State of New Mexico
Oil Conservation Division

| | |
|---|---|
| Incident ID | |
| District RP | 2RP-4894-0 |
| Facility ID | |
| Application ID | |

# Closure

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

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

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

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

Printed Name: Mr. Lupe Carrillo Title: COO/Co-Founder

Signature: Lupe Carrillo Date: 11/8/2018

email: Lupe@percussionpetroleum.com Telephone: 713-589-9509

**OCD Only**

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

October 10, 2018

Ms. Maria Pruett/Mr. Mike Bratcher
New Mexico Oil Conservation Division – District 2
811 S. First Street
Artesia, NM 88210

**RE: Closure Request**
**Morris Boyd State Com. #4H**
**Eddy County, New Mexico**
**2RP-4894-0**

Ms. Pruett/Mr. Bratcher:

WSP USA, Inc. (WSP) was engaged by Percussion Petroleum, LLC (Percussion) to perform soil assessment and remediation services at the Morris Boyd State Com #4H facility in Eddy County, New Mexico (Figure 1). The facility was remediated within 90 days and WSP is requesting closure on behalf of Percussion under the updated "Spill Rule" (19.15.29 NMAC). WSP's preliminary soil assessment results, remediation activities, and post remediation assessment results are as follows:

## INCIDENT DESCRIPTION

On June 10, 2018, approximately 250 barrels of produced water was released at the Morris Boyd State Com #4H well pad. All fluid was contained on location with no impacts to any nearby watercourses or receptors. During the freshwater tank emptying process the #10 brine tank was mistaken as a freshwater tank and emptied to the surface.

## BACKGROUND INFORMATION

The Morris Boyd State Com #4H well pad is located 14 miles south of Artesia, New Mexico. The legal location for the site is Section 23, Township 19S, Range 25E in Eddy County, New Mexico. The attached Figure 1 depicts the facility's location.

WSP USA
2777 N. Stemmons Freeway
Suite 1600
Dallas, TX 75207

T +1-214-583-3400

wsp.com

According to the United States Department of Agricultural, Natural Resource Conservation Service, Web Soil Survey, the soil in the vicinity of the facility is Reagan-Upton association loam, 0 to 9 percent slopes and Pima silt loam, 0 to 1 percent slopes. Reagan-Upton association soils and Pima silt loams are described as loams from the surface to greater than six-feet in depth. The United States Geological Survey (USGS) National Water Information Service (NWIS) identified the nearest water well, with groundwater depth information available, to be located in Section 22, Township 19S, Range 25E, 5,342 feet to the west of the facility. The depth to groundwater was identified at 19 feet below ground surface (bgs). The referenced groundwater data has been included in the appendix.

## ACTION TAKEN

Percussion's initial response included containing the fluid on location. On July 12, 2018 WSP staff collected soil samples from the impacted area to preliminarily delineate the vertical and horizontal extent of the spill. Soil samples were collected utilizing a decontaminated hand auger and gloved hands. Soil was placed in clean jars supplied by the laboratory, placed in a cooler on ice and shipped to ALS Laboratory in Houston, Texas for analysis for chlorides. Based on the site ranking criteria and corresponding action levels, WSP identified elevated levels of chlorides in the upper 0.5 feet of four sample locations on the pad site, and a maximum depth of 1 foot at sample location 1 (S-1), which was nearest the release point. The pre-remediation analytical results have been summarized in the attached Table 1 and the attached Figure 2 identifies the sample locations. As part of the immediate response, surface soils were scraped and placed on plastic and covered on-site. Percussion excavated the top 1.5 feet of the impacted area, an area approximately 50 feet wide by 100 feet in length. The soils were transported to R360 landfill in Lea County for disposal. Following the excavation, WSP collected additional soil samples.

## POST REMEDIATION SAMPLING RESULTS

On October 2, 2018 WSP staff collected soil samples from the impacted area to confirm the effectiveness of the remediation efforts by Percussion. WSP collected samples from five spots within the excavation and from each sidewall. The results for the sampling event have been summarized in Table 1 and the sampling locations have been identified on Figure 3. WSP utilized the New Mexico Oil Conservation Division (NMOCD) updated "Spill Rule" (19.15.29 NMAC) in preparing this closure request. Based on the site inspection, the impacts would be classified as Unsaturated Contaminated Soils. Following the ranking criteria, WSP identified the facility with a depth to ground water of 19 feet, well head protection area greater than 1,000 feet from a water source and greater than 200 feet from a private domestic water source, and greater than 1,000 feet to a surface body of water. According to Table 1 of the rule, a chloride level of 600 ppm was used as an action level, 100 ppm for total petroleum hydrocarbons (TPH) and 50 for benzene, toluene, ethylbenzene and total xylenes (BTEX).

## SUMMARY and CONCLUSIONS

The post remediation analytical results identified all soil samples were found to be less than 600 ppm for chlorides, 100 ppm for TPH and 50 for BTEX. Based on the analytical results, WSP is requesting closure on Percussion behalf for this release, 2RP-4894-0.

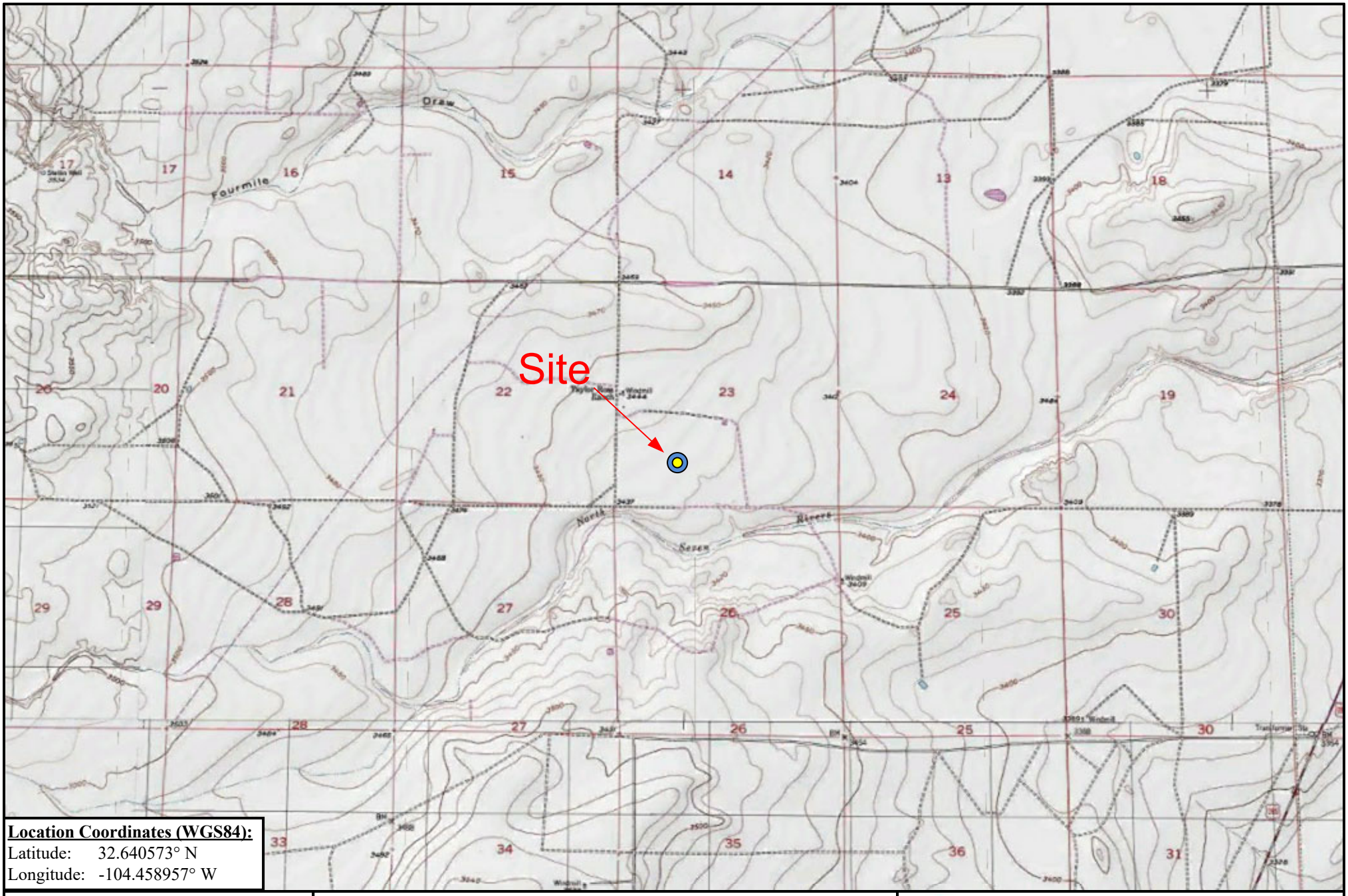
.

If you have any questions or require additional information concerning the proposed plan of action, please contact Matthew Boyle at (214) 561-7424 or (817) 713-0262.

Sincerely,

Matthew Boyle
Sr. Environmental Scientist

Charles D. Harlan, P.G.
Director, Business Development – Water & Environment
TX/Mountain Region




