5'	03/22/18	--	--	--	--	--	< 4.9	< 8.8	< 44	< 44
SB3 5'	03/22/18	--	--	--	--	--	< 5.0	< 9.9	< 49	< 49
SB4 5'	03/22/18	--	--	--	--	--	< 4.8	< 9.4	< 47	< 47
SB4 7.5'	03/22/18	--	--	--	--	--	< 4.8	< 9.7	< 48	< 48
SB4 11'	03/22/18	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.6	< 48	< 48
SB5 5'	03/22/18	< 0.024	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.1	< 45	< 45
SB6 5'	03/22/18	< 0.025	< 0.049	< 0.049	< 0.099	< 0.099	< 4.9	< 9.4	< 47	< 47
SB7 5'	03/22/18	< 0.025	< 0.050	< 0.050	< 0.10	< 0.050	< 5.0	< 9.7	< 48	< 48
HA1	03/22/18	< 0.023	< 0.047	< 0.047	< 0.093	< 0.093	< 4.7	< 7.5	< 37	< 37
HA2	03/22/18	< 0.024	< 0.048	0.071	0.92	0.92	18	< 7.7	< 39	< 57
Regulatory Criteria		10				50	--			1,000

mg/kg – milligrams per kilogram

BTEX – benzene, toluene, ethylbenzene, and xylenes

GRO – gasoline range organics

DRO – diesel range organics

MRO – motor oil range organics

TPH – total petroleum hydrocarbon (TPH = GRO+DRO+MRO)

-- no applicable regulatory criteria

Findings and Conclusions

Based on the analytical results of soil samples and NMOCD remedial action levels, the following is concluded:

- Petroleum hydrocarbons exceeded regulatory criteria in one boring (i.e. SB1)
 - Total BTEX exceeded the remedial action level in one (1) sample (i.e., SB1 2.5')
 - TPH exceeded the remedial action level in two (2) samples (i.e., SB1 2.5' and SB1 5')
 - Vertical delineation was achieved; SB1 7.5' was below NMOCD remedial action level for all constituents
- Horizontal delineation was achieved; SB2 5', SB3 5', SB4 5', SB6 5', SB7 5' HA1, and HA2 were below NMOCD remediation action level
- Based on the delineation effort, the volume of impacted soil is estimated at 60 cubic yards (yd³) Note: Assumes the base of contamination is 6 ft bgs and an average excavation depth of 5 ft bgs

Remedial Options and Cost Estimates

To bring Site soils into regulatory compliance, the following remedial options and associated cost estimates are presented for consideration (i.e. on-site biopile (treatment cell) and dig and haul). Note: Cost presented does not include travel or per diem.

The COCs at this Site are total BTEX, and TPH; most of the TPH was observed in the gasoline range (i.e., C₆-C₁₂) or diesel range (i.e., C₁₂-C₂₈). These COCs are readily degradable with bioremediation and volatilization. To expedite hydrocarbon degradation, Timberwolf recommends incorporating calcium nitrate fertilizer and turning soil every 7 to 10 days. The Site has a level grade, gravel packed surface, and sufficient acreage to treat the impacted soil.

Alternatively, impacted soil may be remedied by excavating and trucking to a commercial disposal facility. Itemized costs for each remedial option are presented in Table 5.

Table 5. Evaluation of Remedial Options

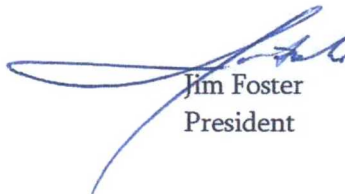
On-Site Treatment				
Item	Unit Cost	Unit	Quantity	Cost
Biopile – Estimated Timeframe = 6 – 8 weeks				
Excavation and Backfill	\$ 1,500.00	Day	2	\$ 3,000.00
Fertilizer	\$ 40.00	40 lb Bag	1	\$ 40.00
Oversight	\$ 1,200.00	Day	2	\$ 2,400.00
Biopile mixing	\$ 750.00	Per Event	4	\$ 3,000.00
Confirmation Sampling	\$ 1,500.00	Day	1	\$ 1,500.00
Closure Report	\$ 1,500.00	Per Report	1	\$ 1,500.00
Biopile Cost Estimate				\$ 11,440.00
Off-Site Disposal				
Item	Unit Cost	Unit	Quantity	Cost
Dig and Haul – Estimated Timeframe = 3 days				
Excavation, Loading, Backfilling	\$ 1,500.00	Day	2	\$ 3,000.00
Trucking	\$ 95.00	Hour	11	\$ 1,045.00
Oversight	\$ 1,200.00	Day	2	\$ 2,400.00
Disposal	\$ 20.00	Yard	60	\$ 1,200.00
Backfill Material	\$ 6.40	Ton	81	\$ 520.00
Closure Report	\$ 1,500.00	Per Report	1	\$ 1,500.00
Dig and Haul Cost Estimate				\$ 9,665.00

Timberwolf appreciates the opportunity to work for you and Hilcorp. If you have any questions regarding this report, please contact us at (979) 324-2139.

Sincerely,
Timberwolf Environmental, LLC



Morgan Vizi
Project Scientist



Jim Foster
President

Attachments: Figures
Soil Boring Logs
Laboratory Report and Chain-of-Custody Document

