

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

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

NMOC

AUG 06 2018

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

Subsequent Report Final Report

| | |
|--|------------------------------------|
| Name of Company Hilcorp Energy Company | Contact Lindsay Dumas |
| Address 1111 Travis St. Houston, TX 77002 | Telephone No. (281)794-9159 |
| Facility Name: SJ 27-5 110N | Facility Type: Gas |
| Surface Owner State | Mineral Owner State |
| API No. 3003927767 | |

LOCATION OF RELEASE

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

Latitude 36.6067696 Longitude -107.3215485

NATURE OF RELEASE

| | | |
|---|---|--|
| Type of Release Oil & Produced Water | Volume of Release 33 bbls/ 17 bbls | Volume Recovered 0 bbls |
| Source of Release Production Tank | Date and Hour of Occurrence 11/29/17 12:50pm | Date and Hour of Discovery 11/29/2017 12:50pm |
| Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom? NMOC | |
| By Whom? Lisa Hunter | Date and Hour 11/30/2017 7:40AM | |
| Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If YES, Volume Impacting the Watercourse. N/A | |
| If a Watercourse was Impacted, Describe Fully.* N/A | | |
| Describe Cause of Problem and Remedial Action Taken.* The release as a result of corrosion on the bottom of the production tank. There was no standing product to recover. | | |
| Describe Area Affected and Cleanup Action Taken.* Approximately 600 c/yds of soil were excavated and biopiled on site for remediation. The remediated soil was backfilled after soil sampling. All analytical results were below the regulatory standards – no further action required. Sampling reports attached. | | |
| I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOC 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 NMOC 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, NMOC 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: <i>Lindsay Dumas</i> | Approve | <p>DENIED</p> <p>BY: <u>Cory Smith</u> DATE: <u>8/28/18</u> (505) 334-6178 Ext. 115</p> <p>*Incomplete no Sampling MAP OR Approval Documentation Attached <input checked="" type="checkbox"/> of Oxidizer</p> |
| Printed Name: Lindsay Dumas | | |
| Title: Environmental Specialist | | |
| E-mail Address: Ldumas@hilcorp.com | | |
| Date: 8/1/2018 | Phone: (281)794-9159 | Conditions of Approval: |

* Attach Additional Sheets If Necessary

#NCS 1733529093

L7 Sent Email

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Tuesday, August 28, 2018 9:43 AM
To: 'Lindsay Dumas'; Fields, Vanessa, EMNRD
Cc: 'Foley, Brandon M.'; Matt Henderson
Subject: RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

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

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

Thank you,

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

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

Lindsay,

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

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

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

cory.smith@state.nm.us

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

The hardcopy was placed in the mail yesterday. Thanks!

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

Lindsay,

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

Thanks,

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

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

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

Kind regards,

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

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



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

February 07, 2018

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

RE: San Juan 27 5 110N

OrderNo.: 1801C57

Dear Lindsay Dumas:

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

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', with a stylized flourish at the end.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

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

CLIENT: Hilcorp Energy

Client Sample ID: Base

Project: San Juan 27 5 110N

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

Lab ID: 1801C57-001

Matrix: SOIL

Received Date: 1/26/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: West Wall

Project: San Juan 27 5 110N

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

Lab ID: 1801C57-002

Matrix: SOIL

Received Date: 1/26/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy Client Sample ID: South Wall
 Project: San Juan 27 5 110N Collection Date: 1/24/2018 11:00:00 AM
 Lab ID: 1801C57-003 Matrix: SOIL Received Date: 1/26/2018 8:00:00 AM

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

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

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

Analytical Report

Lab Order **1801C57**

Date Reported: **2/7/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: North Wall