**Location Coordinates (WGS84):**
Latitude: 32.640573° N
Longitude: -104.458957° W

Percussion Petroleum
Morris Boyd State Com # 4H
Eddy County, New Mexico

**Legend:**

- Site Location

**(Source): Google Earth**

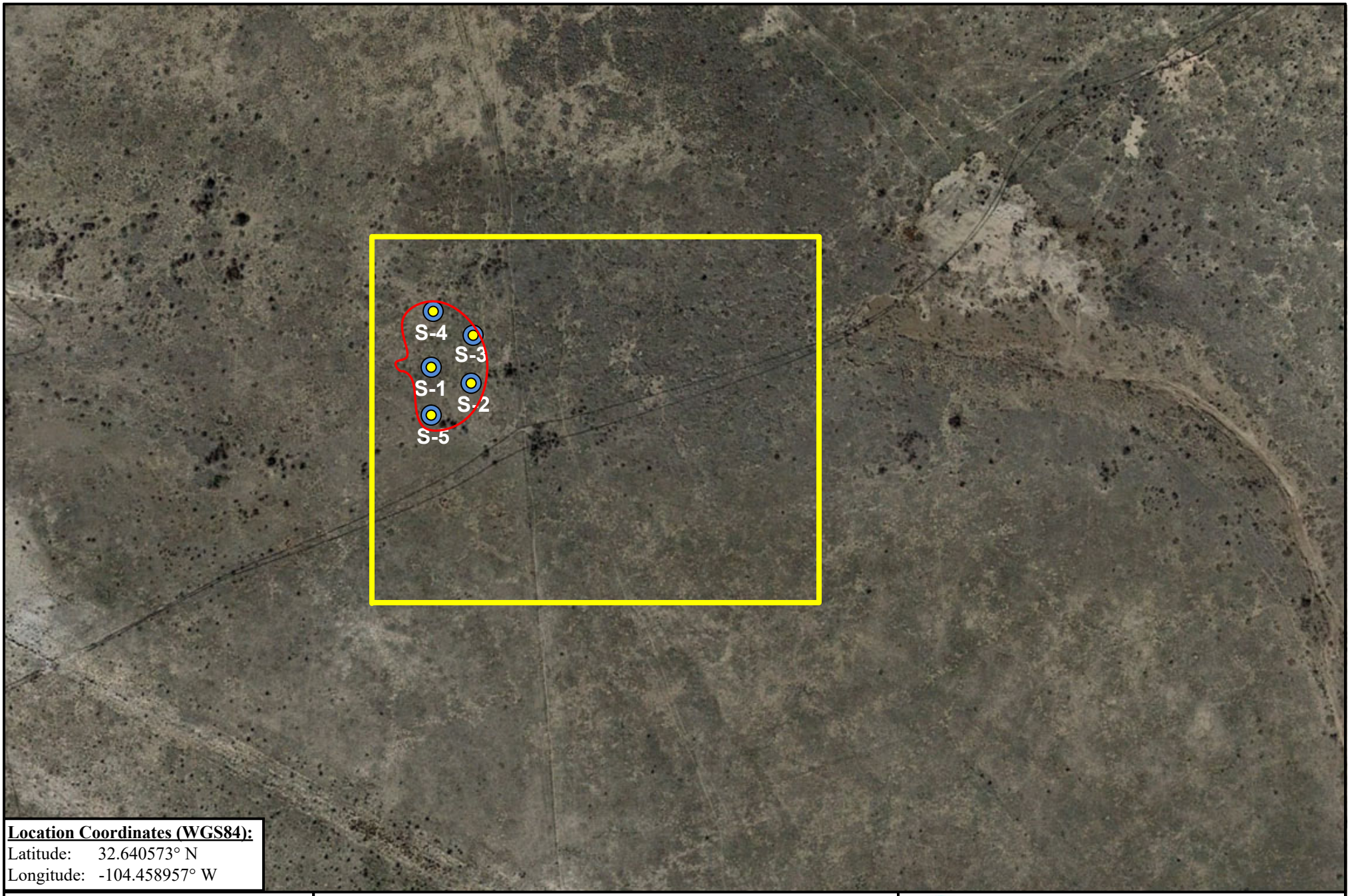
N

**(Not to Scale)**

WSP

Site Location Map

| WSP Project#: 31401117.010 | 8/16/2018 | Figure 1 |
|---|---|---|




**Location Coordinates (WGS84):**
Latitude: 32.640573° N
Longitude: -104.458957° W

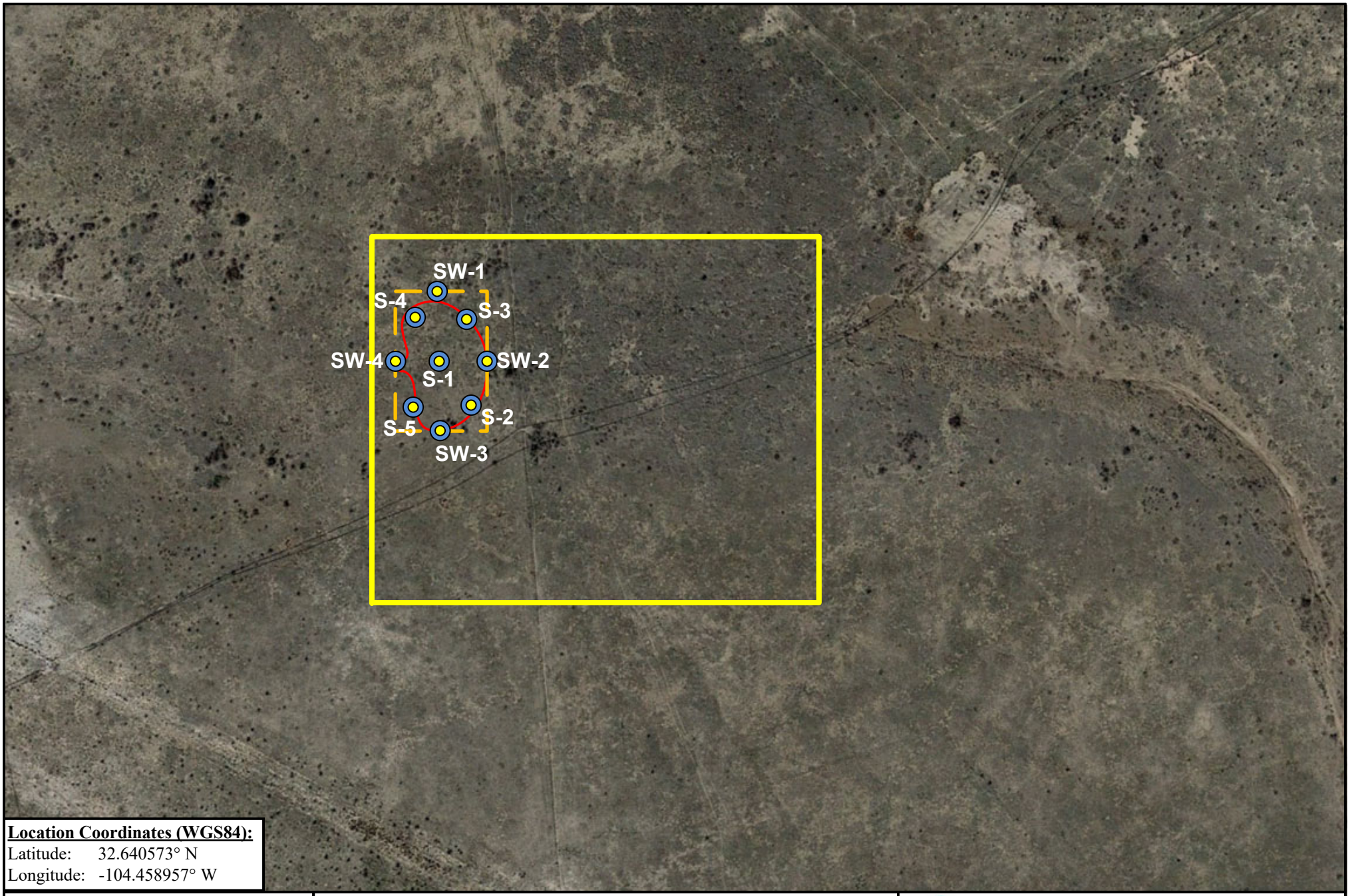
Percussion Petroleum
Morris Boyd State Com # 4H
Eddy County, New Mexico

**Legend:**
- Well Pad Boundary
- Impacted Area
- Sample Location

N
(1"=35')

# Pre-Remediation Sample Location Map

| WSP Project#: 31401117.010 | 8/16/2018 | Figure 2 |
|---|---|---|




**Location Coordinates (WGS84):**
Latitude: 32.640573° N
Longitude: -104.458957° W

Percussion Petroleum
Morris Boyd State Com # 4H
Eddy County, New Mexico

**Legend:**
- Well Pad Boundary
- Impacted Area
- Excavated Area
- Sample Location

N
(1"=35')

# Post Remediation Sample Location Map

| WSP Project#: 31401117.010 | 8/16/2018 | Figure 3 |
|---|---|---|

**Table 1**

**Summary of Soil Sample Analytical Results**

| Sample ID | Sample Depth | Sample Date | Parameter | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chloride mg/kg | TPH-GRO | TPH-DRO | TPH-ORO | Benzene mg/kg | Toluene mg/kg | Ethylbenzene mg/kg | Total Xylene mg/kg |
| CAS Number | | | 16887-00-6 | PHC612 | PHCG1028 | PHCG2835 | 71-43-2 | 108-88-3 | 100-41-4 | 1330-20-7 |
| PCLs for Soil to GW | | | 600 | 100 | | | 10 | 50 | | |
| S-1 | Surface | 7/10/2018 | **43,600** | Not Analyzed for Pre-Remediation Sampling Event | | | | | | |
| S-1 | 1' | 7/10/2018 | 54 | | | | | | | |
| S-1 | 2' | 7/10/2018 | 128 | | | | | | | |
| S-2 | Surface | 7/10/2018 | **6,260** | | | | | | | |
| S-2 | 1' | 7/10/2018 | **808** | | | | | | | |
| S-2 | 2' | 7/10/2018 | 457 | | | | | | | |
| S-3 | Surface | 7/10/2018 | **7,790** | | | | | | | |
| S-3 | 1' | 7/10/2018 | U | | | | | | | |
| S-4 | Surface | 7/10/2018 | **647** | | | | | | | |
| S-4 | 1' | 7/10/2018 | 27.6 | | | | | | | |
| S-5 | 1' | 7/10/2018 | 13.9 | | | | | | | |
| S-1 | 2' | 10/2/2018 | u | u | u | 3.7 | u | u | u | u |
| S-1 | 3' | 10/2/2018 | u | u | 2.3 | 5.7 | u | u | u | u |
| S-2 | 2' | 10/2/2018 | u | u | u | u | u | u | u | u |
| S-2 | 3' | 10/2/2018 | u | u | u | 3.4 | u | u | u | u |
| S-3 | 2' | 10/2/2018 | u | u | 11 | 31 | u | u | u | u |
| S-3 | 3' | 10/2/2018 | u | u | u | 5.8 | u | u | u | u |
| S-4 | 2' | 10/2/2018 | u | u | u | 4.5 | u | u | u | u |
| S-4 | 3' | 10/2/2018 | u | u | 2.2 | 5.3 | u | u | u | u |
| S-5 | 1.5' | 10/2/2018 | 553 | u | u | 4.2 | u | u | u | u |
| SW-1 | 1' | 10/2/2018 | u | u | u | u | u | u | u | u |
| SW-2 | 1' | 10/2/2018 | 9 | u | u | u | u | u | u | u |
| SW-3 | 1' | 10/2/2018 | 104 | u | 1.9 | 16 | u | u | u | u |
| SW-4 | 1' | 10/2/2018 | 120 | u | u | 5.8 | u | u | u | u |

U - Not Detected - less than Standard Detection Limit, Bold numbers indicate results above action levels

| PHOTOGRAPHIC LOG | | |
|---|---|---|
| **Percussion Petroleum** | **Morris Boyd 4H** | **WSP Project #: 31401117.010** |

| **Photo No.** | **Date** |
|---|---|
| 1 | October 2, 2018 |

Excavation

| **Photo No.** | **Date** |
|---|---|
| 2 | October 2, 2018 |

Excavation west wall

| PHOTOGRAPHIC LOG | | |
|---|---|---|
| **Percussion Petroleum** | **Morris Boyd 4H** | **WSP Project #: 31401117.010** |

| **Photo No.** | **Date** |
|---|---|
| 3 | October 2, 2018 |

Excavation north wall

| **Photo No.** | **Date** |
|---|---|
| 4 | October 2, 2018 |

Excavation east wall

## National Water Information System: Web Interface



Click to hideNews Bulletins

- Please see news on new formats
- Full News

# USGS 323842104283501 19S.25E.22.31430

Available data for this site SUMMARY OF ALL AVAILABLE DATA GO

## Well Site

DESCRIPTION:

Latitude 32°38'42", Longitude 104°28'35" NAD27
Eddy County, New Mexico
Well depth: 180 feet
Land surface altitude: 3,463 feet above NAVD88.
Well completed in "Alluvium, Bolson Deposits and Other Surface Deposits" (110AVMB) local aquifer

AVAILABLE DATA:

| Data Type | Begin Date | End Date | Count |
|---|---|---|---|
| Field groundwater-level measurements | 1955-01-04 | 2015-01-13 | 19 |
| Revisions | Unavailable (site:0) (timeseries:0) | | |