Figures

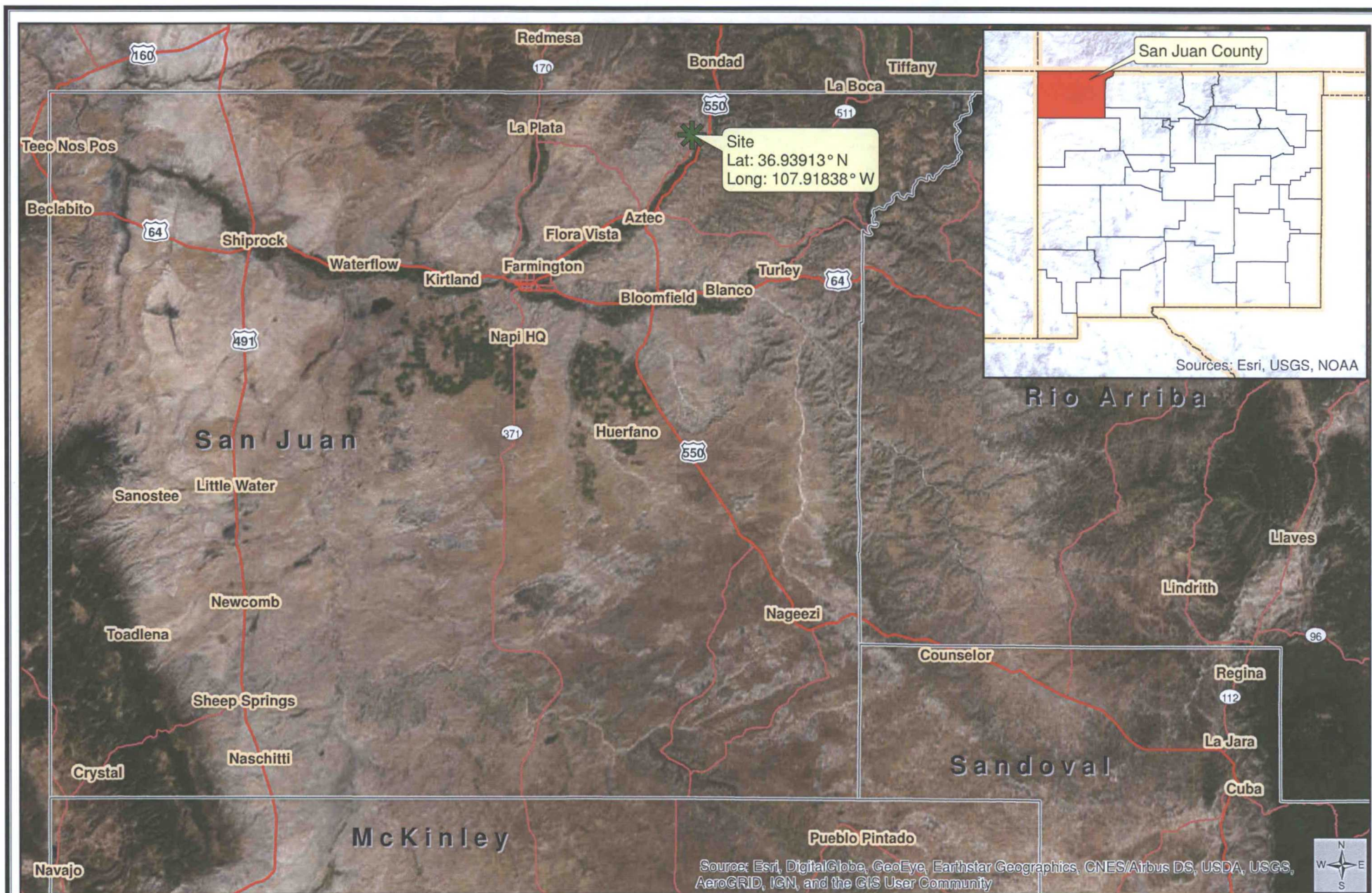


Figure 1
Site Location Map

Site Assessment and Remedial Action Plan

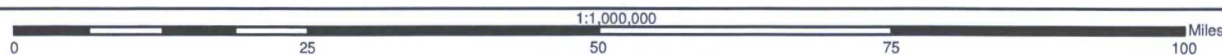
Sample Date:
March 22, 2018



Created By:
Russell Greer
April 5, 2018
TE Project No.: HEC-180017

Scott No. 2A Release
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE & ESRI