Project: San Juan 27 5 110N

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

Lab ID: 1801C57-004

Matrix: SOIL

Received Date: 1/26/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1801C57

Date Reported: 2/7/2018

CLIENT: Hilcorp Energy

Client Sample ID: East Wall

Project: San Juan 27 5 110N

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

Lab ID: 1801C57-005

Matrix: SOIL

Received Date: 1/26/2018 8:00:00 AM

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

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57

07-Feb-18

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

| | | | | | | | | | | |
|------------|-----------------|----------------|-----------------|-------------|---------------------------------|----------|--------------|------|----------|------|
| Sample ID | MB-36356 | SampType: | mblk | TestCode: | EPA Method 300.0: Anions | | | | | |
| Client ID: | PBS | Batch ID: | 36356 | RunNo: | 48913 | | | | | |
| Prep Date: | 2/5/2018 | Analysis Date: | 2/6/2018 | SeqNo: | 1573995 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| | | | | | | | | | | |
|------------|------------------|----------------|-----------------|-------------|---------------------------------|----------|--------------|------|----------|------|
| Sample ID | LCS-36356 | SampType: | lcs | TestCode: | EPA Method 300.0: Anions | | | | | |
| Client ID: | LCSS | Batch ID: | 36356 | RunNo: | 48913 | | | | | |
| Prep Date: | 2/5/2018 | Analysis Date: | 2/6/2018 | SeqNo: | 1573996 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 93.5 | 90 | 110 | | | |

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57
07-Feb-18

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

| | | | | | | | | | | |
|-----------------------------|------------------|----------------|------------------|-------------|--|----------|--------------|------|----------|------|
| Sample ID | LCS-36249 | SampType: | LCS | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | LCSS | Batch ID: | 36249 | RunNo: | 48775 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/30/2018 | SeqNo: | 1569177 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 46 | 10 | 50.00 | 0 | 92.9 | 70 | 130 | | | |
| Surr: DNOP | 4.5 | | 5.000 | | 90.5 | 70 | 130 | | | |

| | | | | | | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|--|----------|--------------|------|----------|------|
| Sample ID | MB-36249 | SampType: | MBLK | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | PBS | Batch ID: | 36249 | RunNo: | 48775 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/30/2018 | SeqNo: | 1569178 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 9.8 | | 10.00 | | 97.6 | 70 | 130 | | | |

| | | | | | | | | | | |
|------------|------------------|----------------|------------------|-------------|--|----------|-------------|------|----------|------|
| Sample ID | LCS-36240 | SampType: | LCS | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | LCSS | Batch ID: | 36240 | RunNo: | 48775 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/30/2018 | SeqNo: | 1570004 | Units: | %Rec | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 5.1 | | 5.000 | | 101 | 70 | 130 | | | |

| | | | | | | | | | | |
|------------|------------------|----------------|------------------|-------------|--|----------|-------------|------|----------|------|
| Sample ID | MB-36240 | SampType: | MBLK | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | PBS | Batch ID: | 36240 | RunNo: | 48775 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/30/2018 | SeqNo: | 1570005 | Units: | %Rec | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 11 | | 10.00 | | 110 | 70 | 130 | | | |

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57
 07-Feb-18

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

| Sample ID | LCS-36238 | SampType: | LCS | TestCode: | EPA Method 8015D: Gasoline Range | | | | | |
|-------------------------------|------------------|----------------|------------------|-------------|---|----------|--------------|------|----------|------|
| Client ID: | LCSS | Batch ID: | 36238 | RunNo: | 48820 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/31/2018 | SeqNo: | 1570842 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | 27 | 5.0 | 25.00 | 0 | 107 | 75.9 | 131 | | | |
| Surr: BFB | 1100 | | 1000 | | 115 | 15 | 316 | | | |

| Sample ID | MB-36238 | SampType: | MBLK | TestCode: | EPA Method 8015D: Gasoline Range | | | | | |
|-------------------------------|------------------|----------------|------------------|-------------|---|----------|--------------|------|----------|------|
| Client ID: | PBS | Batch ID: | 36238 | RunNo: | 48820 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/31/2018 | SeqNo: | 1570844 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | 1000 | | 1000 | | 101 | 15 | 316 | | | |