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

Questions about sites/data?
Feedback on this web site

Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility Plug-Ins FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

**Title: NWIS Site Information for USA: Site Inventory**
**URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=323842104283501**

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2018-10-10 21:46:52 EDT
0.35 0.32 caww01

# Eddy Area, New Mexico

## PM—Pima silt loam, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol:* 1w56
*Elevation:* 600 to 4,200 feet
*Mean annual precipitation:* 8 to 25 inches
*Mean annual air temperature:* 60 to 70 degrees F
*Frost-free period:* 195 to 290 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Pima and similar soils:* 100 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pima

#### Setting

*Landform:* Alluvial fans, alluvial flats, flood plains
*Landform position (three-dimensional):* Rise, talf
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear, convex
*Parent material:* Alluvium

#### Typical profile

*H1 - 0 to 3 inches:* silt loam
*H2 - 3 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 15 percent
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 1.0
*Available water storage in profile:* High (about 11.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 1
*Land capability classification (nonirrigated):* 7c
*Hydrologic Soil Group:* C
*Ecological site:* Bottomland (R042XC017NM)
*Hydric soil rating:* No

### Minor Components

#### Reagan

*Percent of map unit:*
*Ecological site:* Loamy (R042XC007NM)

*Hydric soil rating:* No

**Dev**

*Percent of map unit:*
*Ecological site:* Bottomland (R042XC017NM)
*Hydric soil rating:* No

## RE—Reagan-Upton association, 0 to 9 percent slopes

**Map Unit Setting**

*National map unit symbol:* 1w5d
*Elevation:* 1,100 to 5,400 feet
*Mean annual precipitation:* 6 to 14 inches
*Mean annual air temperature:* 60 to 64 degrees F
*Frost-free period:* 180 to 240 days
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Reagan and similar soils:* 70 percent
*Upton and similar soils:* 25 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Reagan**

**Setting**

*Landform:* Fan remnants, alluvial fans
*Landform position (three-dimensional):* Rise
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Alluvium and/or eolian deposits

**Typical profile**

*H1 - 0 to 8 inches:* loam
*H2 - 8 to 60 inches:* loam

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 40 percent
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 1.0
*Available water storage in profile:* Moderate (about 8.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 2e
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* B
*Ecological site:* Loamy (R070DY153NM)
*Hydric soil rating:* No

**Description of Upton**

**Setting**

*Landform:* Ridges, fans
*Landform position (three-dimensional):* Side slope, rise
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Residuum weathered from limestone

**Typical profile**

*H1 - 0 to 9 inches:* gravelly loam
*H2 - 9 to 13 inches:* gravelly loam
*H3 - 13 to 21 inches:* cemented
*H4 - 21 to 60 inches:* very gravelly loam

**Properties and qualities**

*Slope:* 0 to 9 percent
*Depth to restrictive feature:* 7 to 20 inches to petrocalcic
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.60 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 75 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 1.0
*Available water storage in profile:* Very low (about 1.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* D
*Ecological site:* Shallow Loamy (R070DY159NM)
*Hydric soil rating:* No

**Minor Components**

**Pima**

*Percent of map unit:*
*Ecological site:* Bottomland (R042XC017NM)
*Hydric soil rating:* No

**Atoka**

*Percent of map unit:*
*Ecological site:* Loamy (R042XC007NM)
*Hydric soil rating:* No

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 25, 2018

Matthew Boyle
WSP Environment & Energy
2777 N. Stemmons Fwy. Suite 1600
Dallas, TX 75207

Work Order: **HS18071108**

Laboratory Results for: **Morris Boyd**

Dear Matthew,

ALS Environmental received 11 sample(s) on Jul 24, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

**Generated By: JUMOKE.LAWAL**
Bernadette A. Fini
Project Manager

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**Work Order:** HS18071108

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS18071108-01 | S-1 1' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-02 | S-1 2' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-03 | S-1 0' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-04 | S-2 0' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-05 | S-2 1' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-06 | S-3 0' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-07 | S-3 1' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-08 | S-4 0' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-09 | S-4 1' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-10 | S-5 1' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |
| HS18071108-11 | S-2 2' | Soil | | 12-Jul-2018 00:00 | 24-Jul-2018 09:00 | ☐ |

**Client:** WSP Environment & Energy **CASE NARRATIVE**
**Project:** Morris Boyd
**Work Order:** HS18071108

## Work Order Comments

- Extra sample received not on chain S-2 2'. Per client logged in for analysis.

## WetChemistry by Method E300

### Batch ID: 130769

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-1 1'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-01
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **54.2** | | **4.98** | **mg/Kg** | 1 | 25-Jul-2018 05:40 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-1 2'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-02
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **128** | | **4.91** | **mg/Kg** | 1 | 25-Jul-2018 06:45 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-1 0'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-03
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **43,600** | | **982** | **mg/Kg** | 200 | 25-Jul-2018 07:06 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-2 0'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-04
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **6,260** | | **98.9** | **mg/Kg** | 20 | 25-Jul-2018 07:28 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-2 1'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-05
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **808** | | **24.9** | **mg/Kg** | 5 | 25-Jul-2018 07:50 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-3 0'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-06
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **7,790** | | **99.8** | **mg/Kg** | 20 | 25-Jul-2018 08:11 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-3 1'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-07
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| Chloride | ND | | 4.97 | mg/Kg | 1 | 25-Jul-2018 08:33 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-4 0'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-08
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **647** | | **24.8** | **mg/Kg** | 5 | 25-Jul-2018 09:38 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-4 1'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-09
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **27.6** | | **4.94** | **mg/Kg** | 1 | 25-Jul-2018 10:00 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-5 1'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-10
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **13.9** | | **4.95** | **mg/Kg** | 1 | 25-Jul-2018 10:22 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-2 2'
Collection Date: 12-Jul-2018 00:00

**ANALYTICAL REPORT**
WorkOrder:HS18071108
Lab ID:HS18071108-11
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **ANIONS BY E300.0** | **Method:E300** | | | Prep:E300 / 24-Jul-2018 | | Analyst: KMU |
| **Chloride** | **457** | | **24.9** | **mg/Kg** | 5 | 25-Jul-2018 10:43 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**WEIGHT LOG**

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18071108

**Batch ID:** 130769 **Method:** ANIONS BY E300.0 **Prep:** 300_S_PR

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS18071108-01 | 1 | 5.0211 | 50 (mL) | 9.958 |
| HS18071108-02 | 1 | 5.0881 | 50 (mL) | 9.827 |
| HS18071108-03 | 1 | 5.0918 | 50 (mL) | 9.82 |
| HS18071108-04 | 1 | 5.0549 | 50 (mL) | 9.891 |
| HS18071108-05 | 1 | 5.0141 | 50 (mL) | 9.972 |
| HS18071108-06 | 1 | 5.0102 | 50 (mL) | 9.98 |
| HS18071108-07 | 1 | 5.0271 | 50 (mL) | 9.946 |
| HS18071108-08 | 1 | 5.0343 | 50 (mL) | 9.932 |
| HS18071108-09 | 1 | 5.0651 | 50 (mL) | 9.871 |
| HS18071108-10 | 1 | 5.0491 | 50 (mL) | 9.903 |
| HS18071108-11 | 1 | 5.0211 | 50 (mL) | 9.958 |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18071108

## DATES REPORT

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** 130769 | **Test Name :** ANIONS BY E300.0 | | | **Matrix:** Soil | | |
| HS18071108-01 | S-1 1' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 05:40 | 1 |
| HS18071108-02 | S-1 2' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 06:45 | 1 |
| HS18071108-03 | S-1 0' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 07:06 | 200 |
| HS18071108-04 | S-2 0' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 07:28 | 20 |
| HS18071108-05 | S-2 1' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 07:50 | 5 |
| HS18071108-06 | S-3 0' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 08:11 | 20 |
| HS18071108-07 | S-3 1' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 08:33 | 1 |
| HS18071108-08 | S-4 0' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 09:38 | 5 |
| HS18071108-09 | S-4 1' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 10:00 | 1 |
| HS18071108-10 | S-5 1' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 10:22 | 1 |
| HS18071108-11 | S-2 2' | 12 Jul 2018 00:00 | | 24 Jul 2018 13:05 | 25 Jul 2018 10:43 | 5 |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18071108

**QC BATCH REPORT**

**Batch ID: 130769** **Instrument: ICS3K2** **Method: E300**

**MBLK** Sample ID: **MBLK-130769** Units: **mg/Kg** Analysis Date: **25-Jul-2018 00:58**
Client ID: Run ID: **ICS3K2_320382** SeqNo: **4663315** PrepDate: **24-Jul-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 5.00 | | | | | | | | |

**LCS** Sample ID: **LCS-130769** Units: **mg/Kg** Analysis Date: **25-Jul-2018 01:19**
Client ID: Run ID: **ICS3K2_320382** SeqNo: **4663316** PrepDate: **24-Jul-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 214.2 | 5.00 | 200 | 0 | 107 | 90 - 110 | | | | |

**LCSD** Sample ID: **LCSD-130769** Units: **mg/Kg** Analysis Date: **25-Jul-2018 01:41**
Client ID: Run ID: **ICS3K2_320382** SeqNo: **4663317** PrepDate: **24-Jul-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 210.4 | 5.00 | 200 | 0 | 105 | 90 - 110 | 214.2 | 1.77 | 20 | |

**MS** Sample ID: **HS18071108-01MS** Units: **mg/Kg** Analysis Date: **25-Jul-2018 06:01**
Client ID: **S-1 1'** Run ID: **ICS3K2_320382** SeqNo: **4663329** PrepDate: **24-Jul-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 162.8 | 5.00 | 99.96 | 54.23 | 109 | 75 - 125 | | | | |

**MS** Sample ID: **HS18070482-03MS** Units: **mg/Kg** Analysis Date: **25-Jul-2018 02:46**
Client ID: Run ID: **ICS3K2_320382** SeqNo: **4663320** PrepDate: **24-Jul-2018** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 2443 | 49.5 | 989.1 | 1412 | 104 | 75 - 125 | | | | |

**MSD** Sample ID: **HS18071108-01MSD** Units: **mg/Kg** Analysis Date: **25-Jul-2018 06:23**
Client ID: **S-1 1'** Run ID: **ICS3K2_320382** SeqNo: **4663330** PrepDate: **24-Jul-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 165.1 | 4.99 | 99.86 | 54.23 | 111 | 75 - 125 | 162.8 | 1.42 | 20 | |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18071108

**QC BATCH REPORT**

**Batch ID: 130769** **Instrument: ICS3K2** **Method: E300**

**MSD** Sample ID: **HS18070482-03MSD** Units: **mg/Kg** Analysis Date: **25-Jul-2018 03:08**
Client ID: Run ID: **ICS3K2_320382** SeqNo: **4663321** PrepDate: **24-Jul-2018** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 2474 | 49.9 | 997.7 | 1412 | 106 | 75 - 125 | 2443 | 1.25 | 20 | |

**The following samples were analyzed in this batch:**

| | | | |
|---|---|---|---|
| HS18071108-01 | HS18071108-02 | HS18071108-03 | HS18071108-04 |
| HS18071108-05 | HS18071108-06 | HS18071108-07 | HS18071108-08 |
| HS18071108-09 | HS18071108-10 | HS18071108-11 | |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** **HS18071108**