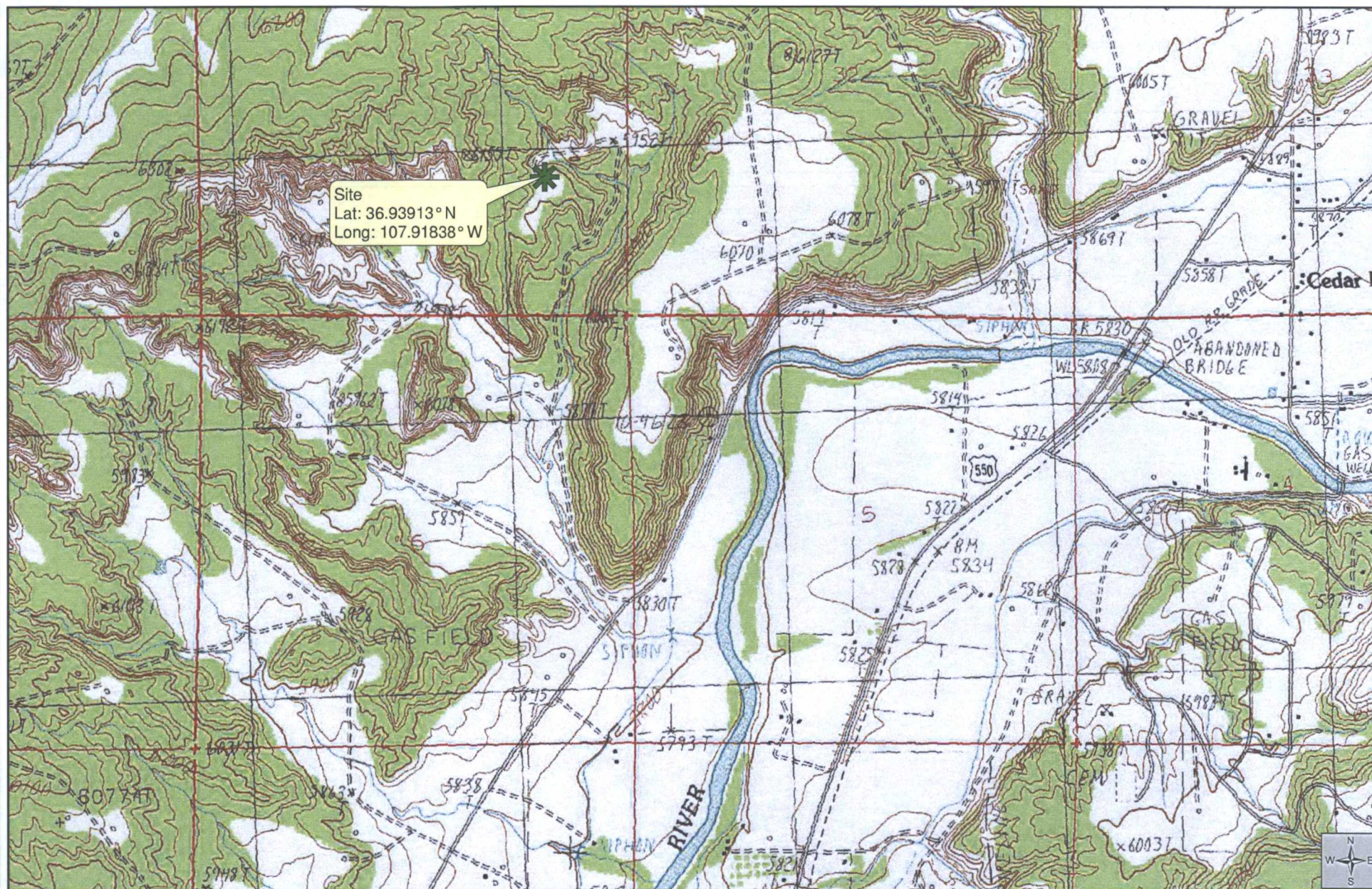


Figure 2
 Topographic Map

Site Assessment and Remedial Action Plan

Sample Date:
 March 22, 2018



Created By:
 Russell Greer
 April 5, 2018
 TE Project No.: HEC-180017

Scott No. 2A Release
 Hilcorp Energy Company
 San Juan County, New Mexico

Datum: NAD83
 Imagery Source: USGS
 Quad: Cedar Hill
 Vector Source: TE

Site

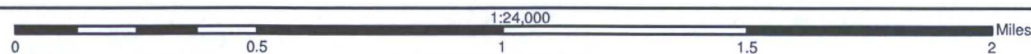




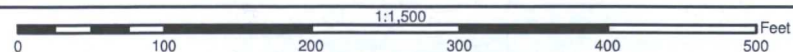
Figure 3
Aerial Map

Site Assessment and Remedial Action Plan

Sample Date:
March 22, 2018



Created By:
Russell Greer
April 5, 2018
TE Project No.: HEC-180017

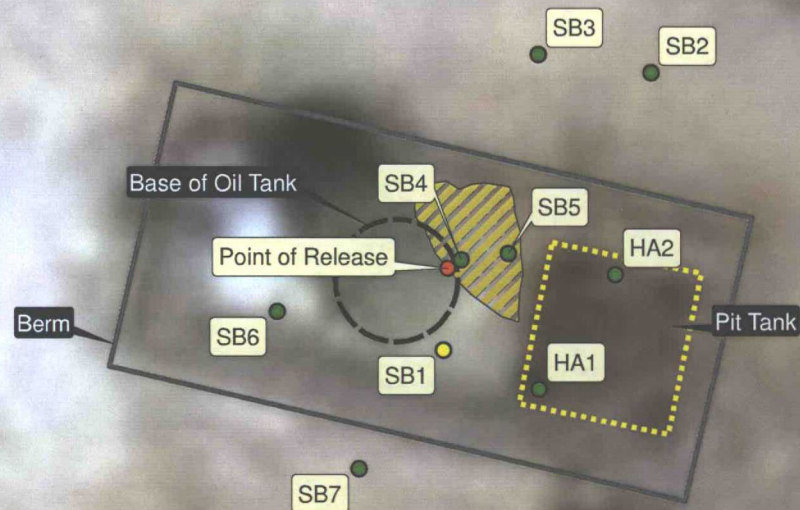


Scott No. 2A Release
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

 Site

Sample ID	Sample Date	Volatile Organic Compounds (mg/Kg)					GRO (mg/Kg)	DRO (mg/Kg)	MRO (mg/Kg)	TPH (mg/Kg)
		B	T	E	X	Total BTEX				
HA1	03/22/18	< 0.023	< 0.047	< 0.047	< 0.093	< 0.093	< 4.7	< 7.5	< 37	< 37
HA2	03/22/18	< 0.024	< 0.048	0.071	0.92	0.92	18	< 7.7	< 39	< 57
SB1 2.5'	03/22/18	< 0.24	1.6	3.8	52	57.4	1,000	890	160	2,050
SB1 5'	03/22/18	< 0.12	0.54	2.1	29	31.64	580	620	140	1,340
SB1 7.5'	03/22/18	< 0.023	< 0.047	< 0.047	< 0.093	< 0.093	< 4.7	< 10	< 51	< 51
SB2 5'	03/22/18	--	--	--	--	--	< 4.9	< 8.8	< 44	< 44
SB3 5'	03/22/18	--	--	--	--	--	< 5.0	< 9.9	< 49	< 49
SB4 5'	03/22/18	--	--	--	--	--	< 4.8	< 9.4	< 47	< 47
SB4 7.5'	03/22/18	--	--	--	--	--	< 4.8	< 9.7	< 48	< 48
SB4 11'	03/22/18	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.6	< 48	< 48
SB5 5'	03/22/18	< 0.024	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.1	< 45	< 45
SB6 5'	03/22/18	< 0.025	< 0.049	< 0.049	< 0.099	< 0.099	< 4.9	< 9.4	< 47	< 47
SB7 5'	03/22/18	< 0.025	< 0.050	< 0.050	< 0.10	< 0.050	< 5.0	< 9.7	< 48	< 48
Regulatory Criteria		10				50	--			1,000



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Figure 4
Sample Location Map

Site Assessment and Remedial Action Plan

Sample Date:
March 22, 2018



Created By:
Russell Greer
April 5, 2018
TE Project No.: HEC-180017

Scott No. 2A Release
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

- Soil Sample (clean)
- Soil Sample (elevated)
- Point of Release
- ▨ Excavation

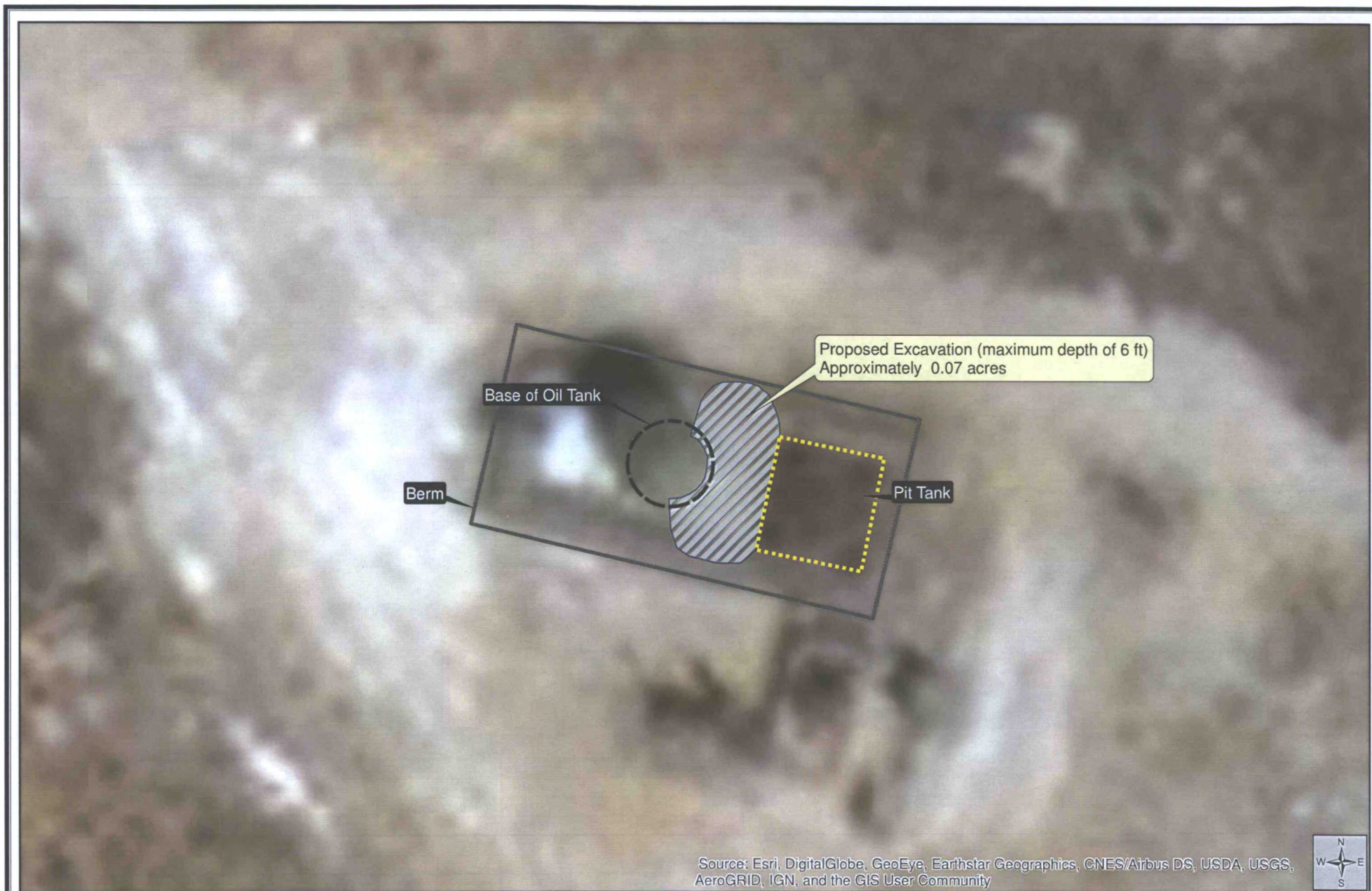


Figure 5
Proposed Excavation Map

Site Assessment and Remedial Action Plan

Sample Date:
March 22, 2018



Created By:
Russell Greer
April 5, 2018
TE Project No.: HEC-180017

Scott No. 2A Release
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

Proposed Excavation

Soil Boring Log

SOIL BORING LOG

Page 1 of 1

SB-1

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company

Completion Date: 03/22/18

Project Name: Scott 2A Release

Logged By: Jim Foster

Site Location: San Juan County, NM

Drilled By: Geomat of Farmington, NM

Project Number: HEC-180017

Drilling Method & Boring Diameter: Hollow Stem Auger

Boring Coordinates: 39.93909, -107.91841

Total Depth (ft): 11'

Ground Surface Elevation (ft, msl): 6013'

First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion		
				FILL			
		53.4		BROWN SANDSTONE			
5	BR	121.3					
				GREY SANDSTONE			
	BR	1					
10	BR	0.7		GREY TO BROWN SANDSTONE			
				TD = 11'			
15							
20							

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

SOIL BORING LOG

Page 1 of 1

SB-2

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93917, -107.91833	Total Depth (ft): 10'
Ground Surface Elevation (ft, msl): 6012'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion		
				FILL			
		0.8		BROWN SANDSTONE			
5	BR	1.3					
				BROWNISH GREY SANDSTONE			
	BR						
10	BR	1.8		GREY SANDSTONE			
				TD = 10'			
15							
20							

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

SOIL BORING LOG

Page 1 of 1

SB-3

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93918, -107.91833	Total Depth (ft): 7.5'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion		
				FILL			
		1.3		BROWN SANDSTONE			
5	BR	1.8					
	BR	2.5		BROWN SANDSTONE WITH SAND SEAMS			
10				TD = 7.5'			
15							
20							

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

SOIL BORING LOG

Page 1 of 1

SB-4

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93911, -107.91833	Total Depth (ft): 11'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
				FILL	
5		6.4		BROWN SANDSTONE	
	BR	9.1			
10				GREY SANDSTONE	
	BR	1.6			
15				TD = 11' due to refusal	
20					

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

SOIL BORING LOG

Page 1 of 1

SB-5

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93912, -107.91833	Total Depth (ft): 10'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
				FILL	
5	BR	6.4		BROWN SANDSTONE	
		9.1			
10	BR	1.6		GREY SANDSTONE	
				TD = 10'	
15					
20					