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57
07-Feb-18

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

| Sample ID | LCS-36238 | SampType: | LCS | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | LCSS | Batch ID: | 36238 | RunNo: | 48820 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/31/2018 | SeqNo: | 1570883 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | 0.98 | 0.10 | 1.000 | 0 | 97.7 | 70.1 | 121 | | | |
| Benzene | 1.0 | 0.025 | 1.000 | 0 | 104 | 77.3 | 128 | | | |
| Toluene | 1.0 | 0.050 | 1.000 | 0 | 104 | 79.2 | 125 | | | |
| Ethylbenzene | 1.0 | 0.050 | 1.000 | 0 | 102 | 80.7 | 127 | | | |
| Xylenes, Total | 3.1 | 0.10 | 3.000 | 0 | 105 | 81.6 | 129 | | | |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 106 | 80 | 120 | | | |

| Sample ID | MB-36238 | SampType: | MBLK | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | PBS | Batch ID: | 36238 | RunNo: | 48820 | | | | | |
| Prep Date: | 1/29/2018 | Analysis Date: | 1/31/2018 | SeqNo: | 1570885 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | ND | 0.10 | | | | | | | | |
| Benzene | ND | 0.025 | | | | | | | | |
| Toluene | ND | 0.050 | | | | | | | | |
| Ethylbenzene | ND | 0.050 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 1.0 | | 1.000 | | 104 | 80 | 120 | | | |

Qualifiers:

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 1801C57

RcptNo: 1

Received By: Erin Melendrez 1/26/2018 8:00:00 AM
 Completed By: Dennis Suazo 1/26/2018 8:59:45 AM
 Reviewed By: ENM 1/26/18

[Handwritten signatures]

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

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

Chain-of-Custody Record

Client: (Lindsay Dumas) Hilcorp

Mailing Address: 1111 Travis St.
Houston, Tx 77002

Phone #: 281-794-9159

email or Fax#: LDumas@Hilcorp.com

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

Accreditation:
 NELAP Other _____

EDD (Type) _____

Standard Rush

Project Name: San Juan 27-S #110N

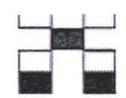
Project #:

Project Manager: Lindsay Dumas

Sampler: Travis Munkres

On Ice: Yes No

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



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH Method 8015B (Gas/Diesel) | TPH (Method 418.1) | EDB (Method 504.1) | 8310 (PNA or PAH) | RCRA 8 Metals | Anions (F,Cl,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Chlorides 300 | Air Bubbles (Y or N) |
|--------------------|------------------|-----------------|-------------------|----------------------|-------------------|----------------|----------------------------|------------------------------|-------------------------------|--------------------|--------------------|-------------------|---------------|---|------------------------------|-------------|-----------------|---------------|----------------------|
| 1/24/18 | 11:00 | Soil | | | | <u>1801C57</u> | | | | | | | | | | | | | |
| 1/24/18 | 11:00 | Soil | Base | jar 4oz | | 001 | ✓ | ✓ | | | | | | | | | | ✓ | |
| 1/24/18 | 11:00 | Soil | West Wall | jar 4oz | | 002 | ✓ | ✓ | | | | | | | | | | ✓ | |
| 1/24/18 | 11:00 | Soil | South Wall | jar 4oz | | 003 | ✓ | ✓ | | | | | | | | | | ✓ | |
| 1/24/18 | 11:00 | Soil | North Wall | jar 4oz | | 004 | ✓ | ✓ | | | | | | | | | | ✓ | |
| 1/24/18 | 11:00 | Soil | East Wall | jar 4oz | | 005 | ✓ | ✓ | | | | | | | | | | ✓ | |