**QUALIFIERS, ACRONYMS, UNITS**

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| M | Manually integrated, see raw data for justification |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL/SDL |

| Acronym | Description |
|---|---|
| DCS | Detectability Check Study |
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitaion Limit |
| SD | Serial Dilution |
| SDL | Sample Detection Limit |
| TRRP | Texas Risk Reduction Program |

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| California | 2919 2016-2018 | 31-Jul-2018 |
| Oklahoma | 2017-088 | 31-Aug-2018 |
| North Carolina | 624-2018 | 31-Dec-2018 |
| Arkansas | 88-0356 | 27-Mar-2019 |
| Kansas | E-10352 2017-218 | 31-Jul-2018 |
| Texas | T10470231-18-21 | 30-Apr-2019 |
| North Dakota | R193 2018-2019 | 30-Apr-2019 |
| Illinois | 004438 | 29-Jun-2019 |
| Louisiana | 03087 | 30-Jun-2019 |
| Dept of Defense | L2231 Rev 3-30-2018 | 22-Dec-2018 |
| Kentucky | 123043 - 2018 | 30-Apr-2019 |

## Sample Receipt Checklist

Client Name: WSP Dallas
Work Order: HS18071108
Date/Time Received: **24-Jul-2018 09:00**
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 24-Jul-2018 Date
Reviewed by: *Bernadette A. Fini* eSignature — 24-Jul-2018 Date

Matrices: **Soil**
Carrier name: **FedEx**

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| TX1005 solids received in hermetically sealed vials? | Yes ☐ | No ☐ | N/A ☑ |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 0.7c/0.3c U/c | IR11 | |
| Cooler(s)/Kit(s): | 25793 | | |
| Date/Time sample(s) sent to storage: | 7/24/18 11:00 | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | | | |

Login Notes: No times on COC. No dates/times on jar labels.
Extra sample received not on COC :
S-2 2'. Logged in with analysis

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

+1 513 733 5336
Everett, WA
+1 425 356 2600
Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

# Chain of Custody Form

Page 1 of 1

COC ID: 27145

HS18071108

WV

WSP Parsons Brinckerhoff
Morris Boyd

ALS Environmental

ALS Project Manager:

| Customer Information | | Project Information | |
|---|---|---|---|
| Purchase Order | | Project Name | Morris Boyd |
| Work Order | | Project Number | |
| Company Name | WSP | Bill To Company | |
| Send Report To | Matthew Boyle | Invoice Attn | |
| Address | 2777 N Stemmons Pkwy Suite 1600 | Address | Same |
| City/State/Zip | Dallas TX 75207 | City/State/Zip | |
| Phone | 817 713 0262 | Phone | |
| Fax | | Fax | |
| e-Mail Address | Matthew.Boyle@wsp.com | e-Mail Address | |

| No. | Sample Description | Date | Time | Matrix | Pres. | # Bottles | A | B | C | D | E | F | G | H | I | J | Hold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S-1 1' | 7-12-18 | | Soil | Ice | 2 | ✓ | | | | | | | | | | |
| 2 | S-1 2' | | | | | 2 | ✓ | | | | | | | | | | |
| 3 | S-1 0' | | | | | 2 | ✓ | | | | | | | | | | |
| 4 | S-2 0' | | | | | 1 | ✓ | | | | | | | | | | |
| 5 | S-2 1' | | | | | 1 | ✓ | | | | | | | | | | |
| 6 | S-3 0' | | | | | 1 | ✓ | | | | | | | | | | |
| 7 | S-3 1' | | | | | 1 | ✓ | | | | | | | | | | |
| 8 | S-4 0' | | | | | 1 | ✓ | | | | | | | | | | |
| 9 | S-4 1' | | | | | 1 | ✓ | | | | | | | | | | |
| 10 | S-5 1' | | | | | 1 | ✓ | | | | | | | | | | |

Chlorides

Sampler(s) Please Print & Sign: Matthew Boyle

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☐ Other ____ ☐ STD 10 Wk Days ☐ 5 Wk Days ☒ 2 Wk Days ☒ 24 Hour

Results Due Date:

| | | | | |
|---|---|---|---|---|
| Relinquished by: Matthew Boyle | Date: 7-23-18 | Time: 7:30 | Received by: | |
| Relinquished by: | Date: | Time: | Received by (Laboratory): RC 7/24/18 | 09:00 |
| Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory): | |

Notes:

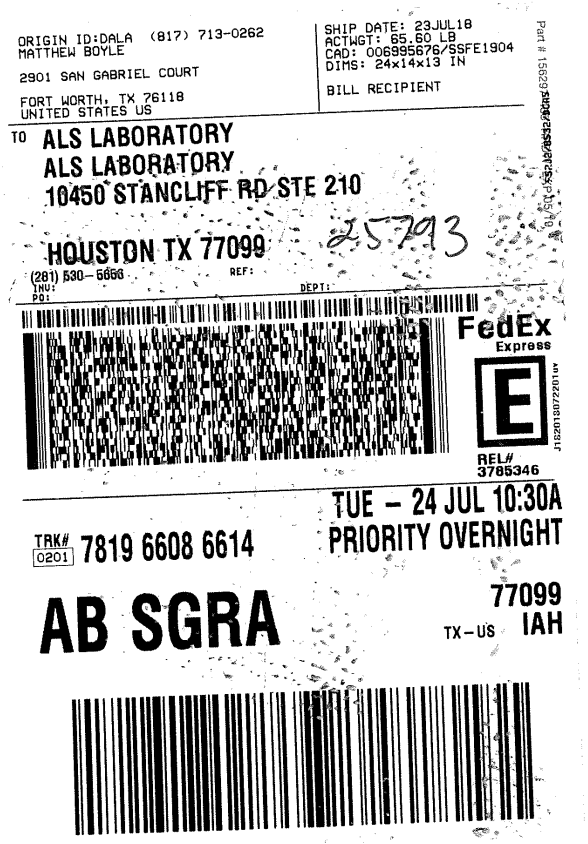
| Cooler ID | Cooler Temp |
|---|---|
| 25 793 | UIC. |
| | 0.7° |
| | #11 |
| | CF. 0.4° |

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other ____

Preservative Key: 1-HCl 2-$HNO_3$ 3-$H_2SO_4$ 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

25793 JUL 24 2018


ORIGIN ID:DALA (817) 713-0262
MATTHEW BOYLE
2901 SAN GABRIEL COURT
FORT WORTH, TX 76118
UNITED STATES US

SHIP DATE: 23JUL18
ACTWGT: 65.60 LB
CAD: 006995676/SSFE1904
DIMS: 24x14x13 IN
BILL RECIPIENT

TO ALS LABORATORY
ALS LABORATORY
10450 STANCLIFF RD STE 210
HOUSTON TX 77099
25793
(281) 530-5656
REF:
INV:
PO:
DEPT:

FedEx Express
REL# 3785346

TUE - 24 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7819 6608 6614

AB SGRA

77099
TX-US IAH

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 11, 2018

Matthew Boyle
WSP Environment & Energy
2777 N. Stemmons Fwy. Suite 1600
Dallas, TX 75207

Work Order: **HS18100327**

Laboratory Results for: **Morris Boyd**

Dear Matthew,

ALS Environmental received 13 sample(s) on Oct 06, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Bernadette Fini

**Generated By: BERNADETTE.FINI**
Bernadette A. Fini
Project Manager

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**Work Order:** HS18100327

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS18100327-01 | S-1 @ 2' | Soil | | 02-Oct-2018 13:00 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-02 | S-1 @ 3' | Soil | | 02-Oct-2018 13:10 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-03 | S-2 @ 2' | Soil | | 02-Oct-2018 13:15 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-04 | S-2 @ 3' | Soil | | 02-Oct-2018 13:20 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-05 | S-3 @ 2' | Soil | | 02-Oct-2018 13:30 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-06 | S-3 @ 3' | Soil | | 02-Oct-2018 13:40 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-07 | S-4 @ 2' | Soil | | 02-Oct-2018 13:50 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-08 | S-4 @ 3' | Soil | | 02-Oct-2018 14:00 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-09 | SW-1 | Soil | | 02-Oct-2018 14:10 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-10 | SW-2 | Soil | | 02-Oct-2018 14:20 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-11 | SW-3 | Soil | | 02-Oct-2018 14:30 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-12 | SW-4 | Soil | | 02-Oct-2018 14:40 | 06-Oct-2018 09:40 | ☐ |
| HS18100327-13 | S-5 | Soil | | 02-Oct-2018 15:00 | 06-Oct-2018 09:40 | ☐ |

**Client:** WSP Environment & Energy **CASE NARRATIVE**
**Project:** Morris Boyd
**Work Order:** HS18100327

## GC Semivolatiles by Method SW8015M

### Batch ID: 133276

**Sample ID: S-1 @ 2' (HS18100327-01MSD)**

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

## GC Volatiles by Method SW8021B

### Batch ID: R325157

**Sample ID: S-1 @ 2' (HS18100327-01)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-1 @ 2' (HS18100327-01MS)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.
- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

**Sample ID: S-1 @ 2' (HS18100327-01MSD)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.
- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

**Sample ID: S-1 @ 3' (HS18100327-02)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-2 @ 2' (HS18100327-03)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-2 @ 3' (HS18100327-04)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-3 @ 2' (HS18100327-05)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-3 @ 3' (HS18100327-06)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-4 @ 2' (HS18100327-07)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-4 @ 3' (HS18100327-08)**

**Client:** WSP Environment & Energy **CASE NARRATIVE**
**Project:** Morris Boyd
**Work Order:** HS18100327

## GC Volatiles by Method SW8021B

### Batch ID: R325157

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: S-5 (HS18100327-13)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: SW-1 (HS18100327-09)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: SW-2 (HS18100327-10)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: SW-3 (HS18100327-11)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

**Sample ID: SW-4 (HS18100327-12)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

## GC Volatiles by Method SW8015

### Batch ID: R325009

**Sample ID: S-1 @ 2' (HS18100327-01MS)**

- Surrogate recoveries were outside of the control limits due to matrix interference.

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

**Sample ID: S-1 @ 2' (HS18100327-01MSD)**

- Surrogate recoveries were outside of the control limits due to matrix interference.