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

SOIL BORING LOG

Page 1 of 1

SB-6

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company

Completion Date: 03/22/18

Project Name: Scott 2A Release

Logged By: Jim Foster

Site Location: San Juan County, NM

Drilled By: Geomat of Farmington, NM

Project Number: HEC-180017

Drilling Method & Boring Diameter: Hollow Stem Auger

Boring Coordinates: 36.93909, -107.91861

Total Depth (ft): 7.5'

Ground Surface Elevation (ft, msl): 6013'

First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion		
				FILL			
		1.5		BROWN SANDSTONE			
5	BR	1.5					
		1.1					
10				TD = 7.5'			
15							
20							

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

SOIL BORING LOG

Page 1 of 1

SB-7

TIMBERWOLF
ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93893, -107.91833	Total Depth (ft): 7.5'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion		
				FILL			
		0.7		BROWN SANDSTONE			
5	BR	1.5					
		1.4					
10				TD = 7.5'			
15							
20							

Notes:

Well Completion: none, groundwater not encountered

BR- bedrock

Laboratory Report and Chain-of-Custody Documents



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

March 27, 2018

Jim Foster
Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX

RE: J153 22

OrderNo.: 1803C97

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/23/2018 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 horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 1803C97

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: HA1

Project: J153 22

Collection Date: 3/22/2018 12:50:00 PM

Lab ID: 1803C97-001

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	7.5		mg/Kg	1	3/26/2018 6:05:24 PM	37223
Motor Oil Range Organics (MRO)	ND	37		mg/Kg	1	3/26/2018 6:05:24 PM	37223
Surr: DNOP	84.3	70-130		%Rec	1	3/26/2018 6:05:24 PM	37223
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/26/2018 6:07:34 PM	37211
Surr: BFB	106	15-316		%Rec	1	3/26/2018 6:07:34 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	3/26/2018 6:07:34 PM	37211
Toluene	ND	0.047		mg/Kg	1	3/26/2018 6:07:34 PM	37211
Ethylbenzene	ND	0.047		mg/Kg	1	3/26/2018 6:07:34 PM	37211
Xylenes, Total	ND	0.093		mg/Kg	1	3/26/2018 6:07:34 PM	37211
Surr: 4-Bromofluorobenzene	88.0	80-120		%Rec	1	3/26/2018 6:07:34 PM	37211

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 1803C97

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Project: J153 22

Lab ID: 1803C97-002

Matrix: SOIL

Client Sample ID: HA2

Collection Date: 3/22/2018 2:50:00 PM

Received Date: 3/23/2018 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)	ND	7.7		mg/Kg	1	3/26/2018 6:27:24 PM	37223
Motor Oil Range Organics (MRO)	ND	39		mg/Kg	1	3/26/2018 6:27:24 PM	37223
Surr: DNOP	87.5	70-130		%Rec	1	3/26/2018 6:27:24 PM	37223
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	18	4.8		mg/Kg	1	3/26/2018 6:30:45 PM	37211
Surr: BFB	212	15-316		%Rec	1	3/26/2018 6:30:45 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	3/26/2018 6:30:45 PM	37211
Toluene	ND	0.048		mg/Kg	1	3/26/2018 6:30:45 PM	37211
Ethylbenzene	0.071	0.048		mg/Kg	1	3/26/2018 6:30:45 PM	37211
Xylenes, Total	0.92	0.096		mg/Kg	1	3/26/2018 6:30:45 PM	37211
Surr: 4-Bromofluorobenzene	93.3	80-120		%Rec	1	3/26/2018 6:30:45 PM	37211

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#: 1803C97

27-Mar-18

Client: Timberwolf Environmental

Project: J153 22

Sample ID	LCS-37223		SampType:	LCS		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	LCSS		Batch ID:	37223		RunNo:	50058				
Prep Date:	3/25/2018		Analysis Date:	3/26/2018		SeqNo:	1621123		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	47	10	50.00	0	93.5	70	130				
Surr: DNOP	3.6		5.000		72.0	70	130				

Sample ID	MB-37223	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	37223	RunNo:	50058					
Prep Date:	3/25/2018	Analysis Date:	3/26/2018	SeqNo:	1621124	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.8		10.00		87.9	70	130			

Sample ID	LCS-37224		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37224		RunNo: 50058					
Prep Date:	3/25/2018		Analysis Date: 3/26/2018		SeqNo: 1622045		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.6		5.000		71.4	70	130			

Sample ID	MB-37224	SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS	Batch ID:	37224		RunNo:	50058				
Prep Date:	3/25/2018	Analysis Date:	3/26/2018		SeqNo:	1622046	Units:	%Rec		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.0		10.00		89.6	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#: 1803C97

27-Mar-18

Client: Timberwolf Environmental

Project: J153 22

Sample ID	MB-37211	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	37211	RunNo:	50067					
Prep Date:	3/23/2018	Analysis Date:	3/26/2018	SeqNo:	1621677	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	980		1000		97.7	15	316			

Sample ID	LCS-37211	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	37211	RunNo:	50067					
Prep Date:	3/23/2018	Analysis Date:	3/26/2018	SeqNo:	1621678	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	103	75.9	131			
Surr: BFB	1100		1000		112	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#: 1803C97

27-Mar-18

Client: Timberwolf Environmental

Project: J153 22

Sample ID	MB-37211		SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	PBS		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621699		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		93.4	80	120			

Sample ID	LCS-37211		SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	LCSS		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621700		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.4	77.3	128			
Toluene	0.99	0.050	1.000	0	99.3	79.2	125			
Ethylbenzene	0.97	0.050	1.000	0	97.5	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.9	81.6	129			
Surr: 4-Bromofluorobenzene	0.93		1.000		92.7	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: TIMBERWOLF ENVIRON

Work Order Number: 1803C97

RcptNo: 1

Received By: Anne Thorne

3/23/2018 7:00:00 AM

Completed By: Michelle Garcia

3/23/2018 9:32:40 AM

Reviewed By: JMO

3/23/18

Labeled By: DDS

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 $>0^{\circ}\text{C}$ 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Client: Timberwolf Env

Mailing Address: _____

Phone #: 979-324-2139

email or Fax#: 0

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Sample Temperature: 1.8

Analysis Request

[illegible]

3/22/18	1940	Christa Waller
---------	------	----------------

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

March 27, 2018

Jim Foster
Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX

RE: J153-22

OrderNo.: 1803C91

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 12 sample(s) on 3/23/2018 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 horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1803C91

Date Reported: 3/27/2018

CLIENT: Timberwolf Environmental

Client Sample ID: SB1 2.5

Project: J153-22

Collection Date: 3/22/2018 9:27:00 AM

Lab ID: 1803C91-001

Matrix: SOIL

Received Date: 3/23/2018 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)	890	9.7		mg/Kg	1	3/26/2018 11:13:43 PM	37224
Motor Oil Range Organics (MRO)	160	49		mg/Kg	1	3/26/2018 11:13:43 PM	37224
Surr: DNOP	94.5	70-130		%Rec	1	3/26/2018 11:13:43 PM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	1000	48		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Surr: BFB	790	15-316	S	%Rec	10	3/26/2018 10:42:48 AM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.24		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Toluene	1.6	0.48		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Ethylbenzene	3.8	0.48		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Xylenes, Total	52	0.97		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	10	3/26/2018 10:42:48 AM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB1 5.0'

Project: J153-22

Collection Date: 3/22/2018 9:30:00 AM

Lab ID: 1803C91-002

Matrix: SOIL

Received Date: 3/23/2018 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)	620	8.7		mg/Kg	1	3/26/2018 11:35:46 PM	37224
Motor Oil Range Organics (MRO)	140	44		mg/Kg	1	3/26/2018 11:35:46 PM	37224
Surr: DNOP	94.7	70-130		%Rec	1	3/26/2018 11:35:46 PM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	580	23		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Surr: BFB	956	15-316	S	%Rec	5	3/26/2018 12:17:17 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.12		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Toluene	0.54	0.23		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Ethylbenzene	2.1	0.23		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Xylenes, Total	29	0.47		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	5	3/26/2018 12:17:17 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB1 7.5