Date: 1/25/18 Time: 1558 Relinquished by: Lindsay Dumas

Received by: Christal Wells Date: 1/25/18 Time: 1558

Remarks: Standard turnaround

Date: 1/25/18 Time: 1847 Relinquished by: Christal Wells

Received by: Acourid Date: 2/6/18 Time: 0800

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



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

March 14, 2018

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

RE: SJ 27-5 110N

OrderNo.: 1803595

Dear Lindsay Dumas:

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

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

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

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

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: North Pile

Project: SJ 27-5 110N

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

Lab ID: 1803595-001

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

CLIENT: Hilcorp Energy

Client Sample ID: South Pile

Project: SJ 27-5 110N

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

Lab ID: 1803595-002

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: South

Project: SJ 27-5 110N

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

Lab ID: 1803595-003

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: East

Project: SJ 27-5 110N

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

Lab ID: 1803595-004

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: Base

Project: SJ 27-5 110N

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

Lab ID: 1803595-005

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

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

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1803595

14-Mar-18

Client: Hilcorp Energy

Project: SJ 27-5 110N

| | | | | | | | | | | |
|-----------------------------|------------------|----------------|------------------|-------------|--|----------|--------------|------|----------|------|
| Sample ID | LCS-36967 | SampType: | LCS | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | LCSS | Batch ID: | 36967 | RunNo: | 49733 | | | | | |
| Prep Date: | 3/12/2018 | Analysis Date: | 3/13/2018 | SeqNo: | 1610106 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 52 | 10 | 50.00 | 0 | 104 | 70 | 130 | | | |
| Surr: DNOP | 5.1 | | 5.000 | | 102 | 70 | 130 | | | |

| | | | | | | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|--|----------|--------------|------|----------|------|
| Sample ID | MB-36967 | SampType: | MBLK | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | PBS | Batch ID: | 36967 | RunNo: | 49733 | | | | | |
| Prep Date: | 3/12/2018 | Analysis Date: | 3/13/2018 | SeqNo: | 1610107 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 11 | | 10.00 | | 107 | 70 | 130 | | | |

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 1803595
 14-Mar-18

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

| Sample ID: MB-36964 | SampType: MBLK | TestCode: EPA Method 8015D: Gasoline Range | | | | | | | | |
|-------------------------------|---------------------------------|---|---------------------|-------------|------|----------|-----------|------|----------|------|
| Client ID: PBS | Batch ID: 36964 | RunNo: 49750 | | | | | | | | |
| Prep Date: 3/12/2018 | Analysis Date: 3/13/2018 | SeqNo: 1609795 | Units: mg/Kg | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | 930 | | 1000 | | 92.8 | 15 | 316 | | | |

| Sample ID: LCS-36964 | SampType: LCS | TestCode: EPA Method 8015D: Gasoline Range | | | | | | | | |
|-------------------------------|---------------------------------|---|---------------------|-------------|------|----------|-----------|------|----------|------|
| Client ID: LCSS | Batch ID: 36964 | RunNo: 49750 | | | | | | | | |
| Prep Date: 3/12/2018 | Analysis Date: 3/13/2018 | SeqNo: 1609796 | Units: mg/Kg | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | 26 | 5.0 | 25.00 | 0 | 105 | 75.9 | 131 | | | |
| Surr: BFB | 1000 | | 1000 | | 104 | 15 | 316 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- 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

WO#: 1803595

Hall Environmental Analysis Laboratory, Inc.

14-Mar-18

Client: Hilcorp Energy

Project: SJ 27-5 110N

| Sample ID | MB-36964 | SampType: | MBLK | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | PBS | Batch ID: | 36964 | RunNo: | 49750 | | | | | |
| Prep Date: | 3/12/2018 | Analysis Date: | 3/13/2018 | SeqNo: | 1609836 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | ND | 0.10 | | | | | | | | |
| Benzene | ND | 0.025 | | | | | | | | |
| Toluene | ND | 0.050 | | | | | | | | |
| Ethylbenzene | ND | 0.050 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 0.90 | | 1.000 | | 89.8 | 80 | 120 | | | |