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

## WetChemistry by Method E300

### Batch ID: 133374,133376

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-1 @ 2'
Collection Date: 02-Oct-2018 13:00

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-01
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 15:46 |
| *Surr: 4-Bromofluorobenzene* | *90.7* | | *70-123* | *%REC* | *1* | *08-Oct-2018 15:46* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 09-Oct-2018 22:56 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 09-Oct-2018 22:56 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 09-Oct-2018 22:56 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 09-Oct-2018 22:56 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 09-Oct-2018 22:56 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 09-Oct-2018 22:56 |
| *Surr: 4-Bromofluorobenzene* | *29.8* | *S* | *73-130* | *%REC* | *1* | *09-Oct-2018 22:56* |
| *Surr: Trifluorotoluene* | *28.0* | *S* | *70-130* | *%REC* | *1* | *09-Oct-2018 22:56* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 19:13 |
| **TPH (Motor Oil Range)** | **3.7** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 19:13 |
| *Surr: 2-Fluorobiphenyl* | *80.3* | | *60-129* | *%REC* | *1* | *08-Oct-2018 19:13* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.98 | mg/Kg | 1 | 10-Oct-2018 08:23 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-1 @ 3'
Collection Date: 02-Oct-2018 13:10

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-02
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 16:34 |
| *Surr: 4-Bromofluorobenzene* | *74.7* | | *70-123* | *%REC* | *1* | *08-Oct-2018 16:34* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:13 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 00:13 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:13 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:13 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:13 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 00:13 |
| *Surr: 4-Bromofluorobenzene* | *47.0* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 00:13* |
| *Surr: Trifluorotoluene* | *59.5* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 00:13* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| **TPH (Diesel Range)** | **2.3** | | **1.7** | **mg/Kg** | 1 | 08-Oct-2018 20:26 |
| **TPH (Motor Oil Range)** | **5.7** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 20:26 |
| *Surr: 2-Fluorobiphenyl* | *101* | | *60-129* | *%REC* | *1* | *08-Oct-2018 20:26* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.95 | mg/Kg | 1 | 10-Oct-2018 08:37 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-2 @ 2'
Collection Date: 02-Oct-2018 13:15

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-03
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 16:50 |
| *Surr: 4-Bromofluorobenzene* | *72.6* | | *70-123* | *%REC* | *1* | *08-Oct-2018 16:50* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:39 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 00:39 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:39 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:39 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 00:39 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 00:39 |
| *Surr: 4-Bromofluorobenzene* | *47.4* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 00:39* |
| *Surr: Trifluorotoluene* | *58.8* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 00:39* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 20:51 |
| TPH (Motor Oil Range) | ND | n | 3.4 | mg/Kg | 1 | 08-Oct-2018 20:51 |
| *Surr: 2-Fluorobiphenyl* | *86.3* | | *60-129* | *%REC* | *1* | *08-Oct-2018 20:51* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.96 | mg/Kg | 1 | 10-Oct-2018 08:52 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-2 @ 3'
Collection Date: 02-Oct-2018 13:20

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-04
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 17:07 |
| *Surr: 4-Bromofluorobenzene* | *72.7* | | *70-123* | *%REC* | *1* | *08-Oct-2018 17:07* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:05 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 01:05 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:05 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:05 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:05 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 01:05 |
| *Surr: 4-Bromofluorobenzene* | *50.0* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 01:05* |
| *Surr: Trifluorotoluene* | *55.6* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 01:05* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 21:15 |
| **TPH (Motor Oil Range)** | **3.4** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 21:15 |
| *Surr: 2-Fluorobiphenyl* | *79.8* | | *60-129* | *%REC* | *1* | *08-Oct-2018 21:15* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 5.00 | mg/Kg | 1 | 10-Oct-2018 10:19 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-3 @ 2'
Collection Date: 02-Oct-2018 13:30

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-05
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 17:23 |
| *Surr: 4-Bromofluorobenzene* | *71.0* | | *70-123* | *%REC* | *1* | *08-Oct-2018 17:23* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:30 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 01:30 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:30 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:30 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 01:30 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 01:30 |
| *Surr: 4-Bromofluorobenzene* | *43.3* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 01:30* |
| *Surr: Trifluorotoluene* | *53.9* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 01:30* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| **TPH (Diesel Range)** | **11** | | **1.7** | **mg/Kg** | 1 | 08-Oct-2018 21:39 |
| **TPH (Motor Oil Range)** | **31** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 21:39 |
| *Surr: 2-Fluorobiphenyl* | *79.9* | | *60-129* | *%REC* | *1* | *08-Oct-2018 21:39* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.97 | mg/Kg | 1 | 10-Oct-2018 10:34 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-3 @ 3'
Collection Date: 02-Oct-2018 13:40

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-06
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 18:27 |
| *Surr: 4-Bromofluorobenzene* | *72.7* | | *70-123* | *%REC* | *1* | *08-Oct-2018 18:27* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:13 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 03:13 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:13 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:13 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:13 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 03:13 |
| *Surr: 4-Bromofluorobenzene* | *39.3* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 03:13* |
| *Surr: Trifluorotoluene* | *46.8* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 03:13* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 22:04 |
| **TPH (Motor Oil Range)** | **5.8** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 22:04 |
| *Surr: 2-Fluorobiphenyl* | *78.2* | | *60-129* | *%REC* | *1* | *08-Oct-2018 22:04* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.96 | mg/Kg | 1 | 10-Oct-2018 13:21 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-4 @ 2'
Collection Date: 02-Oct-2018 13:50

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-07
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 18:44 |
| *Surr: 4-Bromofluorobenzene* | *72.0* | | *70-123* | *%REC* | *1* | *08-Oct-2018 18:44* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:39 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 03:39 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:39 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:39 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 03:39 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 03:39 |
| *Surr: 4-Bromofluorobenzene* | *38.9* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 03:39* |
| *Surr: Trifluorotoluene* | *42.0* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 03:39* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 19:38 |
| **TPH (Motor Oil Range)** | **4.5** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 19:38 |
| *Surr: 2-Fluorobiphenyl* | *60.9* | | *60-129* | *%REC* | *1* | *08-Oct-2018 19:38* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.92 | mg/Kg | 1 | 10-Oct-2018 13:35 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-4 @ 3'
Collection Date: 02-Oct-2018 14:00

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-08
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 19:00 |
| *Surr: 4-Bromofluorobenzene* | *73.5* | | *70-123* | *%REC* | *1* | *08-Oct-2018 19:00* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:05 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 04:05 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:05 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:05 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:05 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 04:05 |
| *Surr: 4-Bromofluorobenzene* | *43.8* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 04:05* |
| *Surr: Trifluorotoluene* | *51.9* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 04:05* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| **TPH (Diesel Range)** | **2.2** | | **1.7** | **mg/Kg** | 1 | 08-Oct-2018 20:02 |
| **TPH (Motor Oil Range)** | **5.3** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 20:02 |
| *Surr: 2-Fluorobiphenyl* | *69.3* | | *60-129* | *%REC* | *1* | *08-Oct-2018 20:02* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.99 | mg/Kg | 1 | 10-Oct-2018 13:50 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: SW-1
Collection Date: 02-Oct-2018 14:10

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-09
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 19:16 |
| *Surr: 4-Bromofluorobenzene* | *72.3* | | *70-123* | *%REC* | *1* | *08-Oct-2018 19:16* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:31 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 04:31 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:31 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:31 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:31 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 04:31 |
| *Surr: 4-Bromofluorobenzene* | *37.9* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 04:31* |
| *Surr: Trifluorotoluene* | *43.4* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 04:31* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 20:26 |
| TPH (Motor Oil Range) | ND | n | 3.4 | mg/Kg | 1 | 08-Oct-2018 20:26 |
| *Surr: 2-Fluorobiphenyl* | *66.0* | | *60-129* | *%REC* | *1* | *08-Oct-2018 20:26* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| Chloride | ND | | 4.97 | mg/Kg | 1 | 10-Oct-2018 14:04 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: SW-2
Collection Date: 02-Oct-2018 14:20

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-10
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 19:32 |
| *Surr: 4-Bromofluorobenzene* | *71.4* | | *70-123* | *%REC* | *1* | *08-Oct-2018 19:32* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:56 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 04:56 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:56 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:56 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 04:56 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 04:56 |
| *Surr: 4-Bromofluorobenzene* | *39.8* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 04:56* |
| *Surr: Trifluorotoluene* | *42.3* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 04:56* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 20:51 |
| TPH (Motor Oil Range) | ND | n | 3.4 | mg/Kg | 1 | 08-Oct-2018 20:51 |
| *Surr: 2-Fluorobiphenyl* | *73.7* | | *60-129* | *%REC* | *1* | *08-Oct-2018 20:51* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| **Chloride** | **9.00** | | **4.98** | **mg/Kg** | 1 | 10-Oct-2018 14:19 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: SW-3
Collection Date: 02-Oct-2018 14:30

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-11
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 19:48 |
| *Surr: 4-Bromofluorobenzene* | *73.1* | | *70-123* | *%REC* | *1* | *08-Oct-2018 19:48* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:22 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 05:22 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:22 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:22 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:22 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 05:22 |
| *Surr: 4-Bromofluorobenzene* | *49.8* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 05:22* |
| *Surr: Trifluorotoluene* | *56.0* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 05:22* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| **TPH (Diesel Range)** | **1.9** | | **1.7** | **mg/Kg** | 1 | 08-Oct-2018 21:15 |
| **TPH (Motor Oil Range)** | **16** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 21:15 |
| *Surr: 2-Fluorobiphenyl* | *75.0* | | *60-129* | *%REC* | *1* | *08-Oct-2018 21:15* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| **Chloride** | **104** | | **4.97** | **mg/Kg** | 1 | 10-Oct-2018 14:33 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: SW-4
Collection Date: 02-Oct-2018 14:40

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-12
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 20:05 |
| *Surr: 4-Bromofluorobenzene* | *73.4* | | *70-123* | *%REC* | *1* | *08-Oct-2018 20:05* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:47 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 05:47 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:47 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:47 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 05:47 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 05:47 |
| *Surr: 4-Bromofluorobenzene* | *50.8* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 05:47* |
| *Surr: Trifluorotoluene* | *65.6* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 05:47* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 21:39 |
| **TPH (Motor Oil Range)** | **5.8** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 21:39 |
| *Surr: 2-Fluorobiphenyl* | *65.8* | | *60-129* | *%REC* | *1* | *08-Oct-2018 21:39* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| **Chloride** | **120** | | **5.00** | **mg/Kg** | 1 | 10-Oct-2018 14:48 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Environment & Energy
Project: Morris Boyd
Sample ID: S-5
Collection Date: 02-Oct-2018 15:00

**ANALYTICAL REPORT**
WorkOrder:HS18100327
Lab ID:HS18100327-13
Matrix:Soil

| ANALYSES | RESULT | QUAL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY SW8015C** | | **Method:SW8015** | | | | Analyst: NPI |
| Gasoline Range Organics | ND | | 0.050 | mg/Kg | 1 | 08-Oct-2018 20:21 |
| *Surr: 4-Bromofluorobenzene* | *77.0* | | *70-123* | *%REC* | *1* | *08-Oct-2018 20:21* |
| **BTEX BY SW8021B** | | **Method:SW8021B** | | | | Analyst: NPI |
| Benzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 06:13 |
| m,p-Xylene | ND | | 0.0020 | mg/Kg | 1 | 10-Oct-2018 06:13 |
| o-Xylene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 06:13 |
| Toluene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 06:13 |
| Ethylbenzene | ND | | 0.0010 | mg/Kg | 1 | 10-Oct-2018 06:13 |
| Xylenes, Total | ND | | 0.0030 | mg/Kg | 1 | 10-Oct-2018 06:13 |
| *Surr: 4-Bromofluorobenzene* | *58.0* | *S* | *73-130* | *%REC* | *1* | *10-Oct-2018 06:13* |
| *Surr: Trifluorotoluene* | *55.1* | *S* | *70-130* | *%REC* | *1* | *10-Oct-2018 06:13* |
| **TPH DRO/ORO BY SW8015C** | | **Method:SW8015M** | | Prep:SW3541 / 08-Oct-2018 | | Analyst: PVL |
| TPH (Diesel Range) | ND | | 1.7 | mg/Kg | 1 | 08-Oct-2018 22:04 |
| **TPH (Motor Oil Range)** | **4.2** | n | **3.4** | **mg/Kg** | 1 | 08-Oct-2018 22:04 |
| *Surr: 2-Fluorobiphenyl* | *65.1* | | *60-129* | *%REC* | *1* | *08-Oct-2018 22:04* |
| **ANIONS BY E300.0** | | **Method:E300** | | Prep:E300 / 09-Oct-2018 | | Analyst: KMU |
| **Chloride** | **553** | | **5.00** | **mg/Kg** | 1 | 10-Oct-2018 15:31 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**WEIGHT LOG**