Project: J153-22

Collection Date: 3/22/2018 9:38:00 AM

Lab ID: 1803C91-003

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	10		mg/Kg	1	3/26/2018 11:57:36 PM	37224
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	3/26/2018 11:57:36 PM	37224
Surr: DNOP	87.1	70-130		%Rec	1	3/26/2018 11:57:36 PM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/26/2018 1:04:15 PM	37211
Surr: BFB	92.9	15-316		%Rec	1	3/26/2018 1:04:15 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	3/26/2018 1:04:15 PM	37211
Toluene	ND	0.047		mg/Kg	1	3/26/2018 1:04:15 PM	37211
Ethylbenzene	ND	0.047		mg/Kg	1	3/26/2018 1:04:15 PM	37211
Xylenes, Total	ND	0.093		mg/Kg	1	3/26/2018 1:04:15 PM	37211
Surr: 4-Bromofluorobenzene	86.9	80-120		%Rec	1	3/26/2018 1:04:15 PM	37211

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: Timberwolf Environmental

Client Sample ID: SB2 5'

Project: J153-22

Collection Date: 3/22/2018 10:10:00 AM

Lab ID: 1803C91-004

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	8.8		mg/Kg	1	3/27/2018 12:19:39 AM	37224
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	3/27/2018 12:19:39 AM	37224
Surr: DNOP	85.4	70-130		%Rec	1	3/27/2018 12:19:39 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/26/2018 1:27:37 PM	37211
Surr: BFB	92.9	15-316		%Rec	1	3/26/2018 1:27:37 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB3 5'

Project: J153-22

Collection Date: 3/22/2018 10:55:00 AM

Lab ID: 1803C91-005

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.9		mg/Kg	1	3/27/2018 12:41:25 AM	37224
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	3/27/2018 12:41:25 AM	37224
Surr: DNOP	89.9	70-130		%Rec	1	3/27/2018 12:41:25 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	3/26/2018 1:50:49 PM	37211
Surr: BFB	91.7	15-316		%Rec	1	3/26/2018 1:50:49 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB4 5'

Project: J153-22

Collection Date: 3/22/2018 12:00:00 PM

Lab ID: 1803C91-006

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.4		mg/Kg	1	3/27/2018 1:03:18 AM	37224
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/27/2018 1:03:18 AM	37224
Surr: DNOP	89.2	70-130		%Rec	1	3/27/2018 1:03:18 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/26/2018 2:14:01 PM	37211
Surr: BFB	90.7	15-316		%Rec	1	3/26/2018 2:14:01 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB4 7.5'

Project: J153-22

Collection Date: 3/22/2018 12:05:00 PM

Lab ID: 1803C91-007

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.7		mg/Kg	1	3/27/2018 1:25:14 AM	37224
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/27/2018 1:25:14 AM	37224
Surr: DNOP	87.4	70-130		%Rec	1	3/27/2018 1:25:14 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/26/2018 2:37:17 PM	37211
Surr: BFB	92.3	15-316		%Rec	1	3/26/2018 2:37:17 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB4 11'

Project: J153-22

Collection Date: 3/22/2018 12:30:00 PM

Lab ID: 1803C91-009

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.6		mg/Kg	1	3/27/2018 1:47:06 AM	37224
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/27/2018 1:47:06 AM	37224
Surr: DNOP	88.2	70-130		%Rec	1	3/27/2018 1:47:06 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/26/2018 4:34:12 PM	37211
Surr: BFB	92.1	15-316		%Rec	1	3/26/2018 4:34:12 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	3/26/2018 4:34:12 PM	37211
Toluene	ND	0.049		mg/Kg	1	3/26/2018 4:34:12 PM	37211
Ethylbenzene	ND	0.049		mg/Kg	1	3/26/2018 4:34:12 PM	37211
Xylenes, Total	ND	0.097		mg/Kg	1	3/26/2018 4:34:12 PM	37211
Surr: 4-Bromofluorobenzene	85.6	80-120		%Rec	1	3/26/2018 4:34:12 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB5 5'

Project: J153-22

Collection Date: 3/22/2018 1:00:00 PM

Lab ID: 1803C91-010

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.1		mg/Kg	1	3/27/2018 2:09:03 AM	37224
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	3/27/2018 2:09:03 AM	37224
Surr: DNOP	91.6	70-130		%Rec	1	3/27/2018 2:09:03 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/26/2018 4:57:42 PM	37211
Surr: BFB	93.3	15-316		%Rec	1	3/26/2018 4:57:42 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	3/26/2018 4:57:42 PM	37211
Toluene	ND	0.047		mg/Kg	1	3/26/2018 4:57:42 PM	37211
Ethylbenzene	ND	0.047		mg/Kg	1	3/26/2018 4:57:42 PM	37211
Xylenes, Total	ND	0.094		mg/Kg	1	3/26/2018 4:57:42 PM	37211
Surr: 4-Bromofluorobenzene	87.4	80-120		%Rec	1	3/26/2018 4:57:42 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB6 5'

Project: J153-22

Collection Date: 3/22/2018 1:35:00 PM

Lab ID: 1803C91-011

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.4		mg/Kg	1	3/27/2018 2:31:00 AM	37224
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/27/2018 2:31:00 AM	37224
Surr: DNOP	92.2	70-130		%Rec	1	3/27/2018 2:31:00 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/26/2018 5:21:04 PM	37211
Surr: BFB	94.1	15-316		%Rec	1	3/26/2018 5:21:04 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	3/26/2018 5:21:04 PM	37211
Toluene	ND	0.049		mg/Kg	1	3/26/2018 5:21:04 PM	37211
Ethylbenzene	ND	0.049		mg/Kg	1	3/26/2018 5:21:04 PM	37211
Xylenes, Total	ND	0.099		mg/Kg	1	3/26/2018 5:21:04 PM	37211
Surr: 4-Bromofluorobenzene	88.6	80-120		%Rec	1	3/26/2018 5:21:04 PM	37211

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 1803C91

Date Reported: 3/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB7 5'

Project: J153-22

Collection Date: 3/22/2018 2:15:00 PM

Lab ID: 1803C91-012

Matrix: SOIL

Received Date: 3/23/2018 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)	ND	9.7		mg/Kg	1	3/27/2018 2:52:47 AM	37224
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/27/2018 2:52:47 AM	37224
Surr: DNOP	84.5	70-130		%Rec	1	3/27/2018 2:52:47 AM	37224
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	3/26/2018 5:44:19 PM	37211
Surr: BFB	92.3	15-316		%Rec	1	3/26/2018 5:44:19 PM	37211
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	3/26/2018 5:44:19 PM	37211
Toluene	ND	0.050		mg/Kg	1	3/26/2018 5:44:19 PM	37211
Ethylbenzene	ND	0.050		mg/Kg	1	3/26/2018 5:44:19 PM	37211
Xylenes, Total	ND	0.10		mg/Kg	1	3/26/2018 5:44:19 PM	37211
Surr: 4-Bromofluorobenzene	87.3	80-120		%Rec	1	3/26/2018 5:44:19 PM	37211

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#: 1803C91

27-Mar-18

Client: Timberwolf Environmental

Project: J153-22

Sample ID	LCS-37224	SampType: LCS			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID: 37224			RunNo: 50058					
Prep Date:	3/25/2018	Analysis Date: 3/26/2018			SeqNo: 1622045		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.4	70	130			
Surr: DNOP	3.6		5.000		71.4	70	130			

Sample ID	MB-37224	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID: 37224		RunNo: 50058						
Prep Date:	3/25/2018	Analysis Date: 3/26/2018		SeqNo: 1622046		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	9.0		10.00		89.6	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#: 1803C91

27-Mar-18

Client: Timberwolf Environmental

Project: J153-22

Sample ID	MB-37211		SampType:	MBLK		TestCode:	EPA Method 8015D: Gasoline Range			
Client ID:	PBS		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621677		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	980		1000		97.7	15	316			