| Sample ID | LCS-36964 | SampType: | LCS | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | LCSS | Batch ID: | 36964 | RunNo: | 49750 | | | | | |
| Prep Date: | 3/12/2018 | Analysis Date: | 3/13/2018 | SeqNo: | 1609837 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | 1.0 | 0.10 | 1.000 | 0 | 103 | 70.1 | 121 | | | |
| Benzene | 1.0 | 0.025 | 1.000 | 0 | 105 | 77.3 | 128 | | | |
| Toluene | 1.0 | 0.050 | 1.000 | 0 | 104 | 79.2 | 125 | | | |
| Ethylbenzene | 1.0 | 0.050 | 1.000 | 0 | 103 | 80.7 | 127 | | | |
| Xylenes, Total | 3.1 | 0.10 | 3.000 | 0 | 105 | 81.6 | 129 | | | |
| Surr: 4-Bromofluorobenzene | 0.95 | | 1.000 | | 95.3 | 80 | 120 | | | |

Qualifiers:

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

Work Order Number: 1803595

RcptNo: 1

Received By: Isaiah Ortiz 3/10/2018 8:00:00 AM

IO

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

IO

Reviewed By: *grc 03/12/18*

labeled by: *IO*

Chain of Custody

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

Log In

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

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

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

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

Chain-of-Custody Record

Client: Hilcorp

Mailing Address: 1111 Travis St.
Houston, Tx 77002

Phone #: 832-839-4585

email or Fax#: LDumas@hilcorp.com

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

Accreditation:
 NELAP Other _____

EDD (Type) _____

Turn-Around Time:

Standard Rush _____

Project Name:

SJ 27-5 110 N

Project #:

Project Manager:

Lindsay Dumas

Sampler: Travis Munkres

On Ice: Yes No

Sample Temperature: 9



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) + MPD | TPH Method 8015B (Gas/Diesel) | TPH (Method 418.1) | EDB (Method 504.1) | 8310 (PNA or PAH) | RCRA 8 Metals | Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Air Bubbles (Y or N) | |
|----------------|--------------|-------------|-------------------|----------------------|-------------------|----------------|----------------------------|------------------------------------|-------------------------------|--------------------|--------------------|-------------------|---------------|--|------------------------------|-------------|-----------------|----------------------|--|
| 3/8 | | | | | | <u>1803595</u> | | | | | | | | | | | | | |
| <u>3/8</u> | <u>1:00</u> | <u>soil</u> | <u>North pile</u> | <u>4oz jar</u> | <u>-</u> | <u>-001</u> | <u>X</u> | <u>X</u> | | | | | | | | | | | |
| <u>3/8</u> | <u>1:00</u> | <u>soil</u> | <u>South pile</u> | <u>4oz jar</u> | <u>-</u> | <u>-002</u> | <u>X</u> | <u>X</u> | | | | | | | | | | | |
| <u>3/8</u> | <u>12:30</u> | <u>soil</u> | <u>South</u> | <u>4oz jar</u> | <u>-</u> | <u>-003</u> | <u>X</u> | <u>X</u> | | | | | | | | | | | |
| <u>3/8</u> | <u>12:30</u> | <u>soil</u> | <u>East</u> | <u>4oz jar</u> | <u>-</u> | <u>-004</u> | <u>X</u> | <u>X</u> | | | | | | | | | | | |
| <u>3/8</u> | <u>12:30</u> | <u>soil</u> | <u>Base</u> | <u>4oz jar</u> | <u>-</u> | <u>-005</u> | <u>X</u> | <u>X</u> | | | | | | | | | | | |

Date: 3/9/18 Time: 1320 Relinquished by: Lindsay Dumas Received by: Christa Walt Date: 3/9/18 Time: 1320

Date: 3/9/18 Time: 1804 Relinquished by: Christa Walt Received by: J.O. Date: 3/10/18 Time: 800