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**Batch ID:** 2673 **Method:** GASOLINE RANGE ORGANICS BY SW8015C **Prep:**

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor | |
|---|---|---|---|---|---|
| HS18100327-01 | 1 | 0 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-02 | 1 | 5.06 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-03 | 1 | 5.02 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-04 | 1 | 5.09 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-05 | 1 | 5.07 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-06 | 1 | 5.06 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-07 | 1 | 5.04 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-08 | 1 | 5.03 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-09 | 1 | 5.09 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-10 | 1 | 5.06 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-11 | 1 | 5.11 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-12 | 1 | 5.06 (g) | 5 (mL) | 1 | Bulk (5030B) |
| HS18100327-13 | 1 | 5.14 (g) | 5 (mL) | 1 | Bulk (5030B) |

**Batch ID:** 133276 **Method:** TPH DRO/ORO BY SW8015C **Prep:** 8015SPR_LL

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS18100327-01 | 1 | 30.02 | 1 (mL) | 0.03331 |
| HS18100327-02 | 1 | 30.16 | 1 (mL) | 0.03316 |
| HS18100327-03 | 1 | 30.18 | 1 (mL) | 0.03313 |
| HS18100327-04 | 1 | 30.21 | 1 (mL) | 0.0331 |
| HS18100327-05 | 1 | 30.03 | 1 (mL) | 0.0333 |
| HS18100327-06 | 1 | 30.09 | 1 (mL) | 0.03323 |
| HS18100327-07 | 1 | 30.07 | 1 (mL) | 0.03326 |
| HS18100327-08 | 1 | 30.05 | 1 (mL) | 0.03328 |
| HS18100327-09 | 1 | 30.17 | 1 (mL) | 0.03315 |
| HS18100327-10 | 1 | 30.11 | 1 (mL) | 0.03321 |
| HS18100327-11 | 1 | 30.19 | 1 (mL) | 0.03312 |
| HS18100327-12 | 1 | 30.12 | 1 (mL) | 0.0332 |
| HS18100327-13 | 1 | 30.08 | 1 (mL) | 0.03324 |

**Batch ID:** 133374 **Method:** ANIONS BY E300.0 **Prep:** 300_S_PR

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS18100327-01 | 1 | 5.0214 | 50 (mL) | 9.957 |
| HS18100327-02 | 1 | 5.0551 | 50 (mL) | 9.891 |
| HS18100327-03 | 1 | 5.0405 | 50 (mL) | 9.92 |
| HS18100327-04 | 1 | 5.0011 | 50 (mL) | 9.998 |
| HS18100327-05 | 1 | 5.0331 | 50 (mL) | 9.934 |

**WEIGHT LOG**

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**Batch ID:** 133376 **Method:** ANIONS BY E300.0 **Prep:** 300_S_PR

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS18100327-06 | 1 | 5.0406 | 50 (mL) | 9.919 |
| HS18100327-07 | 1 | 5.0819 | 50 (mL) | 9.839 |
| HS18100327-08 | 1 | 5.0081 | 50 (mL) | 9.984 |
| HS18100327-09 | 1 | 5.0341 | 50 (mL) | 9.932 |
| HS18100327-10 | 1 | 5.025 | 50 (mL) | 9.95 |
| HS18100327-11 | 1 | 5.0319 | 50 (mL) | 9.937 |
| HS18100327-12 | 1 | 5.0028 | 50 (mL) | 9.994 |
| HS18100327-13 | 1 | 5.0028 | 50 (mL) | 9.994 |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

## DATES REPORT

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** 133276 | **Test Name :** TPH DRO/ORO BY SW8015C | | | **Matrix:** Soil | | |
| HS18100327-01 | S-1 @ 2' | 02 Oct 2018 13:00 | | 08 Oct 2018 12:00 | 08 Oct 2018 19:13 | 1 |
| HS18100327-02 | S-1 @ 3' | 02 Oct 2018 13:10 | | 08 Oct 2018 12:00 | 08 Oct 2018 20:26 | 1 |
| HS18100327-03 | S-2 @ 2' | 02 Oct 2018 13:15 | | 08 Oct 2018 12:00 | 08 Oct 2018 20:51 | 1 |
| HS18100327-04 | S-2 @ 3' | 02 Oct 2018 13:20 | | 08 Oct 2018 12:00 | 08 Oct 2018 21:15 | 1 |
| HS18100327-05 | S-3 @ 2' | 02 Oct 2018 13:30 | | 08 Oct 2018 12:00 | 08 Oct 2018 21:39 | 1 |
| HS18100327-06 | S-3 @ 3' | 02 Oct 2018 13:40 | | 08 Oct 2018 12:00 | 08 Oct 2018 22:04 | 1 |
| HS18100327-07 | S-4 @ 2' | 02 Oct 2018 13:50 | | 08 Oct 2018 12:00 | 08 Oct 2018 19:38 | 1 |
| HS18100327-08 | S-4 @ 3' | 02 Oct 2018 14:00 | | 08 Oct 2018 12:00 | 08 Oct 2018 20:02 | 1 |
| HS18100327-09 | SW-1 | 02 Oct 2018 14:10 | | 08 Oct 2018 12:00 | 08 Oct 2018 20:26 | 1 |
| HS18100327-10 | SW-2 | 02 Oct 2018 14:20 | | 08 Oct 2018 12:00 | 08 Oct 2018 20:51 | 1 |
| HS18100327-11 | SW-3 | 02 Oct 2018 14:30 | | 08 Oct 2018 12:00 | 08 Oct 2018 21:15 | 1 |
| HS18100327-12 | SW-4 | 02 Oct 2018 14:40 | | 08 Oct 2018 12:00 | 08 Oct 2018 21:39 | 1 |
| HS18100327-13 | S-5 | 02 Oct 2018 15:00 | | 08 Oct 2018 12:00 | 08 Oct 2018 22:04 | 1 |
| **Batch ID** 133374 | **Test Name :** ANIONS BY E300.0 | | | **Matrix:** Soil | | |
| HS18100327-01 | S-1 @ 2' | 02 Oct 2018 13:00 | | 09 Oct 2018 12:04 | 10 Oct 2018 08:23 | 1 |
| HS18100327-02 | S-1 @ 3' | 02 Oct 2018 13:10 | | 09 Oct 2018 12:04 | 10 Oct 2018 08:37 | 1 |
| HS18100327-03 | S-2 @ 2' | 02 Oct 2018 13:15 | | 09 Oct 2018 12:04 | 10 Oct 2018 08:52 | 1 |
| HS18100327-04 | S-2 @ 3' | 02 Oct 2018 13:20 | | 09 Oct 2018 12:04 | 10 Oct 2018 10:19 | 1 |
| HS18100327-05 | S-3 @ 2' | 02 Oct 2018 13:30 | | 09 Oct 2018 12:04 | 10 Oct 2018 10:34 | 1 |
| **Batch ID** 133376 | **Test Name :** ANIONS BY E300.0 | | | **Matrix:** Soil | | |
| HS18100327-06 | S-3 @ 3' | 02 Oct 2018 13:40 | | 09 Oct 2018 12:25 | 10 Oct 2018 13:21 | 1 |
| HS18100327-07 | S-4 @ 2' | 02 Oct 2018 13:50 | | 09 Oct 2018 12:25 | 10 Oct 2018 13:35 | 1 |
| HS18100327-08 | S-4 @ 3' | 02 Oct 2018 14:00 | | 09 Oct 2018 12:25 | 10 Oct 2018 13:50 | 1 |
| HS18100327-09 | SW-1 | 02 Oct 2018 14:10 | | 09 Oct 2018 12:25 | 10 Oct 2018 14:04 | 1 |
| HS18100327-10 | SW-2 | 02 Oct 2018 14:20 | | 09 Oct 2018 12:25 | 10 Oct 2018 14:19 | 1 |
| HS18100327-11 | SW-3 | 02 Oct 2018 14:30 | | 09 Oct 2018 12:25 | 10 Oct 2018 14:33 | 1 |
| HS18100327-12 | SW-4 | 02 Oct 2018 14:40 | | 09 Oct 2018 12:25 | 10 Oct 2018 14:48 | 1 |
| HS18100327-13 | S-5 | 02 Oct 2018 15:00 | | 09 Oct 2018 12:25 | 10 Oct 2018 15:31 | 1 |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

## DATES REPORT

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** R325009 | **Test Name :** GASOLINE RANGE ORGANICS BY SW8015C | | | **Matrix:** Soil | | |
| HS18100327-01 | S-1 @ 2' | 02 Oct 2018 13:00 | | | 08 Oct 2018 15:46 | 1 |
| HS18100327-02 | S-1 @ 3' | 02 Oct 2018 13:10 | | | 08 Oct 2018 16:34 | 1 |
| HS18100327-03 | S-2 @ 2' | 02 Oct 2018 13:15 | | | 08 Oct 2018 16:50 | 1 |
| HS18100327-04 | S-2 @ 3' | 02 Oct 2018 13:20 | | | 08 Oct 2018 17:07 | 1 |
| HS18100327-05 | S-3 @ 2' | 02 Oct 2018 13:30 | | | 08 Oct 2018 17:23 | 1 |
| HS18100327-06 | S-3 @ 3' | 02 Oct 2018 13:40 | | | 08 Oct 2018 18:27 | 1 |
| HS18100327-07 | S-4 @ 2' | 02 Oct 2018 13:50 | | | 08 Oct 2018 18:44 | 1 |
| HS18100327-08 | S-4 @ 3' | 02 Oct 2018 14:00 | | | 08 Oct 2018 19:00 | 1 |
| HS18100327-09 | SW-1 | 02 Oct 2018 14:10 | | | 08 Oct 2018 19:16 | 1 |
| HS18100327-10 | SW-2 | 02 Oct 2018 14:20 | | | 08 Oct 2018 19:32 | 1 |
| HS18100327-11 | SW-3 | 02 Oct 2018 14:30 | | | 08 Oct 2018 19:48 | 1 |
| HS18100327-12 | SW-4 | 02 Oct 2018 14:40 | | | 08 Oct 2018 20:05 | 1 |
| HS18100327-13 | S-5 | 02 Oct 2018 15:00 | | | 08 Oct 2018 20:21 | 1 |
| **Batch ID** R325157 | **Test Name :** BTEX BY SW8021B | | | **Matrix:** Soil | | |
| HS18100327-01 | S-1 @ 2' | 02 Oct 2018 13:00 | | | 09 Oct 2018 22:56 | 1 |
| HS18100327-02 | S-1 @ 3' | 02 Oct 2018 13:10 | | | 10 Oct 2018 00:13 | 1 |
| HS18100327-03 | S-2 @ 2' | 02 Oct 2018 13:15 | | | 10 Oct 2018 00:39 | 1 |
| HS18100327-04 | S-2 @ 3' | 02 Oct 2018 13:20 | | | 10 Oct 2018 01:05 | 1 |
| HS18100327-05 | S-3 @ 2' | 02 Oct 2018 13:30 | | | 10 Oct 2018 01:30 | 1 |
| HS18100327-06 | S-3 @ 3' | 02 Oct 2018 13:40 | | | 10 Oct 2018 03:13 | 1 |
| HS18100327-07 | S-4 @ 2' | 02 Oct 2018 13:50 | | | 10 Oct 2018 03:39 | 1 |
| HS18100327-08 | S-4 @ 3' | 02 Oct 2018 14:00 | | | 10 Oct 2018 04:05 | 1 |
| HS18100327-09 | SW-1 | 02 Oct 2018 14:10 | | | 10 Oct 2018 04:31 | 1 |
| HS18100327-10 | SW-2 | 02 Oct 2018 14:20 | | | 10 Oct 2018 04:56 | 1 |
| HS18100327-11 | SW-3 | 02 Oct 2018 14:30 | | | 10 Oct 2018 05:22 | 1 |
| HS18100327-12 | SW-4 | 02 Oct 2018 14:40 | | | 10 Oct 2018 05:47 | 1 |
| HS18100327-13 | S-5 | 02 Oct 2018 15:00 | | | 10 Oct 2018 06:13 | 1 |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: 133276** **Instrument: FID-7** **Method: SW8015M**