Sample ID	LCS-37211		SampType:	LCS		TestCode:	EPA Method 8015D: Gasoline Range			
Client ID:	LCSS		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621678		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	103	75.9	131			
Surr: BFB	1100		1000		112	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#: 1803C91

27-Mar-18

Client: Timberwolf Environmental

Project: J153-22

Sample ID	MB-37211		SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	PBS		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621699	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		93.4	80	120			

Sample ID	LCS-37211		SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	LCSS		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621700	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.4	77.3	128			
Toluene	0.99	0.050	1.000	0	99.3	79.2	125			
Ethylbenzene	0.97	0.050	1.000	0	97.5	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.9	81.6	129			
Surr: 4-Bromofluorobenzene	0.93		1.000		92.7	80	120			

Sample ID	1803C91-001AMS		SampType:	MS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	SB1 2.5		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621702	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.24	0.9653	0	97.1	68.5	133			
Toluene	2.4	0.48	0.9653	1.645	77.9	75	130			
Ethylbenzene	4.6	0.48	0.9653	3.840	75.6	79.4	128			S
Xylenes, Total	51	0.97	2.896	52.12	-27.3	77.3	131			S
Surr: 4-Bromofluorobenzene	10		9.653		108	80	120			

Sample ID	1803C91-001AMSD		SampType:	MSD		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	SB1 2.5		Batch ID:	37211		RunNo:	50067			
Prep Date:	3/23/2018		Analysis Date:	3/26/2018		SeqNo:	1621703	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.24	0.9615	0	95.4	68.5	133	2.15	20	
Toluene	2.9	0.48	0.9615	1.645	131	75	130	19.2	20	S
Ethylbenzene	5.8	0.48	0.9615	3.840	200	79.4	128	23.1	20	RS
Xylenes, Total	69	0.96	2.885	52.12	578	77.3	131	29.1	20	RS
Surr: 4-Bromofluorobenzene	11		9.615		113	80	120	0	0	

Qualifiers:

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

Work Order Number: 1803C91

RcptNo: 1

Received By: Anne Thorne 3/23/2018 7:00:00 AM

Completed By: Michelle Garcia 3/23/2018 9:11:40 AM

Reviewed By: IMO 3/23/18

Anne Thorne

Michelle Garcia

Labeled By DDS

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 $>0^{\circ}\text{C}$ 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:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

17. Cooler Information

Cooler No.	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Timberwolf Environmental

Mailing Address:

Phone #: 979 324-2139

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☒ Standard ☐ Rush

Project Name:

J153-22

Project #:

180017

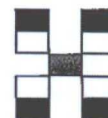
Project Manager:

Jim Foster

Sampler: JF

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0



**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 (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX	Air Bubbles (Y or N)
3/22/18	0927	Soil	SB1 2.5'	(1) 4oz	Cool	001			✓									✓	
	0930		SB1 5.0'			002			✓									✓	
	0938		SB1 7.5'			003			✓									✓	
	1010		SB2 5'			004			✓										
	1055		SB3 5'			005			✓										
	1200		SB4 5'			006			✓										
	1205		SB4 7.5'			007			✓										
	1230		SB4 10'			008													✓
	1230		SB4 11'			009			✓									✓	
	1300		SB5 5'			010			✓									✓	
	1335		SB6 5'			011			✓									✓	
	1405		SB7 5'			012			✓									✓	

Date: 3/22/18 Time: 1738 Relinquished by: [Signature]

Received by: [Signature] Date: 3/22/18 Time: 1738

Remarks:

Date: 3/22/18 Time: 1940 Relinquished by: [Signature]

Received by: [Signature] Date: 03/23/18 Time: 0700

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

May 01, 2018

Jennifer Deal
Hilcorp Energy
PO Box PO Box 4700
Farmington, NM 84701
TEL:
FAX

RE: Scott 2A

OrderNo.: 1804D56

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 3 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 horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical ReportLab Order **1804D56**Date Reported: **5/1/2018****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Hilcorp Energy**Client Sample ID:** S Bottom**Project:** Scott 2A**Collection Date:** 4/26/2018 9:15:00 AM**Lab ID:** 1804D56-001**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)	ND	9.5		mg/Kg	1	4/27/2018 9:28:51 AM	37831
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/27/2018 9:28:51 AM	37831
Surr: DNOP	98.0	70-130		%Rec	1	4/27/2018 9:28:51 AM	37831
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	4/27/2018 9:35:24 AM	G50883
Surr: BFB	88.8	15-316		%Rec	1	4/27/2018 9:35:24 AM	G50883
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.090		mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Benzene	ND	0.022		mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Toluene	ND	0.045		mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Ethylbenzene	ND	0.045		mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Xylenes, Total	ND	0.090		mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	4/27/2018 9:35:24 AM	B50883

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.

Analytical Report

Lab Order 1804D56

Date Reported: 5/1/2018

CLIENT: Hilcorp Energy

Client Sample ID: SE Wall

Project: Scott 2A

Collection Date: 4/26/2018 9:18:00 AM

Lab ID: 1804D56-002

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)	96	9.5		mg/Kg	1	4/27/2018 10:34:43 AM	37831
Motor Oil Range Organics (MRO)	260	47		mg/Kg	1	4/27/2018 10:34:43 AM	37831
Surr: DNOP	98.0	70-130		%Rec	1	4/27/2018 10:34:43 AM	37831
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	4/27/2018 9:58:47 AM	G50883
Surr: BFB	90.5	15-316		%Rec	1	4/27/2018 9:58:47 AM	G50883
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.073		mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Benzene	ND	0.018		mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Toluene	ND	0.037		mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Ethylbenzene	ND	0.037		mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Xylenes, Total	ND	0.073		mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	4/27/2018 9:58:47 AM	B50883

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 1804D56

Date Reported: 5/1/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: E Wall

Project: Scott 2A

Collection Date: 4/26/2018 9:20:00 AM

Lab ID: 1804D56-003

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)	ND	9.9		mg/Kg	1	4/27/2018 10:12:45 AM	37831
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/27/2018 10:12:45 AM	37831
Surr: DNOP	97.8	70-130		%Rec	1	4/27/2018 10:12:45 AM	37831
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	4/27/2018 10:22:09 AM	G50883
Surr: BFB	89.6	15-316		%Rec	1	4/27/2018 10:22:09 AM	G50883
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.078		mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Benzene	ND	0.019		mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Toluene	ND	0.039		mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Ethylbenzene	ND	0.039		mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Xylenes, Total	ND	0.078		mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	4/27/2018 10:22:09 AM	B50883

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#: 1804D56

01-May-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	LCS-37831		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37831		RunNo: 50882					
Prep Date:	4/27/2018		Analysis Date: 4/27/2018		SeqNo: 1651344		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.9	70	130			
Surr: DNOP	4.6		5.000		92.0	70	130			

Sample ID	MB-37831	SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS	Batch ID:	37831		RunNo:	50882				
Prep Date:	4/27/2018	Analysis Date:	4/27/2018		SeqNo:	1651345	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	9.5		10.00		95.4	70	130			

Sample ID	1804D56-001AMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	S Bottom		Batch ID: 37831		RunNo: 50882					
Prep Date:	4/27/2018		Analysis Date: 4/27/2018		SeqNo: 1651777		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.7	48.59	4.114	85.8	55.8	125			
Surr: DNOP	4.8		4.859		98.9	70	130			

Sample ID	1804D56-001AMSD		SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	S Bottom		Batch ID: 37831		RunNo: 50882					
Prep Date:	4/27/2018		Analysis Date: 4/27/2018		SeqNo: 1651778		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.25	4.114	92.5	55.8	125	9.92	20	
Surr: DNOP	4.9		5.025		97.4	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical 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#: 1804D56

01-May-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	G50883	RunNo:	50883					
Prep Date:		Analysis Date:	4/27/2018	SeqNo:	1652246	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	880		1000		88.4	15	316			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	G50883	RunNo:	50883					
Prep Date:		Analysis Date:	4/27/2018	SeqNo:	1652247	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	104	75.9	131			
Surr: BFB	1000		1000		100	15	316			