Remarks:
Standard turnaround time
AFE #1850852

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



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

May 01, 2018

Lindsay Dumas

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX

RE: SJ 27-5 110N Landfarm 2

OrderNo.: 1804D57

Dear Lindsay Dumas:

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

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

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: South 6

Project: SJ 27-5 110N Landfarm 2

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

Lab ID: 1804D57-001

Matrix: SOIL

Received Date: 4/27/2018 7:00:00 AM

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

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: North 6

Project: SJ 27-5 110N Landfarm 2

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

Lab ID: 1804D57-002

Matrix: SOIL

Received Date: 4/27/2018 7:00:00 AM

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

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

| | | | |
|--------------------|---|---|-------------|
| Qualifiers: | * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank | Page 2 of 6 |
| | D Sample Diluted Due to Matrix | E Value above quantitation range | |
| | H Holding times for preparation or analysis exceeded | J Analyte detected below quantitation limits | |
| | ND Not Detected at the Reporting Limit | P Sample pH Not In Range | |
| | PQL Practical Quantitative Limit | RL Reporting Detection Limit | |
| | S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified | |

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57
 01-May-18

Client: Hilcorp Energy
Project: SJ 27-5 110N Landfarm 2

| | | | | | | | | | | |
|-----------------------------|------------------|----------------|------------------|-------------|--|----------|--------------|------|----------|------|
| Sample ID | LCS-37838 | SampType: | LCS | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | LCSS | Batch ID: | 37838 | RunNo: | 50909 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653303 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 48 | 10 | 50.00 | 0 | 96.0 | 70 | 130 | | | |
| Surr: DNOP | 4.8 | | 5.000 | | 96.3 | 70 | 130 | | | |

| | | | | | | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|--|----------|--------------|------|----------|------|
| Sample ID | MB-37838 | SampType: | MBLK | TestCode: | EPA Method 8015M/D: Diesel Range Organics | | | | | |
| Client ID: | PBS | Batch ID: | 37838 | RunNo: | 50909 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653304 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 10 | | 10.00 | | 102 | 70 | 130 | | | |

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57

01-May-18

Client: Hilcorp Energy
Project: SJ 27-5 110N Landfarm 2

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

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

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

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57
01-May-18

Client: Hilcorp Energy
Project: SJ 27-5 110N Landfarm 2

| Sample ID | MB-37835 | SampType: | MBLK | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | PBS | Batch ID: | 37835 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653384 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | ND | 0.10 | | | | | | | | |
| Benzene | ND | 0.025 | | | | | | | | |
| Toluene | ND | 0.050 | | | | | | | | |
| Ethylbenzene | ND | 0.050 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 110 | 80 | 120 | | | |

| Sample ID | LCS-37835 | SampType: | LCS | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | LCSS | Batch ID: | 37835 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653385 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | 0.93 | 0.10 | 1.000 | 0 | 92.9 | 70.1 | 121 | | | |
| Benzene | 0.97 | 0.025 | 1.000 | 0 | 96.6 | 77.3 | 128 | | | |
| Toluene | 0.98 | 0.050 | 1.000 | 0 | 98.4 | 79.2 | 125 | | | |
| Ethylbenzene | 0.97 | 0.050 | 1.000 | 0 | 96.7 | 80.7 | 127 | | | |
| Xylenes, Total | 3.0 | 0.10 | 3.000 | 0 | 99.7 | 81.6 | 129 | | | |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 109 | 80 | 120 | | | |

| Sample ID | 1804D57-002AMS | SampType: | MS | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|-----------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID: | North 6 | Batch ID: | 37835 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653388 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | 0.88 | 0.094 | 0.9363 | 0 | 94.4 | 56.9 | 130 | | | |
| Benzene | 0.90 | 0.023 | 0.9363 | 0 | 95.6 | 68.5 | 133 | | | |
| Toluene | 0.92 | 0.047 | 0.9363 | 0.008357 | 97.4 | 75 | 130 | | | |
| Ethylbenzene | 0.92 | 0.047 | 0.9363 | 0.01235 | 97.4 | 79.4 | 128 | | | |
| Xylenes, Total | 2.8 | 0.094 | 2.809 | 0.01709 | 101 | 77.3 | 131 | | | |
| Surr: 4-Bromofluorobenzene | 0.99 | | 0.9363 | | 106 | 80 | 120 | | | |