**MBLK** Sample ID: **MBLK-133276** Units: **mg/Kg** Analysis Date: **08-Oct-2018 18:25**
Client ID: Run ID: **FID-7_325008** SeqNo: **4763639** PrepDate: **08-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | ND | 1.7 | | | | | | | | |
| TPH (Motor Oil Range) | ND | 3.4 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *2.797* | *0.10* | *3.33* | *0* | *84.0* | *70 - 130* | | | | |

**LCS** Sample ID: **LCS-133276** Units: **mg/Kg** Analysis Date: **08-Oct-2018 18:49**
Client ID: Run ID: **FID-7_325008** SeqNo: **4763640** PrepDate: **08-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | 34.94 | 1.7 | 33.33 | 0 | 105 | 70 - 130 | | | | |
| TPH (Motor Oil Range) | 31.64 | 3.4 | 33.33 | 0 | 94.9 | 70 - 130 | | | | |
| *Surr: 2-Fluorobiphenyl* | *3.242* | *0.10* | *3.33* | *0* | *97.4* | *70 - 130* | | | | |

**MS** Sample ID: **HS18100327-01MS** Units: **mg/Kg** Analysis Date: **08-Oct-2018 19:38**
Client ID: **S-1 @ 2'** Run ID: **FID-7_325008** SeqNo: **4763717** PrepDate: **08-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | 36.29 | 1.7 | 33.26 | 1.201 | 105 | 70 - 130 | | | | |
| TPH (Motor Oil Range) | 40.17 | 3.4 | 33.26 | 3.698 | 110 | 70 - 130 | | | | |
| *Surr: 2-Fluorobiphenyl* | *2.937* | *0.10* | *3.323* | *0* | *88.4* | *60 - 129* | | | | |

**MSD** Sample ID: **HS18100327-01MSD** Units: **mg/Kg** Analysis Date: **08-Oct-2018 20:02**
Client ID: **S-1 @ 2'** Run ID: **FID-7_325008** SeqNo: **4763718** PrepDate: **08-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | 45.12 | 1.7 | 33.29 | 1.201 | 132 | 70 - 130 | 36.29 | 21.7 | 30 | S |
| TPH (Motor Oil Range) | 36.52 | 3.4 | 33.29 | 3.698 | 98.6 | 70 - 130 | 40.17 | 9.51 | 30 | |
| *Surr: 2-Fluorobiphenyl* | *3.738* | *0.10* | *3.326* | *0* | *112* | *60 - 129* | *2.937* | *24* | *30* | |

**The following samples were analyzed in this batch:**

| | | | |
|---|---|---|---|
| HS18100327-01 | HS18100327-02 | HS18100327-03 | HS18100327-04 |
| HS18100327-05 | HS18100327-06 | HS18100327-07 | HS18100327-08 |
| HS18100327-09 | HS18100327-10 | HS18100327-11 | HS18100327-12 |
| HS18100327-13 | | | |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: R325009** **Instrument: FID-14** **Method: SW8015**

**MBLK** Sample ID: **MBLK-181008** Units: **mg/Kg** Analysis Date: **08-Oct-2018 15:14**
Client ID: Run ID: **FID-14_325009** SeqNo: **4763660** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | 0.050 | | | | | | | | |
| *Surr: 4-Bromofluorobenzene* | *0.0795* | *0.0050* | *0.1* | *0* | *79.5* | *75 - 121* | | | | |

**LCS** Sample ID: **GLCS-181008** Units: **mg/Kg** Analysis Date: **08-Oct-2018 14:25**
Client ID: Run ID: **FID-14_325009** SeqNo: **4763659** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.8387 | 0.050 | 1 | 0 | 83.9 | 72 - 121 | | | | |
| *Surr: 4-Bromofluorobenzene* | *0.08322* | *0.0050* | *0.1* | *0* | *83.2* | *75 - 121* | | | | |

**MS** Sample ID: **HS18100327-01MS** Units: **mg/Kg** Analysis Date: **08-Oct-2018 16:02**
Client ID: **S-1 @ 2'** Run ID: **FID-14_325009** SeqNo: **4763662** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.5582 | 0.050 | 1 | 0 | 55.8 | 70 - 130 | | | | S |
| *Surr: 4-Bromofluorobenzene* | *0.04953* | *0.0050* | *0.1* | *0* | *49.5* | *70 - 123* | | | | S |

**MSD** Sample ID: **HS18100327-01MSD** Units: **mg/Kg** Analysis Date: **08-Oct-2018 16:18**
Client ID: **S-1 @ 2'** Run ID: **FID-14_325009** SeqNo: **4763663** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.3033 | 0.050 | 1 | 0 | 30.3 | 70 - 130 | 0.5582 | 59.2 | 30 | SR |
| *Surr: 4-Bromofluorobenzene* | *0.0297* | *0.0050* | *0.1* | *0* | *29.7* | *70 - 123* | *0.04953* | *50.1* | *30* | SR |

**The following samples were analyzed in this batch:**

| | | | |
|---|---|---|---|
| HS18100327-01 | HS18100327-02 | HS18100327-03 | HS18100327-04 |
| HS18100327-05 | HS18100327-06 | HS18100327-07 | HS18100327-08 |
| HS18100327-09 | HS18100327-10 | HS18100327-11 | HS18100327-12 |
| HS18100327-13 | | | |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: R325157** **Instrument: BTEX1** **Method: SW8021B**

**MBLK** Sample ID: **MBLK-181009** Units: **ug/Kg** Analysis Date: **09-Oct-2018 22:04**
Client ID: Run ID: **BTEX1_325157** SeqNo: **4766926** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.0 | | | | | | | | |
| *Surr: 4-Bromofluorobenzene* | *25.5* | *0* | *30* | *0* | *85.0* | *75 - 130* | | | | |
| *Surr: Trifluorotoluene* | *22.92* | *0* | *30* | *0* | *76.4* | *70 - 130* | | | | |

**LCS** Sample ID: **LCS-181009** Units: **ug/Kg** Analysis Date: **09-Oct-2018 21:13**
Client ID: Run ID: **BTEX1_325157** SeqNo: **4766924** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 18.88 | 1.0 | 20 | 0 | 94.4 | 82 - 130 | | | | |
| m,p-Xylene | 38 | 2.0 | 40 | 0 | 95.0 | 83 - 130 | | | | |
| o-Xylene | 19.32 | 1.0 | 20 | 0 | 96.6 | 83 - 130 | | | | |
| Toluene | 18.68 | 1.0 | 20 | 0 | 93.4 | 85 - 130 | | | | |
| Ethylbenzene | 18.74 | 1.0 | 20 | 0 | 93.7 | 81 - 130 | | | | |
| Xylenes, Total | 57.33 | 1.0 | 60 | 0 | 95.5 | 83 - 130 | | | | |
| *Surr: 4-Bromofluorobenzene* | *31.66* | *0* | *30* | *0* | *106* | *75 - 130* | | | | |
| *Surr: Trifluorotoluene* | *27.39* | *0* | *30* | *0* | *91.3* | *70 - 130* | | | | |

**LCSD** Sample ID: **LCSD-181009** Units: **ug/Kg** Analysis Date: **09-Oct-2018 21:38**
Client ID: Run ID: **BTEX1_325157** SeqNo: **4766925** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 19.16 | 1.0 | 20 | 0 | 95.8 | 82 - 130 | 18.88 | 1.51 | 30 | |
| m,p-Xylene | 38.33 | 2.0 | 40 | 0 | 95.8 | 83 - 130 | 38 | 0.86 | 30 | |
| o-Xylene | 19.7 | 1.0 | 20 | 0 | 98.5 | 83 - 130 | 19.32 | 1.94 | 30 | |
| Toluene | 18.92 | 1.0 | 20 | 0 | 94.6 | 85 - 130 | 18.68 | 1.27 | 30 | |
| Ethylbenzene | 19.02 | 1.0 | 20 | 0 | 95.1 | 81 - 130 | 18.74 | 1.49 | 30 | |
| Xylenes, Total | 58.03 | 1.0 | 60 | 0 | 96.7 | 83 - 130 | 57.33 | 1.23 | 30 | |
| *Surr: 4-Bromofluorobenzene* | *31.55* | *0* | *30* | *0* | *105* | *75 - 130* | *31.66* | *0.349* | *30* | |
| *Surr: Trifluorotoluene* | *27.78* | *0* | *30* | *0* | *92.6* | *70 - 130* | *27.39* | *1.42* | *30* | |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: R325157** **Instrument: BTEX1** **Method: SW8021B**

**MS** Sample ID: **HS18100327-01MS** Units: **ug/Kg** Analysis Date: **09-Oct-2018 23:21**
Client ID: **S-1 @ 2'** Run ID: **BTEX1_325157** SeqNo: **4766928** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.9333 | 1.0 | 20 | 0 | 4.67 | 70 - 130 | | | | JS |
| m,p-Xylene | 1.269 | 2.0 | 40 | 0 | 3.17 | 70 - 130 | | | | JS |
| o-Xylene | 0.857 | 1.0 | 20 | 0 | 4.29 | 70 - 130 | | | | JS |
| Toluene | 0.811 | 1.0 | 20 | 0 | 4.06 | 70 - 130 | | | | JS |
| Ethylbenzene | 0.6421 | 1.0 | 20 | 0 | 3.21 | 70 - 130 | | | | JS |
| Xylenes, Total | ND | 1.0 | 60 | 0 | 3.54 | 70 - 130 | | | | S |
| *Surr: 4-Bromofluorobenzene* | *ND* | *0* | *30* | *0* | *0* | *70 - 130* | | | | S |
| *Surr: Trifluorotoluene* | *0.8236* | *0* | *30* | *0* | *2.75* | *70 - 130* | | | | S |