Sample ID	MB-37823	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	37823	RunNo:	50883					
Prep Date:	4/26/2018	Analysis Date:	4/27/2018	SeqNo:	1652266	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	930		1000		92.9	15	316			

Sample ID	LCS-37823	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	37823	RunNo:	50883					
Prep Date:	4/26/2018	Analysis Date:	4/27/2018	SeqNo:	1652267	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		99.6	15	316			

Sample ID	1804D56-001AMS	SampType:	MS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	S Bottom	Batch ID:	G50883	RunNo:	50929					
Prep Date:		Analysis Date:	4/30/2018	SeqNo:	1653361	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.5	22.40	0	104	77.8	128			
Surr: BFB	890		896.1		99.8	15	316			

Sample ID	1804D56-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	S Bottom	Batch ID:	G50883	RunNo:	50929					
Prep Date:		Analysis Date:	4/30/2018	SeqNo:	1653362	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.5	22.40	0	102	77.8	128	1.71	20	
Surr: BFB	920		896.1		103	15	316	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of 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#: 1804D56

01-May-18

Client: Hilcorp Energy

Project: Scott 2A

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#: 1804D56

01-May-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	B50883	RunNo:	50883					
Prep Date:		Analysis Date:	4/27/2018	SeqNo:	1652293	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		103	80	120			

Sample ID	100NG BTEX LCS	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	B50883	RunNo:	50883					
Prep Date:		Analysis Date:	4/27/2018	SeqNo:	1652294	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.91	0.10	1.000	0	91.0	70.1	121			
Benzene	0.95	0.025	1.000	0	95.1	77.3	128			
Toluene	0.97	0.050	1.000	0	96.8	79.2	125			
Ethylbenzene	0.96	0.050	1.000	0	96.4	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	98.8	81.6	129			
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

Sample ID	MB-37823	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	37823	RunNo:	50883					
Prep Date:	4/26/2018	Analysis Date:	4/27/2018	SeqNo:	1652297	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID	LCS-37823	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	37823	RunNo:	50883					
Prep Date:	4/26/2018	Analysis Date:	4/27/2018	SeqNo:	1652298	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Sample ID	1804D56-002AMS	SampType:	MS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	SE Wall	Batch ID:	B50883	RunNo:	50929					
Prep Date:		Analysis Date:	4/30/2018	SeqNo:	1653382	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.70	0.073	0.7326	0	95.1	56.9	130			
Benzene	0.72	0.018	0.7326	0.006740	97.6	68.5	133			

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#: 1804D56

01-May-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	1804D56-002AMS		SampType:	MS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	SE Wall		Batch ID:	B50883		RunNo:	50929			
Prep Date:			Analysis Date:	4/30/2018		SeqNo:	1653382		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	0.74	0.037	0.7326	0.006740	99.5	75	130			
Ethylbenzene	0.73	0.037	0.7326	0.007546	98.0	79.4	128			
Xylenes, Total	2.2	0.073	2.198	0.01890	101	77.3	131			
Surr: 4-Bromofluorobenzene	0.77		0.7326		106	80	120			

Sample ID	1804D56-002AMSD		SampType:	MSD		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	SE Wall		Batch ID:	B50883		RunNo:	50929			
Prep Date:			Analysis Date:	4/30/2018		SeqNo:	1653383		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.68	0.073	0.7326	0	92.4	56.9	130	2.86	20	
Benzene	0.71	0.018	0.7326	0.006740	95.5	68.5	133	2.11	20	
Toluene	0.72	0.037	0.7326	0.006740	96.8	75	130	2.65	20	
Ethylbenzene	0.71	0.037	0.7326	0.007546	96.3	79.4	128	1.82	20	
Xylenes, Total	2.2	0.073	2.198	0.01890	98.6	77.3	131	2.37	20	
Surr: 4-Bromofluorobenzene	0.76		0.7326		104	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.
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: 1804D56

RcptNo: 1

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

Completed By: Anne Thorne 4/27/2018 7:01:34 AM

Reviewed By: *Julio* 4/27/18

labeled by: AS 04/27/18

Anne Thorne

Anne Thorne

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 $>0^{\circ}\text{C}$ 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			



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

April 25, 2018

Jennifer Deal
Hilcorp Energy
PO Box PO Box 4700
Farmington, NM 84701
TEL:
FAX

RE: Scott 2A

OrderNo.: 1804B68

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 6 sample(s) on 4/24/2018 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 1804B68

Date Reported: 4/25/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: S Wall

Project: Scott 2A

Collection Date: 4/23/2018 9:40:00 AM

Lab ID: 1804B68-001

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	46	10		mg/Kg	1	4/24/2018 11:48:33 AM
Motor Oil Range Organics (MRO)	70	50		mg/Kg	1	4/24/2018 11:48:33 AM
Surr: DNOP	92.5	70-130		%Rec	1	4/24/2018 11:48:33 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: AG
Benzene	ND	0.018		mg/Kg	1	4/24/2018 10:00:49 AM
Toluene	ND	0.037		mg/Kg	1	4/24/2018 10:00:49 AM
Ethylbenzene	ND	0.037		mg/Kg	1	4/24/2018 10:00:49 AM
Xylenes, Total	ND	0.073		mg/Kg	1	4/24/2018 10:00:49 AM
Surr: 4-Bromofluorobenzene	126	70-130		%Rec	1	4/24/2018 10:00:49 AM
Surr: Toluene-d8	91.0	70-130		%Rec	1	4/24/2018 10:00:49 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: AG
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	4/24/2018 10:00:49 AM
Surr: BFB	116	70-130		%Rec	1	4/24/2018 10:00:49 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 1804B68

Date Reported: 4/25/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: W Wall

Project: Scott 2A

Collection Date: 4/23/2018 9:45:00 AM

Lab ID: 1804B68-002

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	30	9.6		mg/Kg	1	4/24/2018 12:12:16 PM
Motor Oil Range Organics (MRO)	63	48		mg/Kg	1	4/24/2018 12:12:16 PM
Surr: DNOP	94.5	70-130		%Rec	1	4/24/2018 12:12:16 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: AG
Benzene	ND	0.021		mg/Kg	1	4/24/2018 10:23:56 AM
Toluene	ND	0.042		mg/Kg	1	4/24/2018 10:23:56 AM
Ethylbenzene	ND	0.042		mg/Kg	1	4/24/2018 10:23:56 AM
Xylenes, Total	ND	0.084		mg/Kg	1	4/24/2018 10:23:56 AM
Surr: 4-Bromofluorobenzene	126	70-130		%Rec	1	4/24/2018 10:23:56 AM
Surr: Toluene-d8	91.8	70-130		%Rec	1	4/24/2018 10:23:56 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: AG
Gasoline Range Organics (GRO)	ND	4.2		mg/Kg	1	4/24/2018 10:23:56 AM
Surr: BFB	116	70-130		%Rec	1	4/24/2018 10:23:56 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 1804B68

Date Reported: 4/25/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: S Bottom

Project: Scott 2A

Collection Date: 4/23/2018 9:48:00 AM

Lab ID: 1804B68-003

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	120	9.7		mg/Kg	1	4/24/2018 12:59:47 PM
Motor Oil Range Organics (MRO)	200	48		mg/Kg	1	4/24/2018 12:59:47 PM
Surr: DNOP	95.6	70-130		%Rec	1	4/24/2018 12:59:47 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: AG
Benzene	ND	0.019		mg/Kg	1	4/24/2018 10:47:01 AM
Toluene	ND	0.039		mg/Kg	1	4/24/2018 10:47:01 AM
Ethylbenzene	ND	0.039		mg/Kg	1	4/24/2018 10:47:01 AM
Xylenes, Total	ND	0.077		mg/Kg	1	4/24/2018 10:47:01 AM
Surr: 4-Bromofluorobenzene	128	70-130		%Rec	1	4/24/2018 10:47:01 AM
Surr: Toluene-d8	92.6	70-130		%Rec	1	4/24/2018 10:47:01 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: AG
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	4/24/2018 10:47:01 AM
Surr: BFB	118	70-130		%Rec	1	4/24/2018 10:47:01 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 1804B68