| Sample ID | 1804D57-002AMSD | SampType: | MSD | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|--------------------------------|------------------------|----------------|------------------|-------------|------------------------------------|----------|--------------|-------|----------|------|
| Client ID: | North 6 | Batch ID: | 37835 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653389 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Methyl tert-butyl ether (MTBE) | 0.85 | 0.095 | 0.9533 | 0 | 89.5 | 56.9 | 130 | 3.61 | 20 | |
| Benzene | 0.85 | 0.024 | 0.9533 | 0 | 89.6 | 68.5 | 133 | 4.66 | 20 | |
| Toluene | 0.91 | 0.048 | 0.9533 | 0.008357 | 95.0 | 75 | 130 | 0.677 | 20 | |
| Ethylbenzene | 0.93 | 0.048 | 0.9533 | 0.01235 | 96.5 | 79.4 | 128 | 0.808 | 20 | |

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57
01-May-18

Client: Hilcorp Energy
Project: SJ 27-5 110N Landfarm 2

| Sample ID | 1804D57-002AMSD | SampType: | MSD | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|----------------------------|-----------------|----------------|-----------|-------------|-----------------------------|----------|-----------|------|----------|------|
| Client ID: | North 6 | Batch ID: | 37835 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653389 | Units: | mg/Kg | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Xylenes, Total | 2.9 | 0.095 | 2.860 | 0.01709 | 100 | 77.3 | 131 | 1.60 | 20 | |
| Surr: 4-Bromofluorobenzene | 0.97 | | 0.9533 | | 102 | 80 | 120 | 0 | 0 | |

| Sample ID | MB-37842 | SampType: | MBLK | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|----------------------------|-----------|----------------|-----------|-------------|-----------------------------|----------|-----------|------|----------|------|
| Client ID: | PBS | Batch ID: | 37842 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653392 | Units: | %Rec | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 4-Bromofluorobenzene | 1.0 | | 1.000 | | 101 | 80 | 120 | | | |

| Sample ID | LCS-37842 | SampType: | LCS | TestCode: | EPA Method 8021B: Volatiles | | | | | |
|----------------------------|-----------|----------------|-----------|-------------|-----------------------------|----------|-----------|------|----------|------|
| Client ID: | LCSS | Batch ID: | 37842 | RunNo: | 50929 | | | | | |
| Prep Date: | 4/27/2018 | Analysis Date: | 4/30/2018 | SeqNo: | 1653393 | Units: | %Rec | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 109 | 80 | 120 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- 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: 1804D57

RcptNo: 1

Received By: Anne Thorne

4/27/2018 7:00:00 AM

Anne Thorne

Completed By: Anne Thorne

4/27/2018 7:44:01 AM

Anne Thorne

Reviewed By: **IMO**

4/27/18

MW 4/27/18

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 4 unless noted

Adjusted: MW 4/27/18

Checked by: _____

Special Handling (if applicable)

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

| | | | |
|----------------------|-------|-------|---|
| Person Notified: | _____ | Date: | _____ |
| By Whom: | _____ | Via: | <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 °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1 | 1.0 | Good | Yes | | | |

July 09, 2018

HilCorp-Farmington, NM

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

Entire Report Reviewed By:



Daphne Richards
Technical Service Representative

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



| | | |
|---|-----------|---|
| Cp: Cover Page | 1 |  |
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| Cn: Case Narrative | 4 | |
| Sr: Sample Results | 5 |  |
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| N VADOS L1005502-02 | 6 |  |
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| | |  |

SAMPLE SUMMARY

ONE LAB. NATIONWIDE. 