**MSD** Sample ID: **HS18100327-01MSD** Units: **ug/Kg** Analysis Date: **09-Oct-2018 23:47**
Client ID: **S-1 @ 2'** Run ID: **BTEX1_325157** SeqNo: **4766929** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 6.834 | 1.0 | 20 | 0 | 34.2 | 70 - 130 | 0.9333 | 152 | 30 | SR |
| m,p-Xylene | 9.142 | 2.0 | 40 | 0 | 22.9 | 70 - 130 | 1.269 | 151 | 30 | SR |
| o-Xylene | 5.336 | 1.0 | 20 | 0 | 26.7 | 70 - 130 | 0.857 | 145 | 30 | SR |
| Toluene | 5.977 | 1.0 | 20 | 0 | 29.9 | 70 - 130 | 0.811 | 152 | 30 | SR |
| Ethylbenzene | 4.825 | 1.0 | 20 | 0 | 24.1 | 70 - 130 | 0.6421 | 153 | 30 | SR |
| Xylenes, Total | 14.48 | 1.0 | 60 | 0 | 24.1 | 70 - 130 | 2.126 | 149 | 30 | SR |
| *Surr: 4-Bromofluorobenzene* | *8.901* | *0* | *30* | *0* | *29.7* | *70 - 130* | *0* | *200* | *30* | SR |
| *Surr: Trifluorotoluene* | *8.065* | *0* | *30* | *0* | *26.9* | *70 - 130* | *0.8236* | *163* | *30* | SR |

**The following samples were analyzed in this batch:**

| | | | |
|---|---|---|---|
| HS18100327-01 | HS18100327-02 | HS18100327-03 | HS18100327-04 |
| HS18100327-05 | HS18100327-06 | HS18100327-07 | HS18100327-08 |
| HS18100327-09 | HS18100327-10 | HS18100327-11 | HS18100327-12 |
| HS18100327-13 | | | |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: 133374** **Instrument: ICS2100** **Method: E300**

**MBLK** Sample ID: **MBLK-133374** Units: **mg/Kg** Analysis Date: **10-Oct-2018 03:46**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766498** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 5.00 | | | | | | | | |

**LCS** Sample ID: **LCS-133374** Units: **mg/Kg** Analysis Date: **10-Oct-2018 04:01**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766499** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 205 | 5.00 | 200 | 0 | 103 | 90 - 110 | | | | |

**LCSD** Sample ID: **LCSD-133374** Units: **mg/Kg** Analysis Date: **10-Oct-2018 04:15**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766500** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 200.7 | 5.00 | 200 | 0 | 100 | 90 - 110 | 205 | 2.16 | 20 | |

**MS** Sample ID: **HS18100327-05MS** Units: **mg/Kg** Analysis Date: **10-Oct-2018 10:48**
Client ID: **S-3 @ 2'** Run ID: **ICS2100_325138** SeqNo: **4766527** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 98.17 | 4.97 | 99.35 | 2.186 | 96.6 | 75 - 125 | | | | |

**MS** Sample ID: **HS18100197-16MS** Units: **mg/Kg** Analysis Date: **10-Oct-2018 06:55**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766511** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 99.1 | 4.98 | 99.54 | 1.913 | 97.6 | 75 - 125 | | | | |

**MSD** Sample ID: **HS18100327-05MSD** Units: **mg/Kg** Analysis Date: **10-Oct-2018 11:03**
Client ID: **S-3 @ 2'** Run ID: **ICS2100_325138** SeqNo: **4766528** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 102.3 | 4.99 | 99.76 | 2.186 | 100 | 75 - 125 | 98.17 | 4.1 | 20 | |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: 133374** **Instrument: ICS2100** **Method: E300**

**MSD** Sample ID: **HS18100197-16MSD** Units: **mg/Kg** Analysis Date: **10-Oct-2018 07:10**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766512** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 100.6 | 4.97 | 99.46 | 1.913 | 99.2 | 75 - 125 | 99.1 | 1.52 | 20 | |

**The following samples were analyzed in this batch:** HS18100327-01 HS18100327-02 HS18100327-03 HS18100327-04 HS18100327-05

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** HS18100327

**QC BATCH REPORT**

**Batch ID: 133376** **Instrument: ICS2100** **Method: E300**

**MBLK** Sample ID: **MBLK-133376** Units: **mg/Kg** Analysis Date: **10-Oct-2018 12:37**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766532** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 5.00 | | | | | | | | |

**LCS** Sample ID: **LCS-133376** Units: **mg/Kg** Analysis Date: **10-Oct-2018 12:51**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766533** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 202 | 5.00 | 200 | 0 | 101 | 90 - 110 | | | | |

**LCSD** Sample ID: **LCSD-133376** Units: **mg/Kg** Analysis Date: **10-Oct-2018 13:06**
Client ID: Run ID: **ICS2100_325138** SeqNo: **4766534** PrepDate: **09-Oct-2018** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 197.6 | 5.00 | 200 | 0 | 98.8 | 90 - 110 | 202 | 2.2 | 20 | |

**The following samples were analyzed in this batch:**

| | | | |
|---|---|---|---|
| HS18100327-06 | HS18100327-07 | HS18100327-08 | HS18100327-09 |
| HS18100327-10 | HS18100327-11 | HS18100327-12 | HS18100327-13 |

**Client:** WSP Environment & Energy
**Project:** Morris Boyd
**WorkOrder:** **HS18100327**

**QUALIFIERS, ACRONYMS, UNITS**

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| M | Manually integrated, see raw data for justification |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL/SDL |

| Acronym | Description |
|---|---|
| DCS | Detectability Check Study |
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitaion Limit |
| SD | Serial Dilution |
| SDL | Sample Detection Limit |
| TRRP | Texas Risk Reduction Program |

| Unit Reported | Description |
|---|---|
| mg/Kg | Milligrams per Kilogram |

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| North Carolina | 624-2018 | 31-Dec-2018 |
| Arkansas | 88-0356 | 27-Mar-2019 |
| Texas | T10470231-18-21 | 30-Apr-2019 |
| North Dakota | R193 2018-2019 | 30-Apr-2019 |
| Illinois | 004438 | 29-Jun-2019 |
| Louisiana | 03087 | 30-Jun-2019 |
| Dept of Defense | ANAB L2231 | 22-Dec-2018 |
| Kentucky | 123043 - 2018 | 30-Apr-2019 |
| Kansas | E-10352 2018-2019 | 31-Jul-2019 |
| Oklahoma | 2018-156 | 31-Aug-2019 |

## Sample Receipt Checklist

Client Name: WSP Dallas
Work Order: HS18100327
Date/Time Received: **06-Oct-2018 09:40**
Received by: **PJM**

Checklist completed by: *Paresh M. Giga* eSignature 6-Oct-2018 Date
Reviewed by: *Bernadette A. Fini* eSignature 8-Oct-2018 Date

Matrices: **Soil**
Carrier name: **FedEx**

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| TX1005 solids received in hermetically sealed vials? | Yes ☐ | No ☐ | N/A ☑ |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 0.8c/0.5c U/c | IR25 | |
| Cooler(s)/Kit(s): | Brown | | |
| Date/Time sample(s) sent to storage: | 10/6/18 11:40 | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS Environmental

+1 513 733 5336 | Everett, WA +1 425 356 2600 | Fort Collins, CO +1 970 490 1511 | Holland, MI +1 616 399 6070

# Chain of Custody Fo

Page 1 of 2

COC ID: 141031

**HS18100327**

WSP Environment & Energy

Morris Boyd

| Customer Information | | Project Information | | ALS Project Manager: |
|---|---|---|---|---|
| Purchase Order | | Project Name | Morris Boyd | |
| Work Order | | Project Number | 31401117.010 | |
| Company Name | WSP USA | Bill To Company | | |
| Send Report To | Matthew.Boyle | Invoice Attn | | |
| Address | 2777 N Stemmons Suite 1600 | Address | Same | |
| City/State/Zip | Dallas TX 75207 | City/State/Zip | | |
| Phone | 8177130262 | Phone | | |
| Fax | | Fax | | |
| e-Mail Address | Matthew.Boyle@wsp.com | e-Mail Address | | |

BTEX
Chlorides
TPH GRO
TPH DRO 1 ORO

| No. | Sample Description | Date | Time | Matrix | Pres. | # Bottles | A | B | C | D | E | F | G | H | I | J | Hold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S-1 @ 2' | 10-2-18 | 1:00 | Soil | Ice | 1 | / | / | / | / | | | | | | | |
| 2 | S-1 @ 3' | | 1:10 | | | 1 | | | | | | | | | | | |
| 3 | S-2 @ 2' | | 1:15 | | | 1 | | | | | | | | | | | |
| 4 | S-2 @ 3' | | 1:20 | | | 1 | | | | | | | | | | | |
| 5 | S-3 @ 2' | | 1:30 | | | 1 | | | | | | | | | | | |
| 6 | S-3 @ 3' | | 1:40 | | | 1 | | | | | | | | | | | |
| 7 | S-4 @ 2' | | 1:50 | | | 1 | | | | | | | | | | | |
| 8 | S-4 @ 3' | | 2:00 | | | 1 | | | | | | | | | | | |
| 9 | SW-1 | | 2:10 | | | 1 | | | | | | | | | | | |
| 10 | SW-2 | | 2:20 | | | 2 | | | | | | | | | | | |

Sampler(s) Please Print & Sign: Matthew Boyle

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☒ Other 48hr ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date: 10-9-18

Relinquished by: Matthew Boyle Date: 10-2-18 Time: 4:30

Relinquished by: Date: Time:

Logged by (Laboratory): Date: Time:

Received by:

Received by (Laboratory): PM 10/6/18 09:40

Checked by (Laboratory):

Notes:

| Cooler ID | Cooler Temp |
|---|---|
| Brown | 0.8° C |
| | 4.2° C |
| | C1-0.3° |

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-$HNO_3$ 3-$H_2SO_4$ 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

# Chain of Custody Form



COC ID: 142302

**HS18100327**

WSP Environment & Energy
Morris Boyd

| Customer Information | | Project Information | | ALS Project Manager: |
|---|---|---|---|---|
| Purchase Order | | Project Name | Morris Boyd | |
| Work Order | | Project Number | 31401117.010 | |
| Company Name | WSP USA | Bill To Company | | |
| Send Report To | Matthew Boyle | Invoice Attn | | |
| Address | 2777 N Stemmons Suite 1600 | Address | | |
| City/State/Zip | Dallas TX 75207 | City/State/Zip | | |
| Phone | 8177130262 | Phone | | |
| Fax | | Fax | | |
| e-Mail Address | Matthew.Boyle@wsp.com | e-Mail Address | | |

| No. | Sample Description | Date | Time | Matrix | Pres. | # Bottles | A | B | C | D | E | F | G | H | I | J | Hold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SW-3 | 10-2-18 | 2:30 | soil | ice | 2 | | | | | | | | | | | |
| 2 | SW-4 | 10-2-18 | 2:40 | soil | ice | 2 | | | | | | | | | | | |
| 3 | S-5 | 10-2-18 | 3:00 | soil | ice | 1 | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

A: BTEX
B: Chlorides
C: TPH GRO
D: TPH DRO / ORO

Sampler(s) Please Print & Sign: Matthew Boyle Matthew Boyle

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☒ Other 48 hr ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date: 10-9-18

| | | | | |
|---|---|---|---|---|
| Relinquished by: Matthew Boyle | Date: 10-2-18 | Time: 4:30 | Received by: | |
| Relinquished by: | Date: | Time: | Received by (Laboratory): PM 10/6/18 09:40. | |
| Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory): | |

Notes:

| Cooler ID | Cooler Temp |
|---|---|
| | |
| | |
| | |

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Date
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-$HNO_3$ 3-$H_2SO_4$ 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.