Date Reported: 4/25/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: N Bottom

Project: Scott 2A

Collection Date: 4/23/2018 9:50:00 AM

Lab ID: 1804B68-004

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/24/2018 1:23:42 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/24/2018 1:23:42 PM
Surr: DNOP	95.9	70-130		%Rec	1	4/24/2018 1:23:42 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: AG
Benzene	ND	0.018		mg/Kg	1	4/24/2018 11:10:06 AM
Toluene	ND	0.035		mg/Kg	1	4/24/2018 11:10:06 AM
Ethylbenzene	ND	0.035		mg/Kg	1	4/24/2018 11:10:06 AM
Xylenes, Total	ND	0.071		mg/Kg	1	4/24/2018 11:10:06 AM
Surr: 4-Bromofluorobenzene	128	70-130		%Rec	1	4/24/2018 11:10:06 AM
Surr: Toluene-d8	90.9	70-130		%Rec	1	4/24/2018 11:10:06 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: AG
Gasoline Range Organics (GRO)	ND	3.5		mg/Kg	1	4/24/2018 11:10:06 AM
Surr: BFB	118	70-130		%Rec	1	4/24/2018 11:10:06 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 1804B68

Date Reported: 4/25/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: NE Bottom

Project: Scott 2A

Collection Date: 4/23/2018 9:55:00 AM

Lab ID: 1804B68-005

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	20	9.7		mg/Kg	1	4/24/2018 1:47:34 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/24/2018 1:47:34 PM
Surr: DNOP	96.2	70-130		%Rec	1	4/24/2018 1:47:34 PM
EPA METHOD 300.0: ANIONS						Analyst: MRA
Chloride	ND	30		mg/Kg	20	4/24/2018 12:46:38 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: AG
Benzene	ND	0.023		mg/Kg	1	4/24/2018 11:33:16 AM
Toluene	ND	0.046		mg/Kg	1	4/24/2018 11:33:16 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/24/2018 11:33:16 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/24/2018 11:33:16 AM
Surr: 4-Bromofluorobenzene	124	70-130		%Rec	1	4/24/2018 11:33:16 AM
Surr: Toluene-d8	88.4	70-130		%Rec	1	4/24/2018 11:33:16 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: AG
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/24/2018 11:33:16 AM
Surr: BFB	114	70-130		%Rec	1	4/24/2018 11:33:16 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 1804B68

Date Reported: 4/25/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: E Wall

Project: Scott 2A

Collection Date: 4/23/2018 9:58:00 AM

Lab ID: 1804B68-006

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	230	9.6		mg/Kg	1	4/24/2018 2:11:29 PM
Motor Oil Range Organics (MRO)	350	48		mg/Kg	1	4/24/2018 2:11:29 PM
Surr: DNOP	101	70-130		%Rec	1	4/24/2018 2:11:29 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: AG
Benzene	ND	0.019		mg/Kg	1	4/24/2018 11:56:26 AM
Toluene	ND	0.038		mg/Kg	1	4/24/2018 11:56:26 AM
Ethylbenzene	ND	0.038		mg/Kg	1	4/24/2018 11:56:26 AM
Xylenes, Total	ND	0.076		mg/Kg	1	4/24/2018 11:56:26 AM
Surr: 4-Bromofluorobenzene	125	70-130		%Rec	1	4/24/2018 11:56:26 AM
Surr: Toluene-d8	90.8	70-130		%Rec	1	4/24/2018 11:56:26 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: AG
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	4/24/2018 11:56:26 AM
Surr: BFB	114	70-130		%Rec	1	4/24/2018 11:56:26 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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#: 1804B68

25-Apr-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	MB-37760	SampType:	mblk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	37760	RunNo:	50801					
Prep Date:	4/24/2018	Analysis Date:	4/24/2018	SeqNo:	1648668	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-37760	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	37760	RunNo:	50801					
Prep Date:	4/24/2018	Analysis Date:	4/24/2018	SeqNo:	1648669	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	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#: 1804B68

25-Apr-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	LCS-37757		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37757		RunNo: 50794					
Prep Date:	4/24/2018		Analysis Date: 4/24/2018		SeqNo: 1647834		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.1	70	130			
Surr: DNOP	3.9		5.000		77.5	70	130			

Sample ID	MB-37757		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 37757		RunNo: 50794					
Prep Date:	4/24/2018		Analysis Date: 4/24/2018		SeqNo: 1647835		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.7		10.00		86.9	70	130			

Sample ID	LCS-37745		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37745		RunNo: 50794					
Prep Date:	4/23/2018		Analysis Date: 4/24/2018		SeqNo: 1648086		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		82.3	70	130			

Sample ID	MB-37745		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 37745		RunNo: 50794					
Prep Date:	4/23/2018		Analysis Date: 4/24/2018		SeqNo: 1648087		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.0		10.00		89.6	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#: 1804B68

25-Apr-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	100ng lcs	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	S50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1647889	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.9	80	120			
Toluene	1.0	0.050	1.000	0	99.9	80	120			
Ethylbenzene	1.0	0.050	1.000	0	102	80	120			
Xylenes, Total	3.0	0.10	3.000	0	100	80	120			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.8	70	130			
Surr: Toluene-d8	0.49		0.5000		99.0	70	130			

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	PBS	Batch ID:	S50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1647896	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.58		0.5000		115	70	130			
Surr: Toluene-d8	0.50		0.5000		99.5	70	130			

Sample ID	1804b68-002ams	SampType:	MS4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	W Wall	Batch ID:	S50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1648434	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.68	0.021	0.8368	0	81.8	80	120			
Toluene	0.76	0.042	0.8368	0	91.2	80	120			
Ethylbenzene	0.83	0.042	0.8368	0	98.9	80	120			
Xylenes, Total	2.5	0.084	2.510	0.01623	97.8	80	120			
Surr: 4-Bromofluorobenzene	0.44		0.4184		105	70	130			
Surr: Toluene-d8	0.38		0.4184		90.2	70	130			

Sample ID	1804b68-002amsd	SampType:	MSD4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	W Wall	Batch ID:	S50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1648435	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.64	0.021	0.8368	0	76.1	80	120	7.21	0	S
Toluene	0.73	0.042	0.8368	0	87.8	80	120	3.84	0	
Ethylbenzene	0.80	0.042	0.8368	0	95.6	80	120	3.39	0	
Xylenes, Total	2.4	0.084	2.510	0.01623	95.2	80	120	2.74	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of 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#: 1804B68

25-Apr-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	1804b68-002amsd	SampType:	MSD4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	W Wall	Batch ID:	S50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1648435	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.44		0.4184		106	70	130	0	0	
Surr: Toluene-d8	0.36		0.4184		87.2	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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#: 1804B68

25-Apr-18

Client: Hilcorp Energy

Project: Scott 2A

Sample ID	2.5ug gro lcs	SampType:	LCS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS	Batch ID:	G50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1647886	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.1	70	130			
Surr: BFB	450		500.0		90.7	70	130			

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	PBS	Batch ID:	G50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1647887	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	530		500.0		106	70	130			

Sample ID	1804b68-001ams	SampType:	MS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	S Wall	Batch ID:	G50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1648413	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	3.7	18.37	0	92.2	64.7	142			
Surr: BFB	380		367.4		103	70	130			

Sample ID	1804b68-001amsd	SampType:	MSD	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	S Wall	Batch ID:	G50798	RunNo:	50798					
Prep Date:		Analysis Date:	4/24/2018	SeqNo:	1648414	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	3.7	18.37	0	95.1	64.7	142	3.12	20	
Surr: BFB	370		367.4		102	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical 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: 1804B68

RcptNo: 1

Received By: Anne Thorne

4/24/2018 6:30:00 AM

Anne Thorne

Completed By: Anne Thorne

4/24/2018 6:59:27 AM

Anne Thorne

Reviewed By: *Two*

4/24/18

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 $>0^{\circ}\text{C}$ 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:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

17. Cooler Information

Cooler No.	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	1.0	Good	Yes			

If necessary samples submitted to Hail 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.