S VADOS L1005502-01 Solid

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

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

¹ Cp

² Tc

N VADOS L1005502-02 Solid

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

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

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



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

Daphne Richards
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁵ Sr

⁶ Qc

⁷ GI

⁸ AI

⁹ Sc



Volatile Organic Compounds (GC) by Method 8015/8021

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

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

6 Qc

7 GI

8 AI

9 Sc



Volatile Organic Compounds (GC) by Method 8015/8021

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

1 Cp

2 Tc

3 Ss

4 Cn

Semi-Volatile Organic Compounds (GC) by Method 8015

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

6 Qc

7 Gl

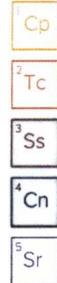
8 Al

9 Sc

Method Blank (MB)

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

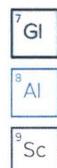
| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|------------------------------------|--------------------|--------------|-----------------|-----------------|
| Benzene | U | | 0.000120 | 0.000500 |
| Toluene | U | | 0.000150 | 0.00500 |
| Ethylbenzene | U | | 0.000110 | 0.000500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



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

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

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



Laboratory Control Sample (LCS)

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

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

ACCOUNT:
HilCorp-Farmington, NM

PROJECT:

SDG:
L1005502

DATE/TIME:
07/09/18 09:10

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

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

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

Cp

Tc

Ss

Cn

Sr

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

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

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

GI

AI

Sc

ACCOUNT:
HilCorp-Farmington, NM

PROJECT:

SDG:
L1005502

DATE/TIME:
07/09/18 09:10

PAGE:
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Method Blank (MB)

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

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

1 Cp

2 Tc

3 Ss

4 Cn

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

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

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

5 Sr

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier Description

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ GI

⁸ AI

⁹ Sc

State Accreditations

| | | | |
|-------------------------|-------------|-----------------------------|-------------------|
| Alabama | 40660 | Nebraska | NE-OS-15-05 |
| Alaska | 17-026 | Nevada | TN-03-2002-34 |
| Arizona | AZ0612 | New Hampshire | 2975 |
| Arkansas | 88-0469 | New Jersey-NELAP | TN002 |
| California | 2932 | New Mexico ¹ | n/a |
| Colorado | TN00003 | New York | 11742 |
| Connecticut | PH-0197 | North Carolina | Env375 |
| Florida | E87487 | North Carolina ¹ | DW21704 |
| Georgia | NELAP | North Carolina ³ | 41 |
| Georgia ¹ | 923 | North Dakota | R-140 |
| Idaho | TN00003 | Ohio-VAP | CL0069 |
| Illinois | 200008 | Oklahoma | 9915 |
| Indiana | C-TN-01 | Oregon | TN200002 |
| Iowa | 364 | Pennsylvania | 68-02979 |
| Kansas | E-10277 | Rhode Island | LA000356 |
| Kentucky ^{1 6} | 90010 | South Carolina | 84004 |
| Kentucky ² | 16 | South Dakota | n/a |
| Louisiana | AI30792 | Tennessee ^{1 4} | 2006 |
| Louisiana ¹ | LA180010 | Texas | T 104704245-17-14 |
| Maine | TN0002 | Texas ⁵ | LAB0152 |
| Maryland | 324 | Utah | TN00003 |
| Massachusetts | M-TN003 | Vermont | VT2006 |
| Michigan | 9958 | Virginia | 460132 |
| Minnesota | 047-999-395 | Washington | C847 |
| Mississippi | TN00003 | West Virginia | 233 |
| Missouri | 340 | Wisconsin | 9980939910 |
| Montana | CERT0086 | Wyoming | A2LA |

Third Party Federal Accreditations

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

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

Our Locations

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



ACCOUNT:
HilCorp-Farmington, NM

PROJECT:

SDG:
1005502

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